

Zais Acht

Sustainable Transformation of a Hermitage Farm in Upper Bavaria

Katrin Schneyer

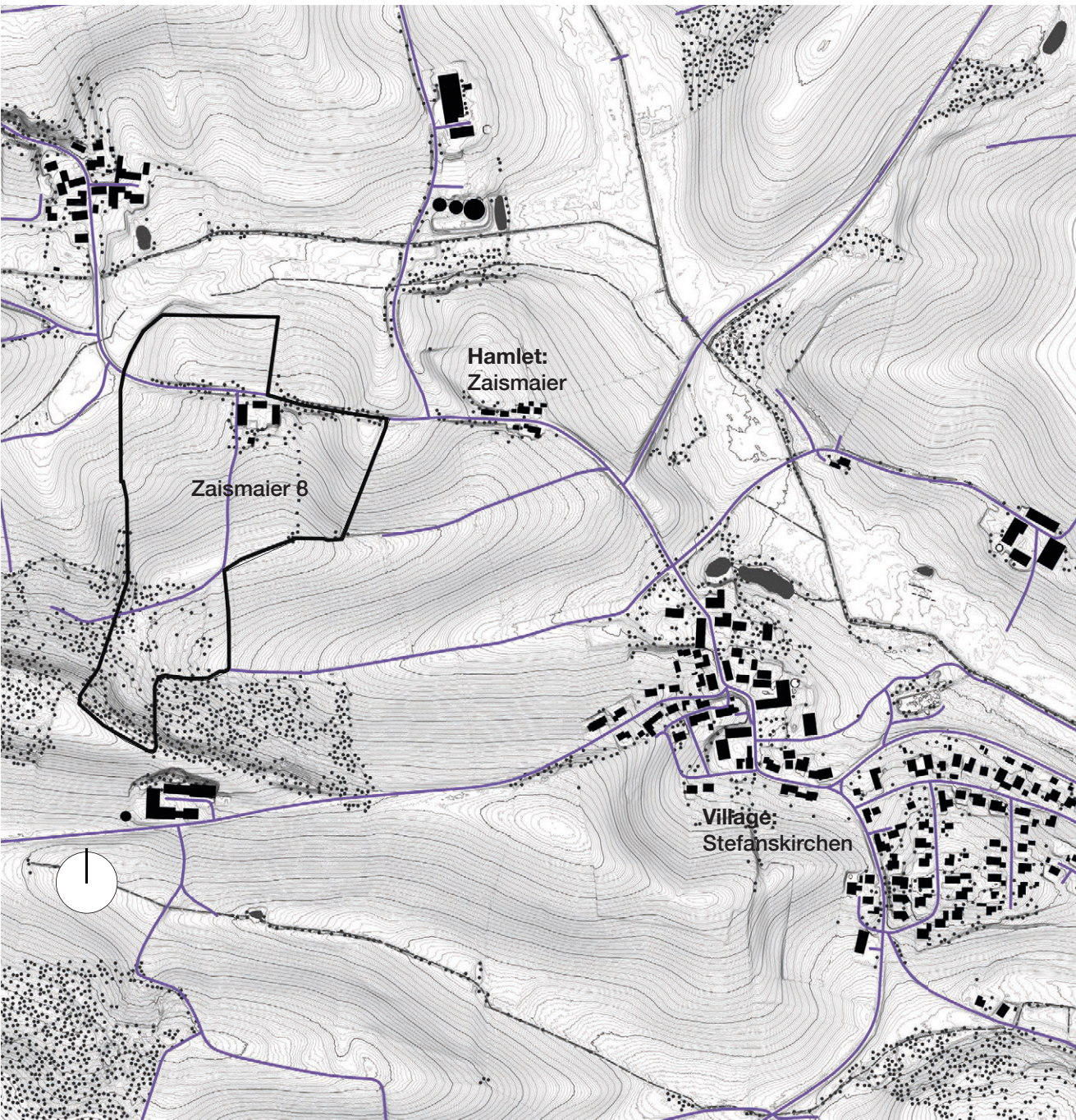
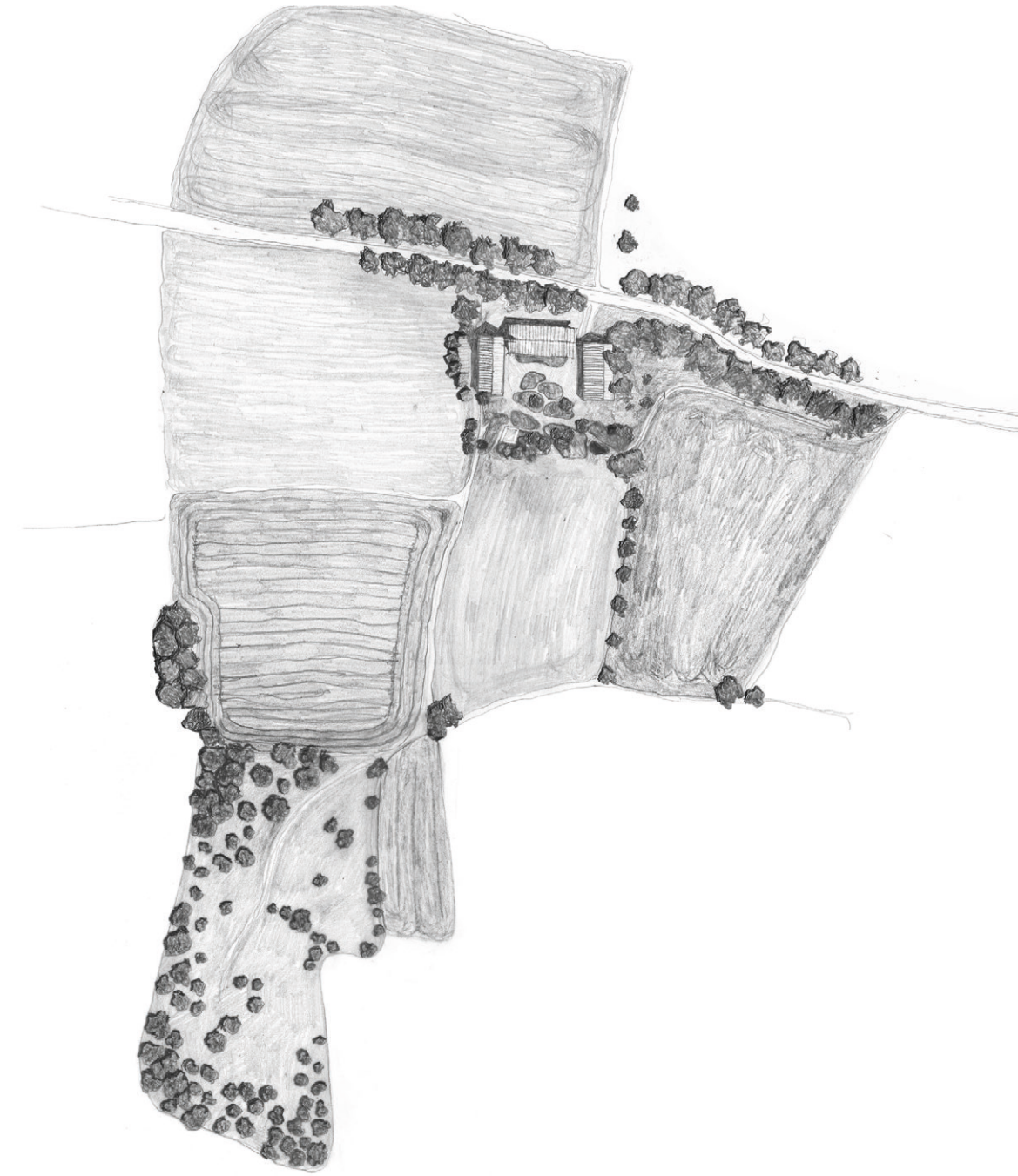
Independant Master's Thesis
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Supervision by Prof. Uta Graff
Chair of Architectural Design and Conception, TUM





INITIAL SITUATION AND SOCIAL RELEVANCE



1: (previous page) Photographic aerial perspective shot of „Zais Acht“, probably from the 1960s, 1970s

2: (previous page) Entrance Situation, Model Image 1:50

3: Topographic Plan, S 1:10 000

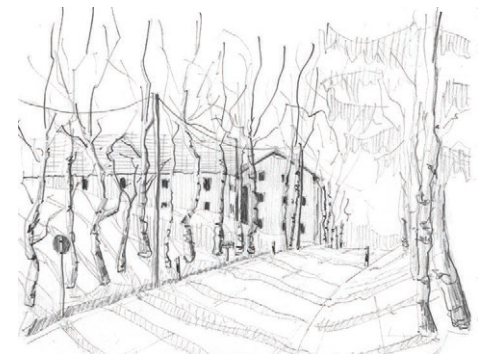
4: Site Plan Zais Acht, S 1:5000

5: Parcel of Land Zais Acht, Pencil drawing

6: Access Situation Zais Acht, Pencil Sketch

7: Entrance Situation Zais Acht, Pencil Sketch

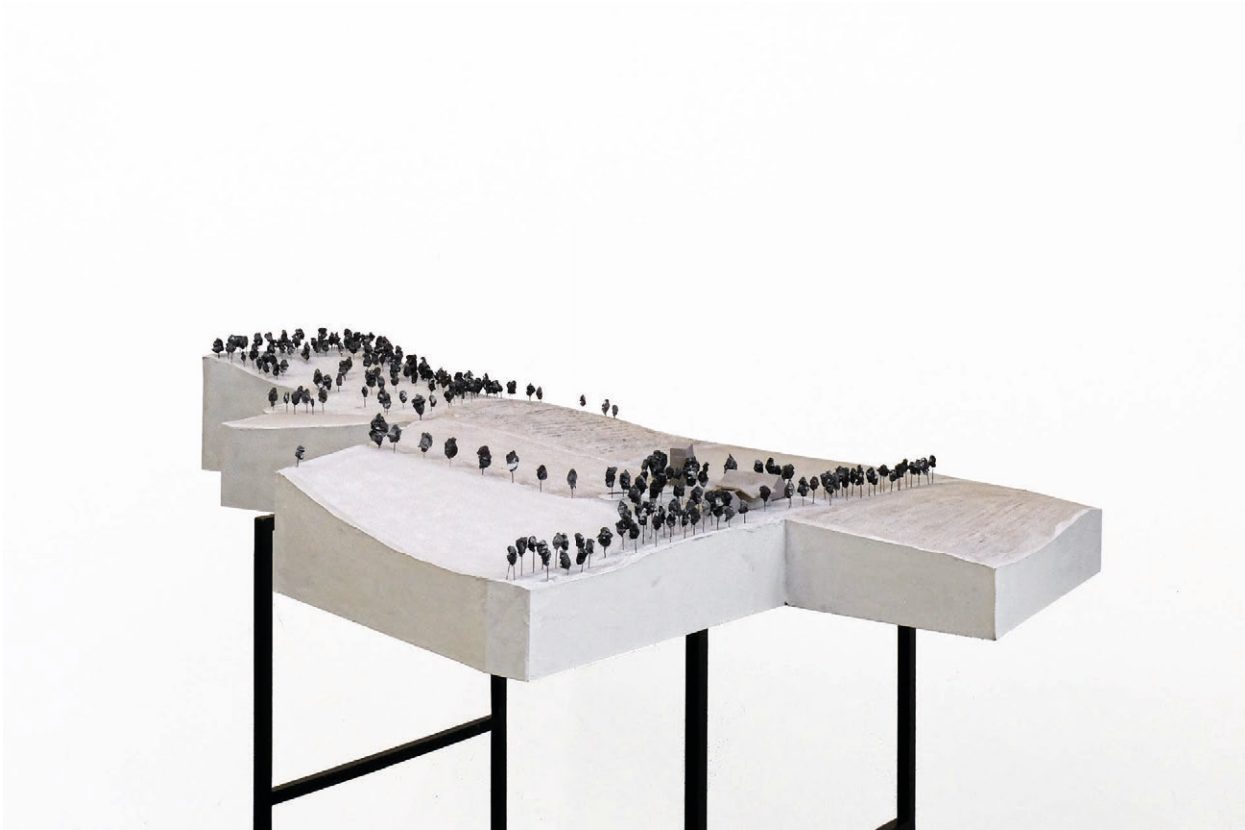
Structural change in agriculture has led to the decline of farms in many parts of Germany. The three-sided farmstead ‘Zais 8’ in the district of Mühldorf, 70 km east of Munich, is a prime example of this development: uninhabited for years, the buildings are in a dilapidated state, the farm buildings are unused, and the 22 hectares of arable land are leased out.



The project deals with the transformation of this three-sided farmstead, which is family-owned and is actually to be converted. This master’s thesis develops a sustainable vision for the transformation of the farm, offering answers to current challenges such as demographic change, resource scarcity and the climate crisis.



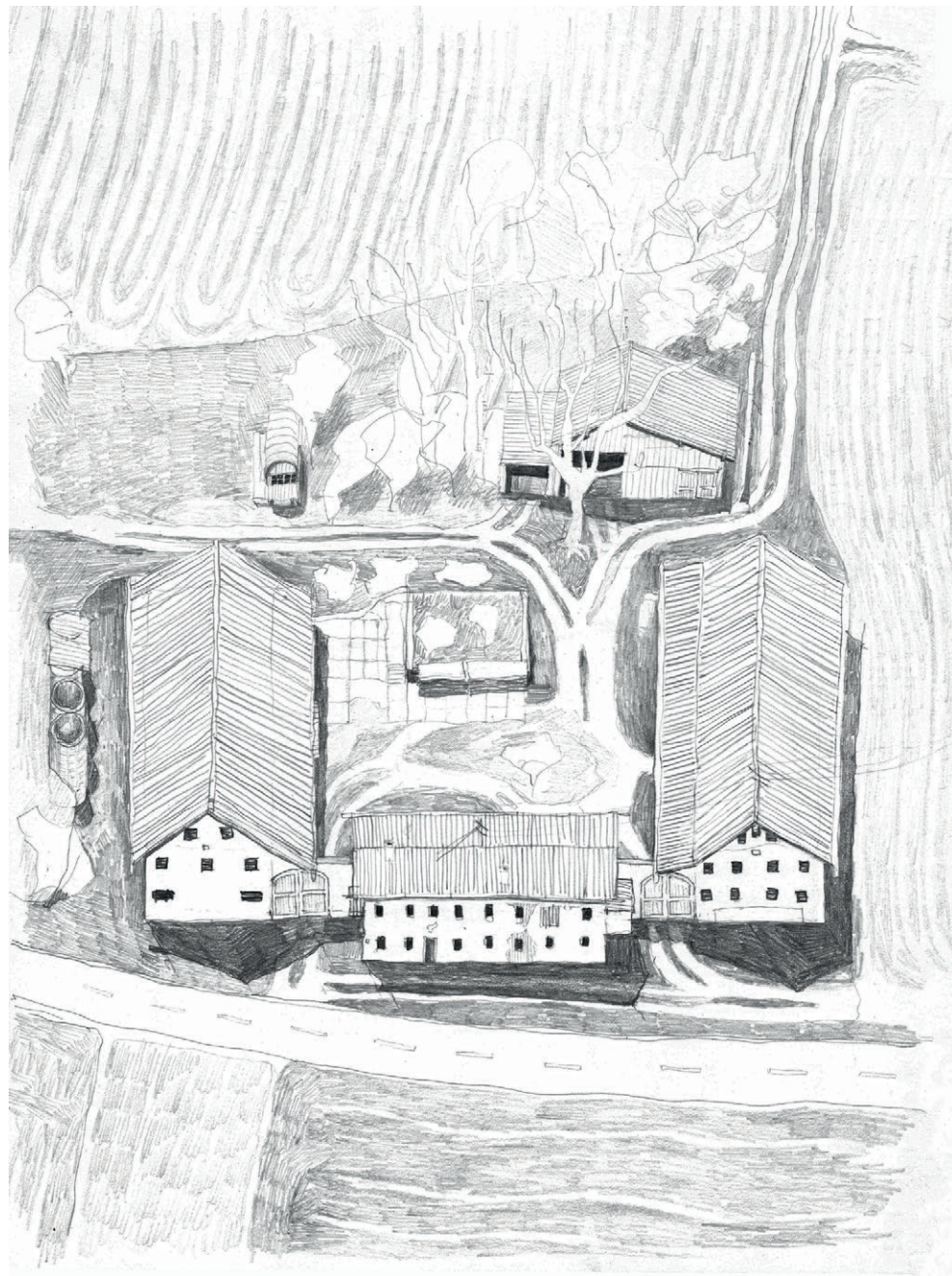
SITE MODEL



1: Site Model showing the picturesque hilly landscape in which the farm is embedded, Parcel of Land, Model made from Plaster, Styrofoam, Black ink, Earth pigments and grey cardboard, Scale 1:500I, Scale 1:500

2: Aerial View of the farm's mixed forest with a view of the building ensemble, Model made from Plaster, Styrofoam, Black ink, Earth pigments and grey cardboard, Scale 1:500





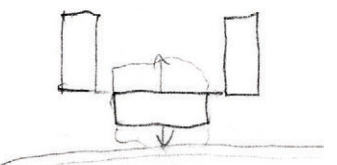
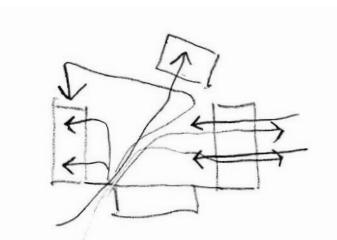
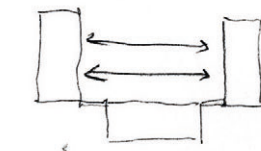
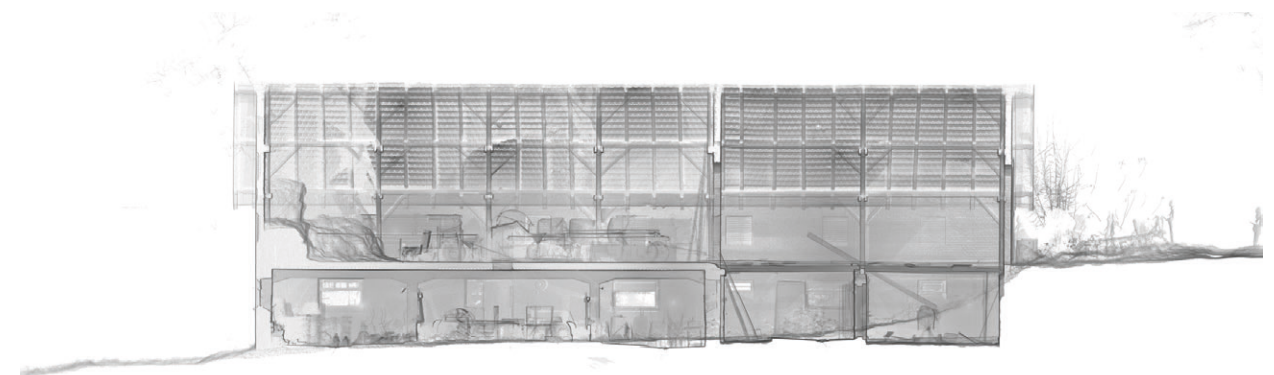
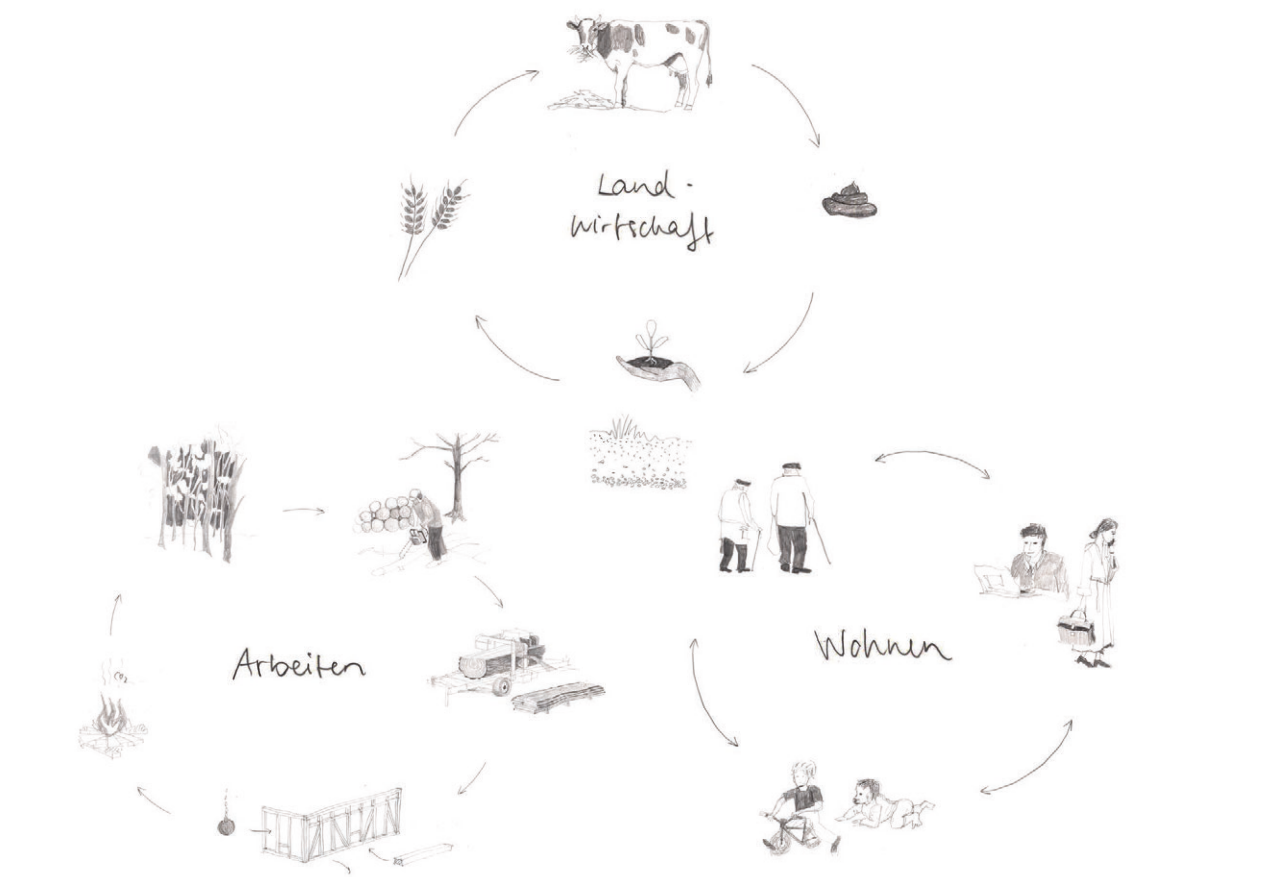
THE CIRCULAR PRINCIPLE AS THE CONCEPTUAL CORE

1: Illustration of existing building, residential barn sits flush with the passage gates

2: Pictogram sketches for movement and usage analysis:
A: Reciprocity
B: Entrance building and passage building
C: Lack of privacy and buffer zones in the existing residential stable building

3: Cycles of agriculture, working and living:
A: Cycle of organic food production
B: Local resources and material cycles
C: Social interactions and network structures

4: Self-made digital building survey of the farmstead as a basis for project processing, Longitudinal Section from the point cloud of the barn (top) and stable (bottom)



Farms have always combined agriculture, living and working. They are living organisms made up of interlocking cycles: food production, local resource cycles and social interactions in inter-generational living. At the Zais 8 farm, these cycles have come to a standstill. This project reactivates them through three central interventions:

1. Preservation and conversion of the existing farm buildings

2. New construction of a residential building and a residential tower for multi-generational living

3. Landscape terraces as communal and productive open spaces



ARCHITECTURAL STRATEGY



The characteristic typology of the three-sided courtyard is retained and spatially refined. The existing residential building is dismantled and rebuilt slightly further back, creating private front gardens and clearer spatial boundaries. The stable and barn remain as functional structures with their characteristic timber architecture.



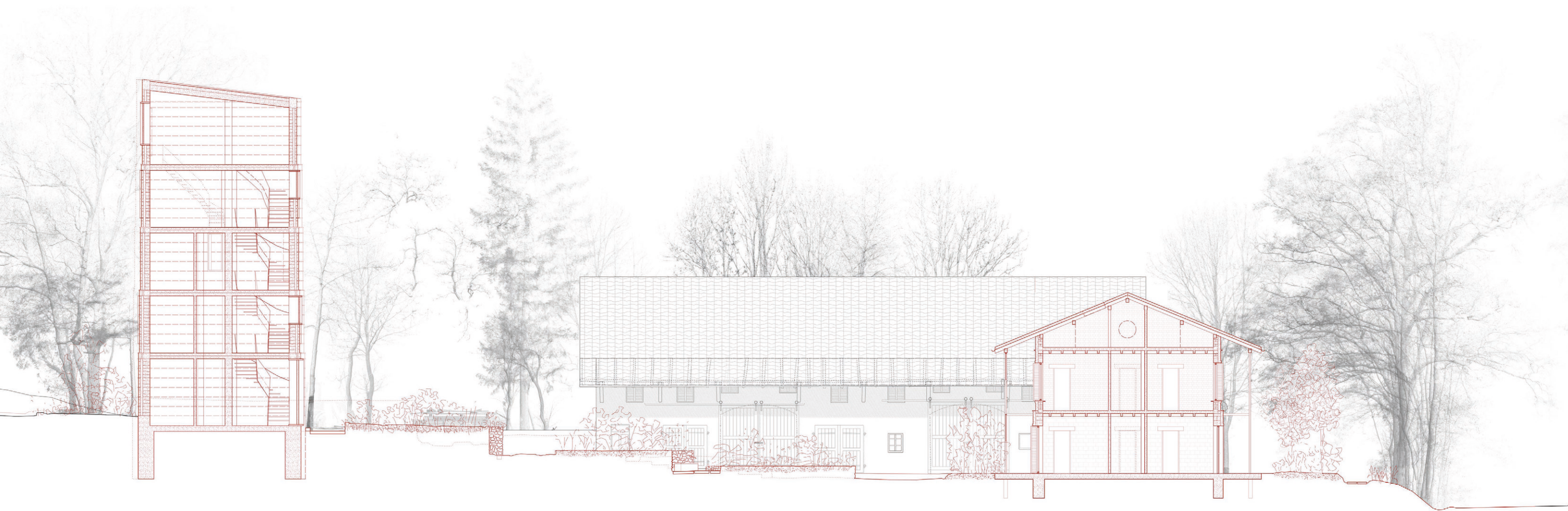
1, 2, 3: Modelimage, Massing Model, Urban Planning Settlement with Landscape Situation, Model made from Plaster, Styrofoam, Earth pigments, painted grey cardboard, Steelwool and spring steel, Scale 1:200



A complementary residential tower replaces the former coach house on the sloping terrain. Its slight rotation responds to the topography and marks a vertical accent as a deliberate counterpoint to the historic ensemble. Existing birch trees frame the tower and embed it in the landscape.

A new access road and parking spaces behind the barn relieve traffic congestion in the courtyard. Stepped landscape platforms connect the courtyard and tower – creating places for social interaction, gardening and relaxation, and turning the courtyard into a social hub.

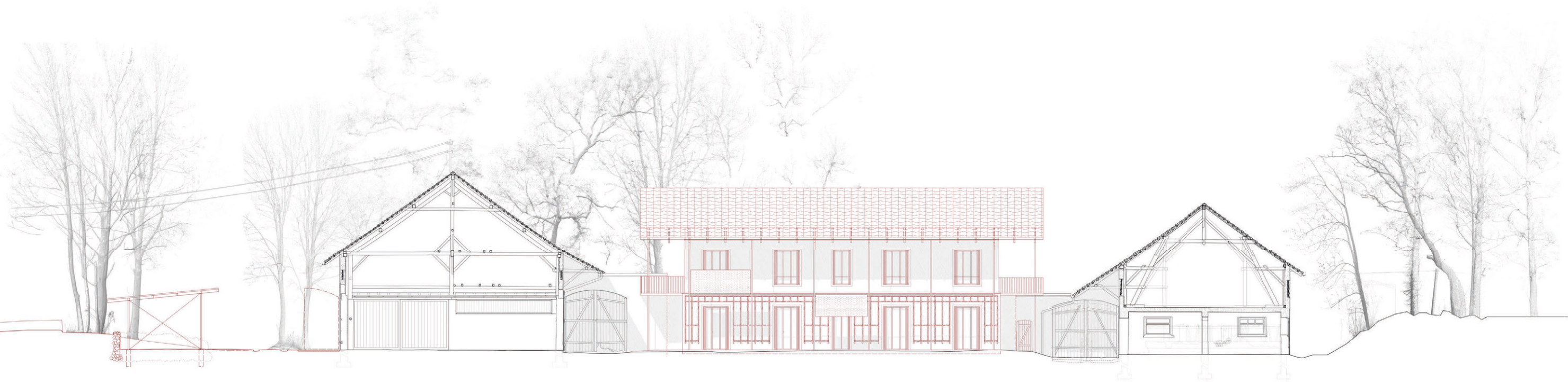
SECTIONS AND ELEVATIONS



SECTIONS AND ELEVATIONS



1: North Elevation, Stable, residential building, barn and residential tower



2: Residential building, South elevation and Cross sections

SUSTAINABILITY THROUGH LOCAL RESOURCES



1: The residential tower stands out from the three-sided courtyard ensemble with its solitary, sculptural appearance and is deliberately designed to appear as an independent element. Layers of brick strips are inserted between the rammed earth layers of the façade, emphasising the horizontality of the building's structure and protecting the clay from washout as a drip edge. Modelimage, Scale 1:50

2: With its plastered façade and wide overhanging roof, the residential building becomes part of the three-sided ensemble. Trellises and wooden shutters tie in with the dark red existing gates and add a rural touch to the house. Slender steel elements – columns and external staircases – deliberately add contemporary accents. Modelimage, Scale 1:50

3: Floorplans Residential Tower
4: Floorplans Residential House

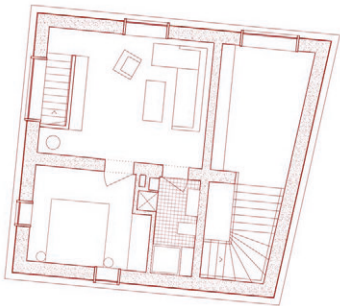


The project relies consistently on local resources: the clay and sandy soils and the farm's own two-hectare mixed forest provide almost all the necessary building materials.

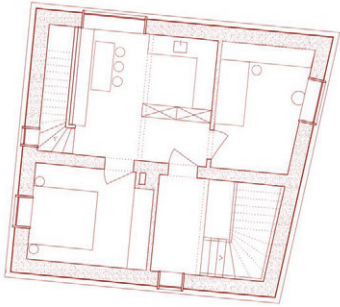
Clay construction: load-bearing clay brick walls with hemp lime insulation in the residential building, double-shell rammed earth construction with glass foam gravel in the tower. Visible layers and brick strips serve as structural drip edges.

Wood construction: ceilings made from wood sourced from the farm's own mixed forest complement the solid clay construction.

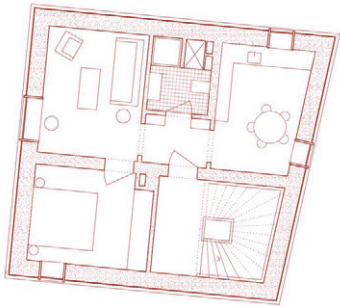
Clay regulates humidity, offers high thermal storage mass and is completely recyclable. Short transport routes minimise grey energy – resource-saving construction in a closed cycle.



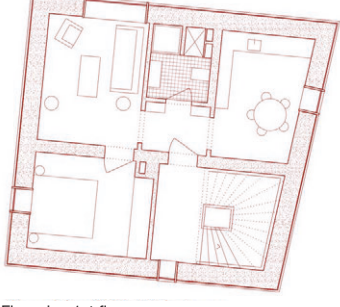
Floorplan 4th floor
Residential Tower



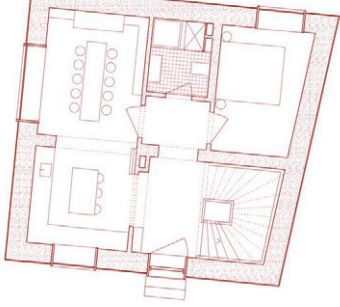
Floorplan 3rd floor
Residential Tower



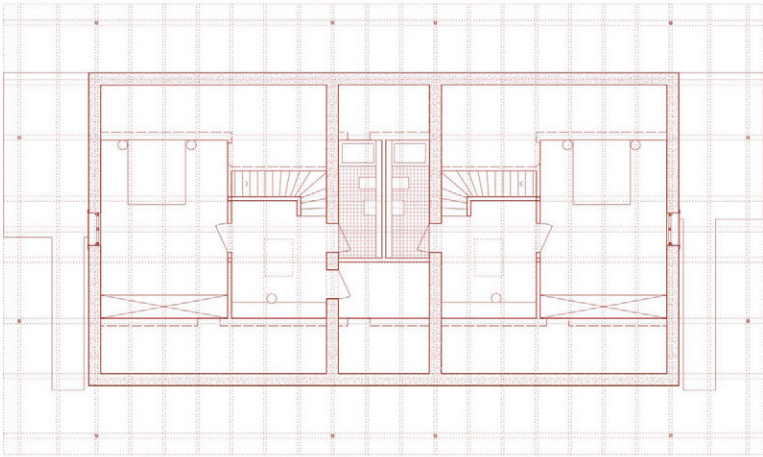
Floorplan 2nd floor
Residential Tower



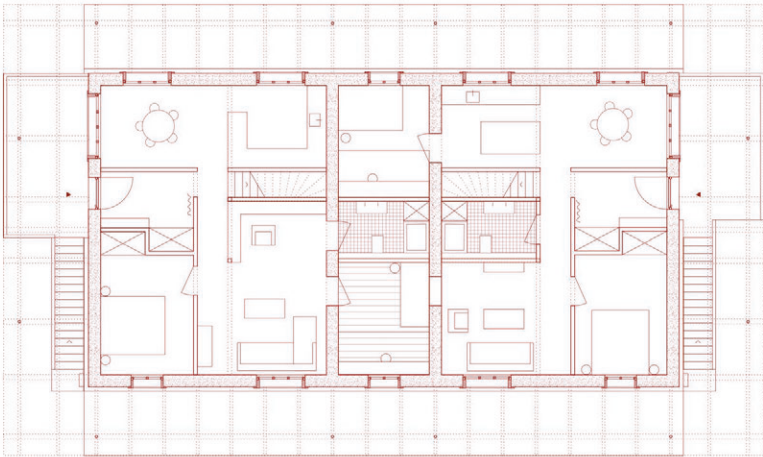
Floorplan 1st floor
Residential Tower



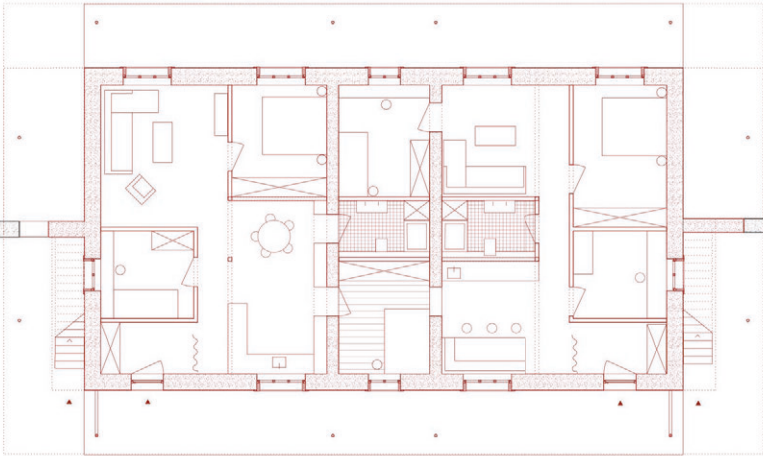
Floorplan ground floor
Residential Tower



Floorplan 2nd floor
Residential House



Floorplan 1st floor
Residential House



Floorplan Ground floor
Residential House



MULTIGENERATIONAL LIVING AND SOCIAL SUSTAINABILITY

Seven residential units (40–100 m²) create a diverse offering for young, old, couples and singles: two barrier-free ground floor flats, two upper floor flats, two compact tower flats and a maisonette flat. Centrally located switch rooms allow for flexible adjustments. Common rooms in the tower and a viewing point encourage social interaction.



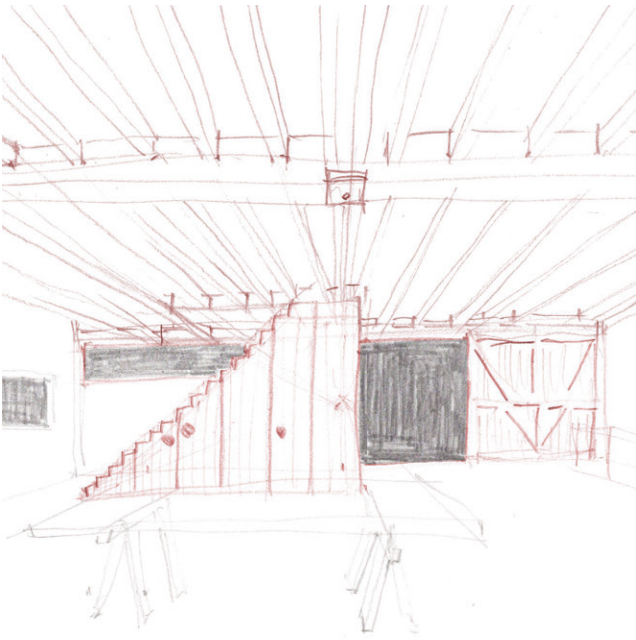
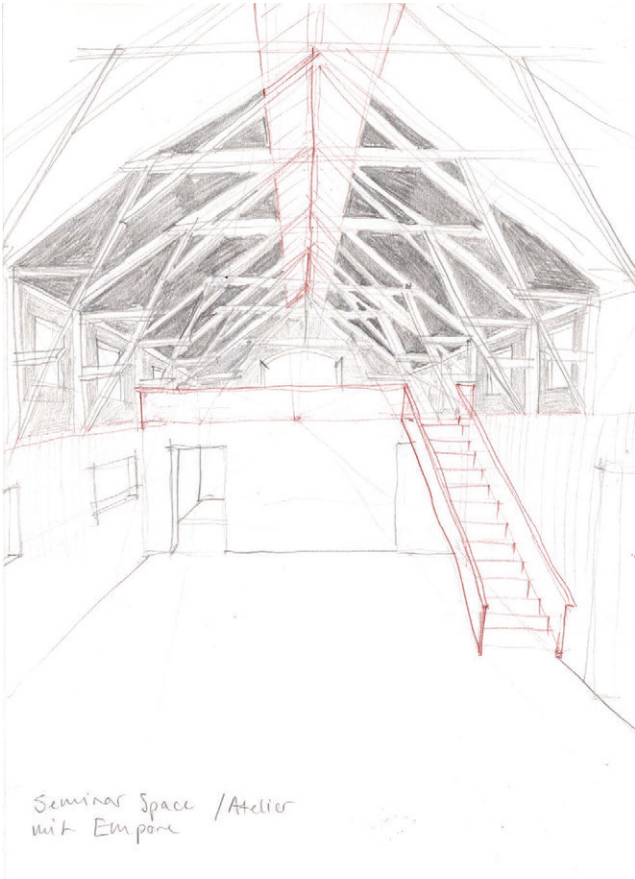
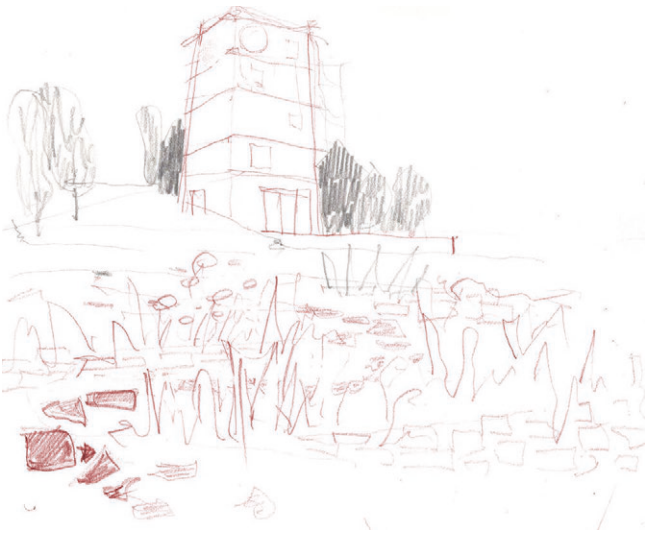
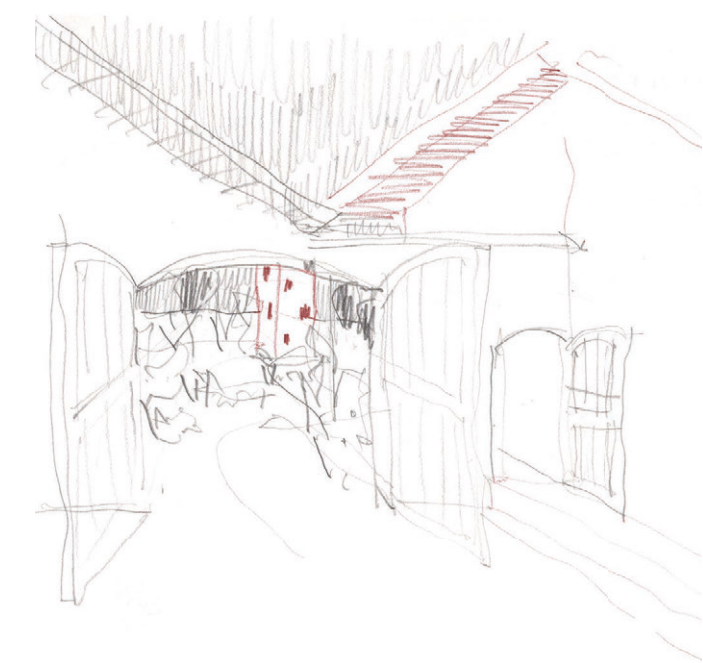
- 1: North Facade View, Modelimage, Scale 1:50
- 2: The upper two flats are accessed via an external steel staircase, which is placed on top of the existing gate passageway, Modelimage, Scale 1:50
- 3: Perspective West Facade, Modelimage, Scale 1:50
- 4,5: (on next pages) Inner Courtyard Perspective from and to the residential tower





A TRANSFERABLE MODEL

This master’s thesis combines ecological, social, economic and cultural sustainability: local resources, preservation of the building fabric and further development of the farm structure lead to a contemporary form of communal, resource-saving living in rural areas.
The three-sided farmstead is once again becoming a functioning organism – as a transferable model for a sustainable, cycle-oriented building culture.



1: Entrance View, Pencil Sketch
2: InnerCourtyard View, Pencil Sketch
3: Vision for the Transformation of the Stable into a Multi Purpose Space, which could be used as a Seminar Hall, an Atelier for Artists Residency, Agricultural Storage Space or a Garage for agricultural Vehicles
4: Current conversion of the barn into a wood workshop with a mezzanine floor to make effective use of the high ceilings and as a heat reservoir

