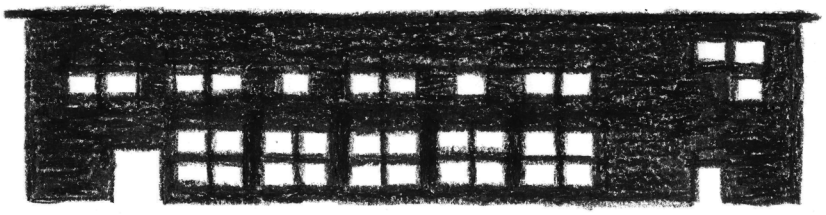

Sandvikssågen

Transformation of a former sawmill through critical reuse and spatial reconfiguration

Chalmers School of Architecture
Department of Architecture & Civil Engineering

Adrian Dahlberg, 2026
Examiner: Daniel Norell
Supervisor: Sara Olsson

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Abstract

Forest industries have shaped the landscapes of Norrland since the 19th century, leaving behind structures that still carry material and cultural traces of production. The mill town Holmsund developed in the archipelago outside of Umeå around the former sawmill Sandvikssågen. Even after its production ceased, its legacy of craftsmanship continues today in the form of workshops and ateliers. The building has undergone fragmented adaptations that constrain its current use. This thesis explores how industrial heritage can be reinterpreted to support contemporary craft practices and new public uses through reconfiguration of the existing.

An investigation was conducted through photography, archival research, and drawings, resulting in an atlas of spatial qualities, material conditions, and reusable components; this became the toolbox for transformation. The findings are treated as active resources, used to reconstruct spaces from salvaged materials. Drawing from adaptive reuse theory and Stewart Brand's notion of shearing layers, the building is understood as an evolving structure where permanent and temporary layers change independently. This informed a design strategy operating through critical removal, reconfiguration of building components, and the addition of new functions. Removal exposes concealed qualities, while reconfiguration repositions elements to form new spatial relationships.

The building is reorganized into three main parts: a new café and common area open to the public, the former production halls accommodate a wood workshop on the ground floor with exhibition above, and the ateliers are updated with improved facilities. Circulation is reworked through two additional cores that support both public access and workshop use.

The project argues that transformation is an active, interpretative process rather than a passive balance between preservation and replacement. By reworking existing structures through critical reuse, new spatial and programmatic relationships emerge without erasing material continuity. Industrial heritage is therefore not a fixed condition to be protected, but a resource that must be actively reconfigured to remain relevant.

Keywords

Critical reuse, Spatial reconfiguration, Industrial heritage

Figure 1. River man in bateau, Umeälven, n.d.

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Aim

The thesis investigates how industrial heritage can support contemporary craft and public use while remaining relevant over time through adaptive reuse. Focusing on Sandvikssågen, the project highlights how ordinary industrial buildings contain spatial, material, and social values shaped by continued occupation. Rather than restoring a past condition, the project treats the building as an evolving structure capable of accommodating new uses through transformation.

Secondly, the thesis develops a transferable approach based on investigation, critical removal, reconfiguration, and reuse. By mapping structures, materials, and current functions, the project distinguishes between long-lasting and temporary layers to guide intervention. Although site-specific, the framework proposes a method for understanding and transforming similar industrial buildings through their existing conditions.

Finally, the thesis contributes to discussions of adaptive reuse by positioning transformation as an active, interpretative process rather than a conservation-driven one. Through critical reuse, the project explores how interventions can strengthen spatial clarity, material presence, and long-term adaptability without erasing historical depth.

Thesis questions

How can an industrial heritage building be transformed to support contemporary practices of craft while strengthening its role as a public space for production, knowledge exchange, and social interaction?

How can spatial and material assets be critically reused through removal, reconfiguration, and addition to reveal its embedded identity while enabling new programmatic qualities?

Method

The thesis is conducted through three interconnected phases that together inform the transformation proposal. The first phase investigates the historical background, industrial context, and current condition of Sandvikssågen through archival research, site visits, photo documentation, reconstructed drawings, and discussions with current stakeholders. This phase documents the building's spatial organization, material conditions, and ongoing use, establishing an understanding of its existing qualities and constraints.

The second phase develops a theoretical and methodological position through literature studies and analysis of reference projects. Concepts such as adaptive reuse, shearing layers, palimpsest, and critical removal form the basis for a design strategy that guides architectural decisions. Theoretical perspectives are continuously tested against the specific conditions of the building.

The third phase applies this framework by developing a design proposal communicated through drawings, visualizations, and physical models. The process concludes with a discussion reflecting on the project's broader relevance within contemporary discourses on industrial heritage, adaptive reuse, and transformation as a practice. AI has been cautiously used for text feedback and image editing.

Delimitations

The design proposal is limited to the transformation of Sandvikssågen and its existing spatial, material, and structural conditions. While the developed approach is intended as a framework for working with industrial heritage, its application remains site-specific and shaped by the building's history, current occupation, and physical logic. The project primarily operates through architectural investigation and spatial design, focusing on material continuity, reuse, and adaptive transformation. Technical systems, structural calculations, acoustics, fire safety, and accessibility are therefore addressed only at a conceptual level and would require further professional development. The design is not constrained by the current setting or economic feasibility. Existing occupants and local activities inform the proposal, yet the project does not aim to provide a finalized operational solution. Instead, the thesis investigates how architectural interventions can reveal, reinterpret, and extend the cultural and spatial values embedded within an evolving industrial structure.

Theory

Adaptive reuse

Adaptive reuse refers to the process of repurposing existing buildings while retaining their cultural and architectural significance. In Adaptive Reuse of the Built Heritage, Plevoets and Van Cleempoel (2019) position it as a discipline negotiating continuity and change rather than choosing between preservation and replacement. Existing structures are understood as active resources embedded with spatial, material, and social value. The scope of adaptive reuse ranges from minimal intervention to substantial reconfiguration; it consistently advocates extending a building's lifespan through environmental responsibility and cultural continuity. Central to the discourse is the concept of aemulatio, in which contemporary additions reinterpret historical principles without imitating them. This approach resists both nostalgic reconstruction, which risks becoming an imitation, and complete renewal, which neglects the context it belongs to. Carlo Scarpa exemplifies this balance in his work, notably at the Castelvecchio museum in Verona, Italy, where a dialogue between past and present reveals the building's historical layers through thoughtful design interventions. Adaptive reuse demands critical judgment, because interventions can either clarify or distort inherited meaning. The concept operates as both a method and an ethical stance, requiring careful negotiation between industrial authenticity and contemporary functionality, focusing on continuity through change.

Collective memory

Collective memory refers to the shared narratives and identities embedded in physical environments and social practices. In The Architecture of the City, Rossi (1982) argues that the city functions as the collective memory of its people, where buildings persist beyond their original purpose and acquire symbolic meaning. Urban artifacts exemplify endurance, memory, and time through which communities understand continuity and change. Sally Stone (2019), in Undoing Buildings, expands this perspective, stating that "issues of collective memory and identity combined with ideas of tradition, history and culture mean that it is possible to retain a sense of continuity with the past as a way of creating the future" (p. 3). She further argues that "The building can exhibit its own evolution, it can reveal the changes that have happened and embrace the narrative that exists within those transformations" (p. 4). Memory, therefore, is not dependent on freezing architecture in time, but on allowing transformation to remain visible. Yet intervention carries responsibility: excessive erasure weakens continuity, while rigid preservation risks fossilization. Collective memory requires that traces remain legible so the building continues to anchor its inherent identity.

Shearing layers

In How Buildings Learn, Brand (1994) introduces the theory of "shearing layers," describing buildings as composed of six elements: Site, Structure, Skin, Services, Space Plan, and Stuff, each evolving at different rates. This model reframes architecture as a temporal system rather than a static object. Brand argues that "buildings tell stories if they're allowed... if their past is flaunted rather than concealed" (p. 4), and further that "age plus adaptivity is what makes a building come to be loved. The building learns from its occupants, and they learn from it" (p. 23). The framework emphasizes that durability and change must coexist: stable structural systems support flexible spatial and technical adaptations. Designing without acknowledging these differing lifespans risks premature obsolescence. Shearing layers, therefore, challenge architects to prioritize long-term adaptability and structures that tolerate change. This theory guides decisions about what constitutes lasting value, such as structure and spatial volume, but also what may evolve, ensuring continued use without compromising structural clarity or historical legibility.

Critical removal

Critical removal generally refers to a design approach within adaptive reuse that involves selectively stripping back later additions to uncover and expose a building's original fabric and spatial logic. The concept builds on multiple theories and is presented here as the author's own understanding. Rather than demolition, it operates through deliberate subtraction, targeting elements that obscure structure, circulation, or material coherence. Its scope ranges from removing lightweight partitions and redundant services to uncovering structural systems and restoring spatial continuity. In this sense, critical removal advocates architectural legibility, improving orientation and coherence in ways that align with Kevin Lynch's concept of imageability, in which clarity supports wayfinding and spatial understanding (Lynch, 1960). The approach relates to Stewart Brand's theory of shearing layers by primarily targeting more temporary layers, such as services and space plan, to gain a deeper understanding of the building's structural logic (Brand, 1994). However, it is not a neutral operation; critical removal is an intentional and project-driven act. Consequently, this raises critical concerns: decisions about what to remove are inherently subjective and inevitably privilege certain values over others. As John Ruskin argued, later additions may hold cultural and temporal significance (Ruskin, 1849/1989). Their removal risks simplifying complex historical narratives, demanding careful judgment to strengthen a building's presence rather than diminish it. Therefore, removal must be justified by the spatial, material, or cultural values it reveals.

The low road

Brand (1994) distinguishes between “high road” and “low road” architecture as two opposing attitudes. High road buildings are conceived as complete aesthetic compositions, tightly detailed and resistant to alteration. Their specificity often limits adaptability, increasing vulnerability to obsolescence. Low road buildings, by contrast, are shaped primarily by utility. Common in industrial contexts, they consist of robust structural frameworks with generous spans and straightforward construction. Their value lies in the ability to change and be flexible: partitions, services, and fittings can be replaced without disturbing the primary values. Brand associates the low road with resilience and informality, arguing that such buildings remain relevant because they accept wear, repair, and reinterpretation as natural processes. By treating these spaces as pragmatic objects: durable, open-ended, and capable of change, they can support an architectural attitude that embraces unfinished or raw qualities, encouraging flexibility rather than perfection, maintaining a robust and utilitarian character.

Palimpsest

The term palimpsest derives from manuscript traditions in which text is written, erased, and overwritten, leaving earlier inscriptions partially visible. In architectural discourse, Plevoets and Van Cleempoel (2019) use the term to describe the built environment as layered through successive adaptations. Architecture is thus understood not as a singular static state, but as an accumulation of interventions over time. The concept advocates revealing temporal depth rather than concealing it, allowing buildings to communicate their own evolution. Writing over, underlining, or selectively erasing becomes an analogy for design strategies that negotiate removal and addition with care. Architects such as Carlo Scarpa, and Lina Bo Bardi exemplify this approach by juxtaposing contemporary materials with historic fabric, creating deliberate tension between old and new. The palimpsest, however, does not imply that every layer must remain untouched. Critical removal can also reinforce legibility by revealing relationships otherwise concealed beneath later additions, allowing multiple temporalities to remain present simultaneously.

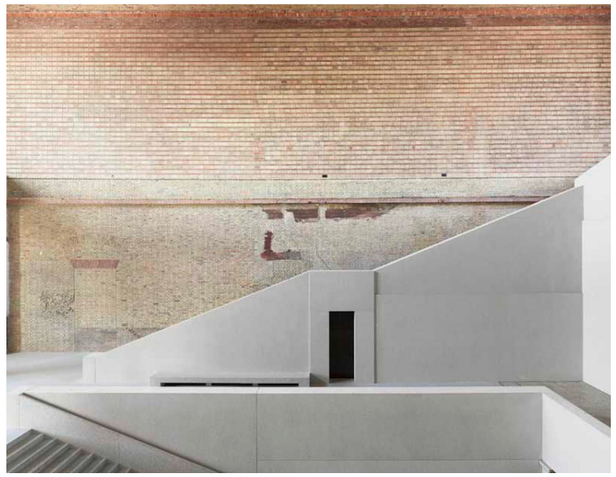


Figure 2. Neues Museum staircase, David Chipperfield Architects + Julian Harrap, n.d.

Figure 3. Neues Museum exhibition, David Chipperfield Architects + Julian Harrap, n.d.

Neues Museum

David Chipperfield
Museumsinsel, Berlin, Germany
2009

The Neues Museum in Berlin, originally completed in the 19th century and heavily damaged during the Second World War, was restored by David Chipperfield and Julian Harrap. Instead of reconstructing lost parts and risking nostalgic imitation, the project focused on integrating the remaining structure with new elements where needed. Existing fragments, such as decorated surfaces and exposed masonry, are left visible to expose traces of the past. This is elevated by distinguishing existing matter from new additions made in stone, concrete, and metal that are clearly contemporary. The outcome is a building where different periods coexist, allowing both historical and contemporary layers to remain part of the spatial experience.

The project approaches transformation through critical selection rather than reconstruction. Instead of returning the building to a previous state, it works with what remains and defines new interventions in relation to it. This can be translated into a method of assessing elements based on their current condition and potential use. The distinction between existing and new elements also informs how additions can be introduced to support the original without copying, allowing the building to be read as an accumulation of changes rather than a fixed composition.

(David Chipperfield Architects, 2009)

Figure 4. Antivilla exterior, Brandlhuber+ Emde, Burlon, n.d.
Figure 5. Antivilla interior, Brandlhuber+ Emde, Burlon, n.d.

Antivilla

Brandlhuber+ Emde, Burlon
Krampnitz, Berlin, Germany
2015

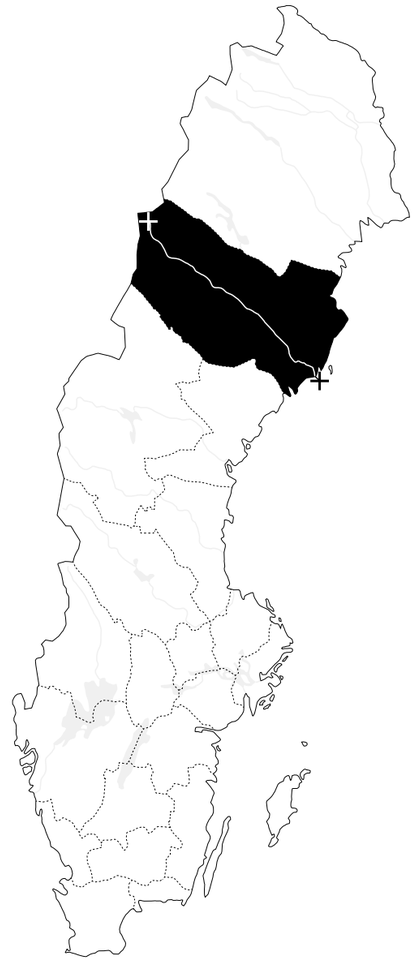
Antivilla, designed by Arno Brandlhuber together with Erik Emde and Thomas Burlon, transforms a former industrial structure through a limited set of interventions. Instead of refining the existing building, the project works directly with it by removing sections of the facade and introducing large openings. These cuts expose the thickness and materiality of the walls while creating new spatial and visual connections. The rough exterior maintains the raw industrial character, while polished concrete contrasts in the interior. Also here, the architects used a critical approach, intervening only to establish new values while preserving the current ones.

The building does not have the same societal prestige as the Neues Museum; it could be better described as an example of low-road architecture, where the interventions allow for more hands-on reconfiguration and experimentation. Instead of taking a preservative approach, the architect's process involves removal as a deliberate design action. Subtraction is used to expose concealed structures and to improve spatial continuity, rather than to restore an earlier condition. Viewing the building as its own material bank supports a method in which intervention is not driven solely by addition, but by selecting which elements to remove, retain, and reconfigure within the building.

(Brandlhuber+ Emde, Burlon, 2015)

Context

Location
Historical background
Site
Existing drawings
Investigation
Conclusions from investigation
Design strategy



Sweden, Västerbotten
1:10 000 000

Västerbotten, Umeälven
1:3 000 000

1. Överuman, start of Umeälven
2. Sandviken, site of project

Umeälven

With its 470 km long journey that begins at the Norwegian border in Storuman, Umeälven is one of Sweden's longest rivers. The river is fundamental to the development of the surrounding communities, serving as both a transportation route and a source of supply. With the growing forestry industry around 1800, the river served as a means to sort and transport logs from timber yards to sawmills (Umeå Kommun, 2025).

Timber rafting

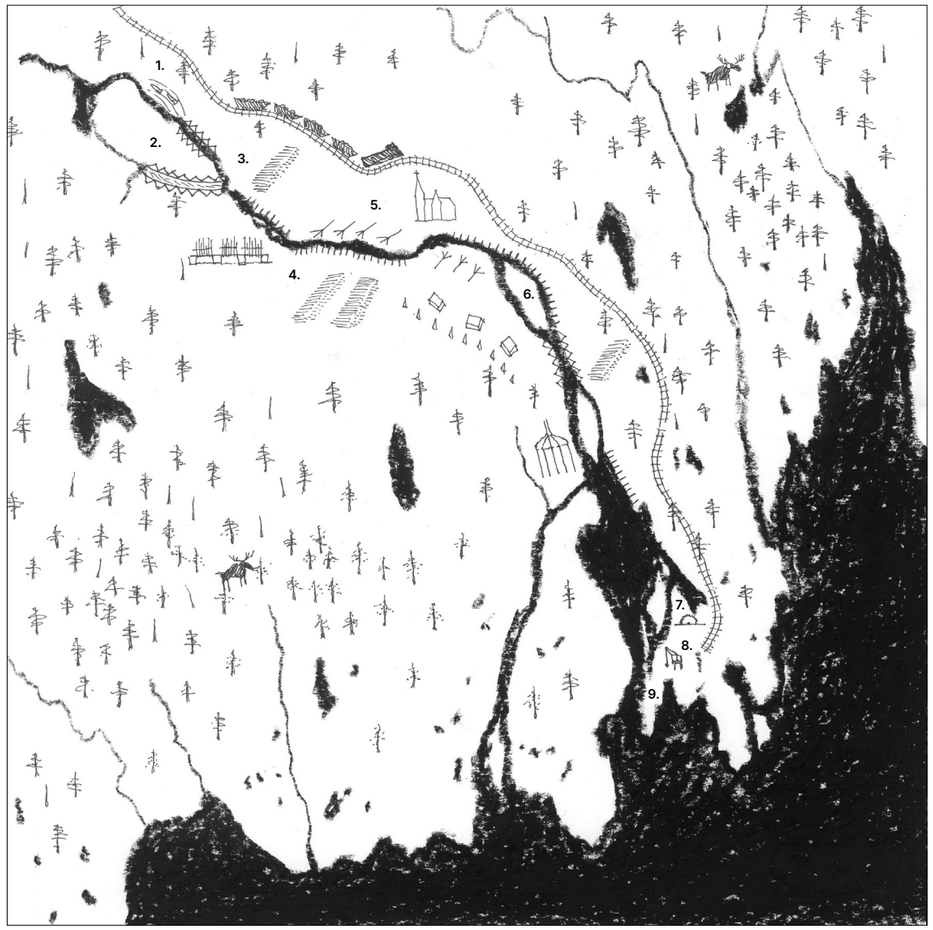
The 1900s were the highlight of the rafting days. It led to significant economic growth across the entire region of Västerbotten, with settlements and workstations developing along the river as part of the timber network. After felling, timber from the inlands was transported downstream through sorting stations, where logs were sorted into the appropriate slots for different forest owners using a timber separator, before being sent in bundles to the sawmills in Holmsund (Umeå Kommun, 2025).

Holmsund

The Umeå River flows into the archipelago of Holmsund, where it gently dissolves into the Baltic Sea. This was the final destination of the log driving route. After being cut and processed into the right dimensions, the finished product was exported from the port to the rest of Sweden (Umeå Kommun, 2025).

The sawmill

A sawmill was built in Sandvik in 1857; it quickly became successful and, consequently, enabled the birth of Holmsund by economically initiating the construction of a church and school, which became the foundation of a new settlement (Umeå kommun, 2025). Baggböle sawmill was replaced by the new one in Holmsund, workers and their families embarked on what came to be known as 'the original journey'. "Logs were joined together, and then the entire family's possessions were loaded onto them: the kitchen table, the wooden chairs, the chickens, the pig, and, finally, all the family members, under the strict supervision of the father, the patriarch of this northern Swedish ark" (Ambjörnsson, 1988, p. 34).



Bruksamhället/ The mill town

1. Baggböle sawmill
2. Klabböle sawmill
3. Backen sorting station
4. Bölesholmarna depot
5. Umeå city
6. Ön, the loggers' village
7. Sawmill in Sandviken
8. Holmsund city
9. Umeå port

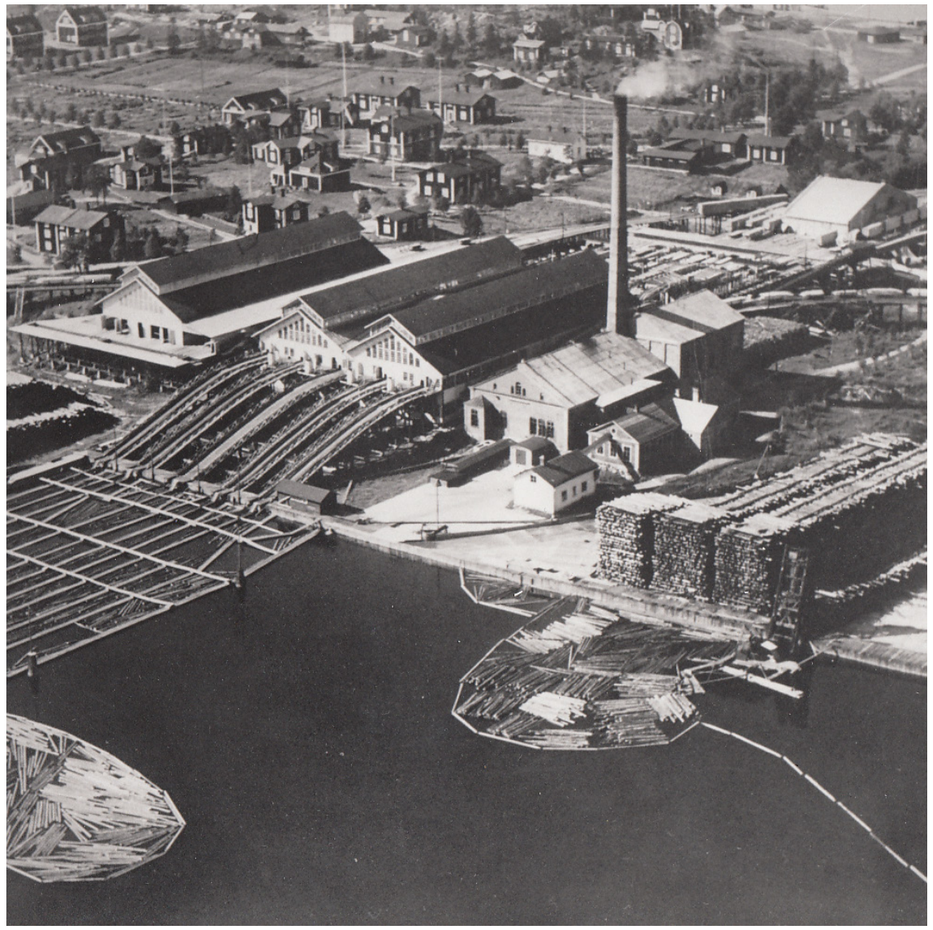


Figure 6. View over the sawmill in Sandvik, Holmsund, n.d.

A growing community

Sandvik's steam-powered sawmill was built on a headland in northern Holmsund in 1857 and was one of the first in the country. In 1915, the sawmill was bought by the forestry company Mo & Domsjö AB. This led to an increase in its capacity, which attracted more workers who settled here. (Umeå Älvdal, 2019). Apart from being a workstation, it was also a place for community life; children played in the lumberyard and were exposed to industry and its jargon at an early age. They quickly learned to work and became natural successors in the working-class culture (Ambjörnsson, 1988). In 1949, a fire broke out, and the wood-built facility burned down. But it was replaced by a smaller sawmill that began operating in 1950, until the business eventually shut down in 1962 due to the gradual decline of log driving (Umeå Kommun, 2025).

Sandvik 1960

The site is in full use by the timber industry. Logs were gathered in the bay outside the sawmill, awaiting processing. The peninsula's landmass formed by accumulating sawmill waste as landfill.

Sandvik 1975

The Timber industry has left the site, and the landscape is transitioning; nature is beginning to reclaim the land. Most structures have been torn down or moved; only a few bundles of logs remain in the eastern bay before they are transported south.

Sandvik 2025

The sawmill and boiler plant are the only lasting remnants from the past era. New structures have been added, and the area has developed into a mixed industrial area.

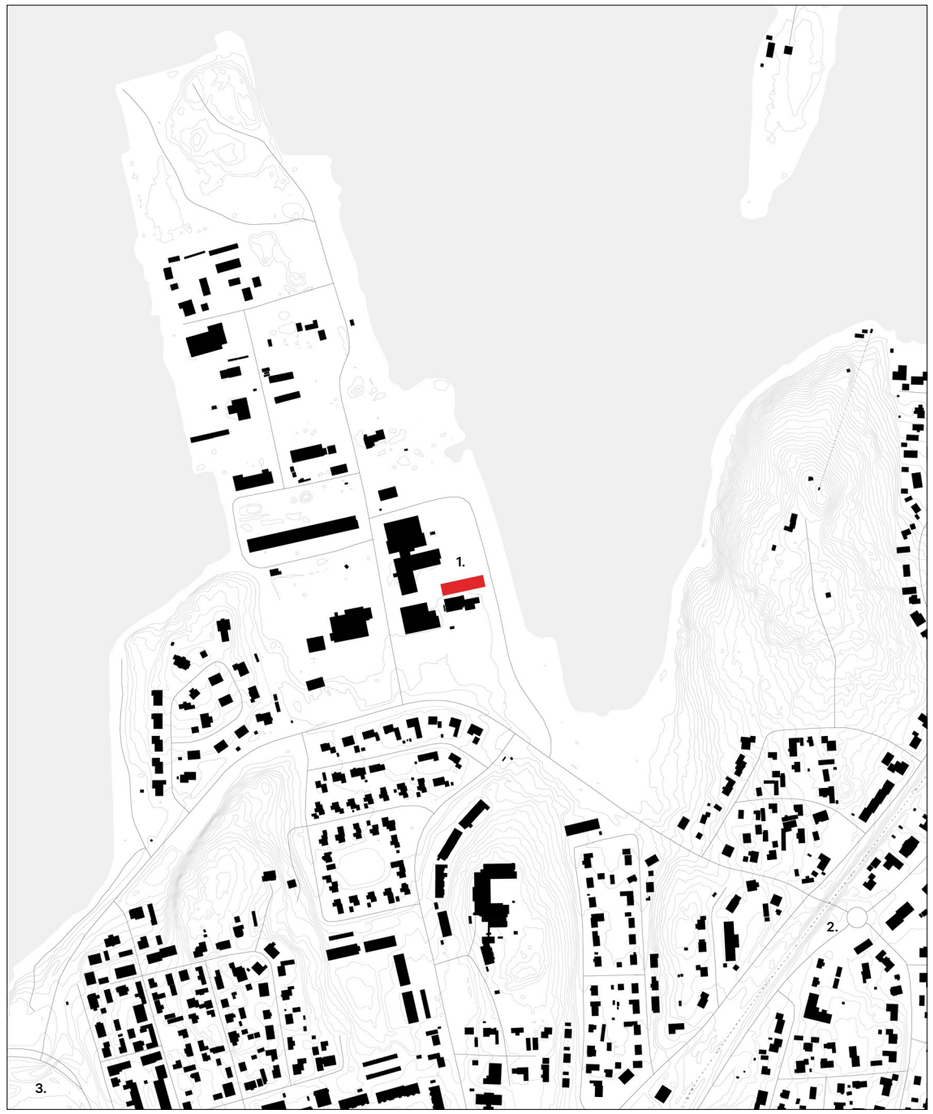
Figure 7. Sandvik, 1960

Figure 8. Sandvik, 1975

Figure 9. Sandvik, 2025

Holmsund
1:40 000

N



Site location
1:7 500

1. site
2. Railway
3. E12

N

Figure 10. Archive drawing, 1983

The former sawmill

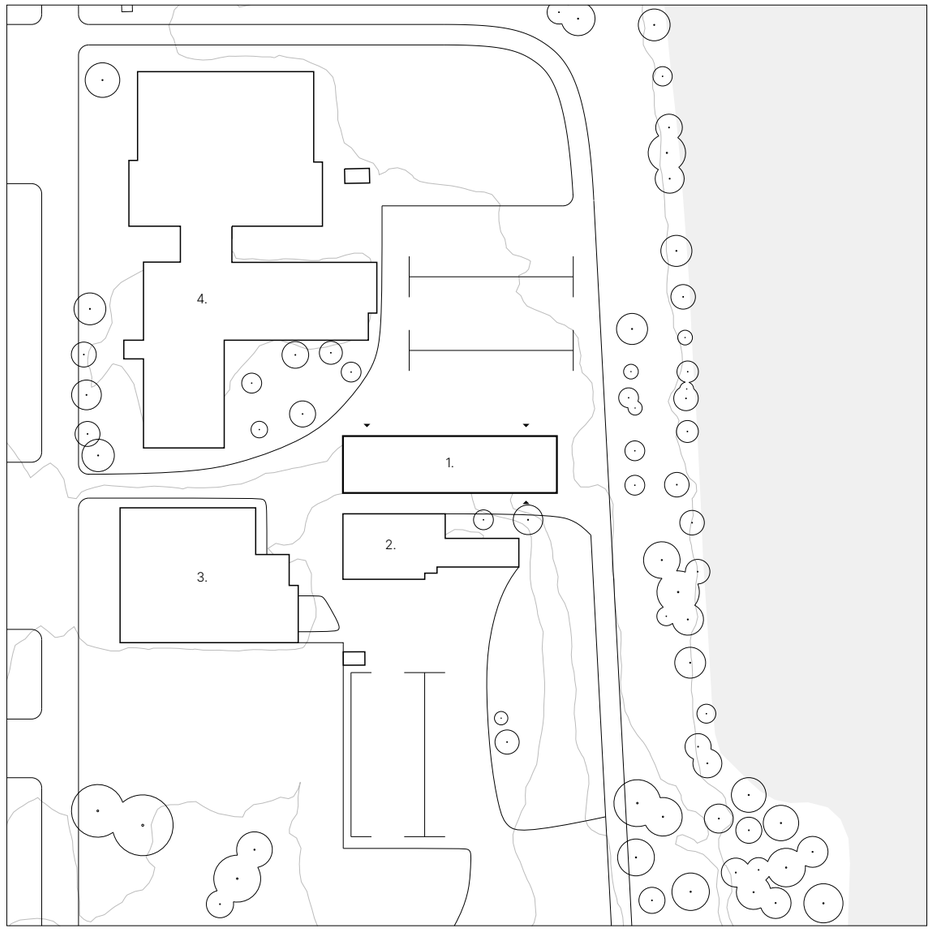
The sawmill was originally organized along a linear, highly rational production sequence. Timber logs arrived via water and were stored in a log pond before being pulled onto a steep ramp leading directly into the second floor. Inside the building, the logs entered the primary sawing stage, where band and circular saws processed them into rough boards. The material then continued through the building for sorting and secondary processing, where it was edged, trimmed, and graded. Residual material and sawdust were collected on the ground floor, where the main machinery was located. Finally, the lumber exited the building via a ramp at the opposite end and was transported to drying stacks. This sequence is reflected in the building's spatial organization, defined by large open volumes, a robust structural grid, and a clear directional flow supporting heavy loads and continuous production.

Subsequent transformations

Despite its industrial capacity, the sawmill was only in operation for 12 years before becoming obsolete (Umeå Kommun, 2025). Following its closure, the machinery was removed, leaving the structural framework intact. The building was later adapted to accommodate vocational education, with a series of additions added to meet immediate functional needs. These included lightweight partition walls, new surface layers, a retrofitted attic for ventilation, and covered window openings. A new external elevator was also introduced. Over time, these interventions were further altered by successive occupants, resulting in an accumulation of informal modifications. Evidence of changing use remains visible, such as paint markings from former activities, including paintball and mechanical work. Rather than a single transformation, the building has undergone continuous adjustment, resulting in a layered condition shaped by pragmatic necessities rather than coherent planning.

Current use

Despite these changes, the building has retained a consistent association with practical use. Today, it is privately managed by a local real estate company and accommodates a mix of tenants, including art practitioners and municipal activities. The ground floor production hall primarily serves as warehouse storage, while the upper level houses a boules court. Smaller rooms are rented as studios for crafts and artistic work. Adjacent structures extend this programmatic diversity: a former boiler plant houses a wood workshop and furniture carpentry, while a vintage shop activates the ground floor and extends into the surrounding park during summer. Nearby buildings host additional functions, including public services and vocational education. Together, the area reflects an ongoing occupation rooted in collective engagement through making, learning, and shared use.



Site plan
1:1 500

1. Sandvikssågen
2. Boiler plant

3. Veterinary & warehouse
4. Vocational education

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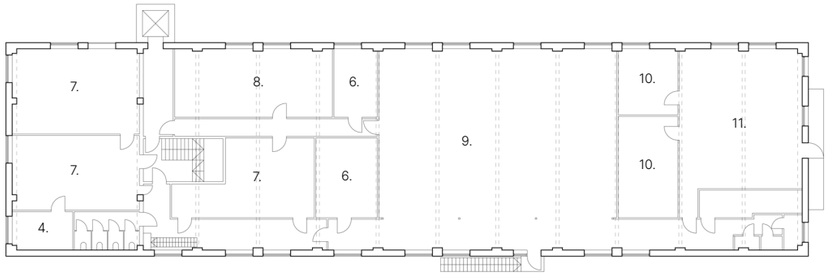
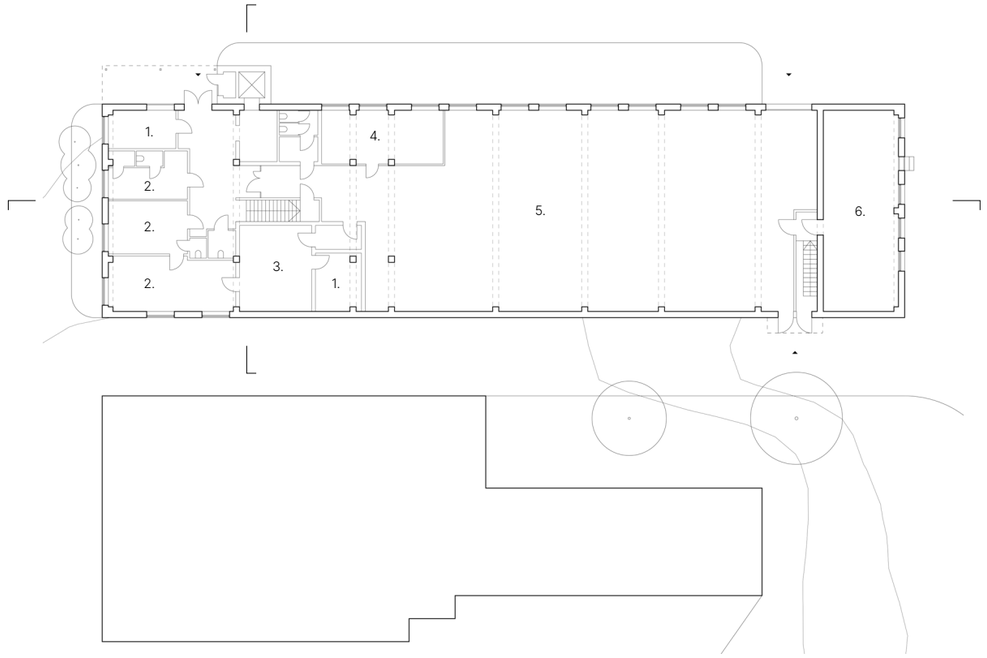


Second floor
1:400

7. Pottery
8. Artist studio
9. Boules court

10. Rehearsal studio
11. Break out

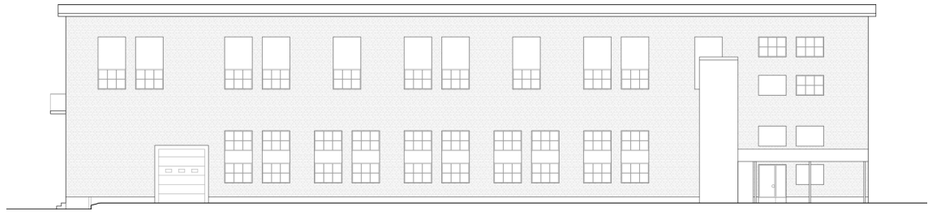


Ground floor
1:400

1. Storage
2. Changing room
3. Safe room

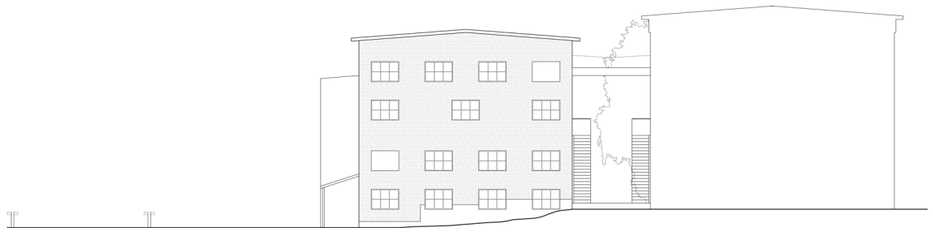
4. Office
5. Warehouse
6. Rentable space

N

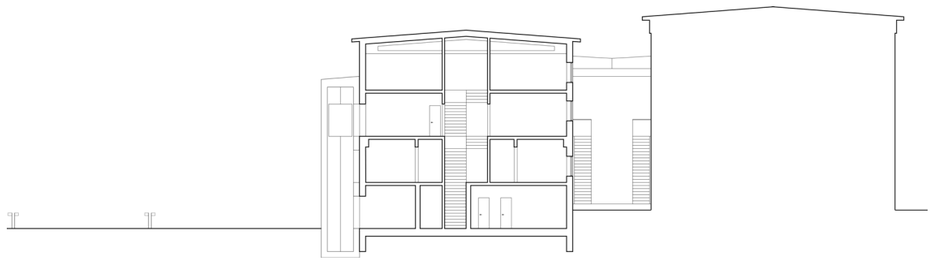


North elevation
1:400

Long section
1:400



West elevation
1:400



Short section
1:400





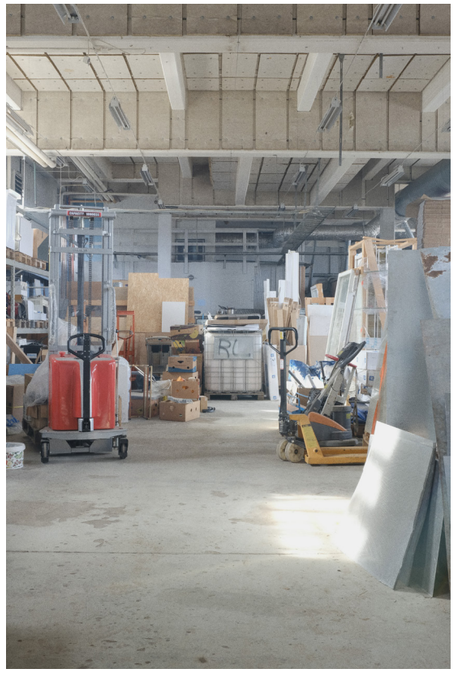


Photographs, existing condition of exterior







Photographs, existing condition of interior

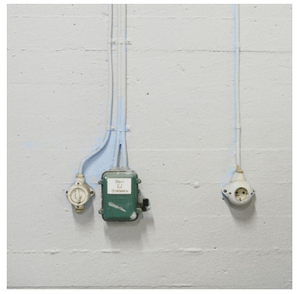


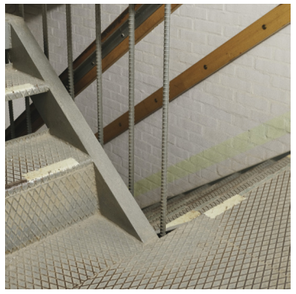




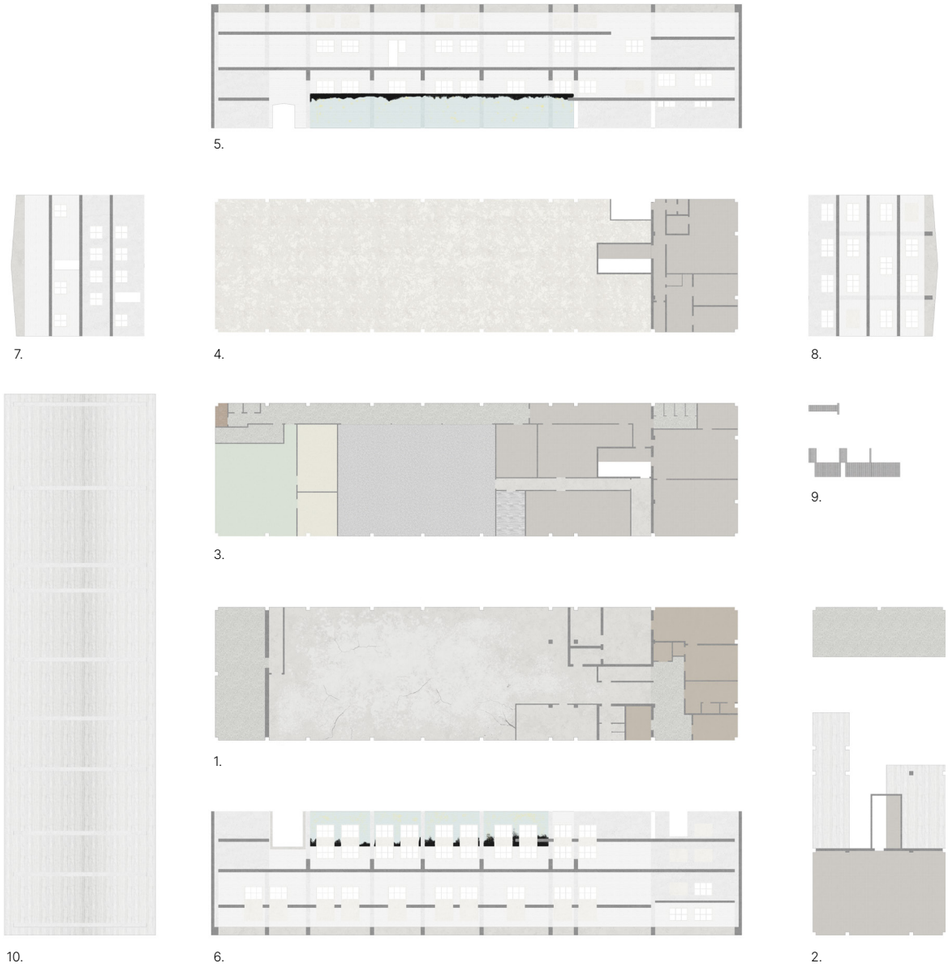

Photographs, ateliers





Photographs, details and artefacts



Collage of “unfolded building”
1:600

1. Ground floor
2. First floor
3. Second floor
4. Third floor
5. South facade
6. North facade
7. East facade
8. West facade
9. Communication
10. Roof

Unfolding the building

Entering the building from the north gable, its industrial origin is not immediately apparent. The first spaces are a sequence of smaller rooms with low ceilings and limited light. These areas reflect a human scale, associated with prior administration and support functions. Moving further inside, the building opens into large production halls where the structure reveals its industrial dimensioning. The contrast between intimate and expansive spaces becomes evident, and both human and machine proportions exist in the same structure. This becomes a defining characteristic. It reflects the logic of the former sawmill, where spaces for people and production operated in parallel but at different scales. This duality remains legible despite later alterations and suggests a spatial framework that can accommodate diverse programs without losing coherence.

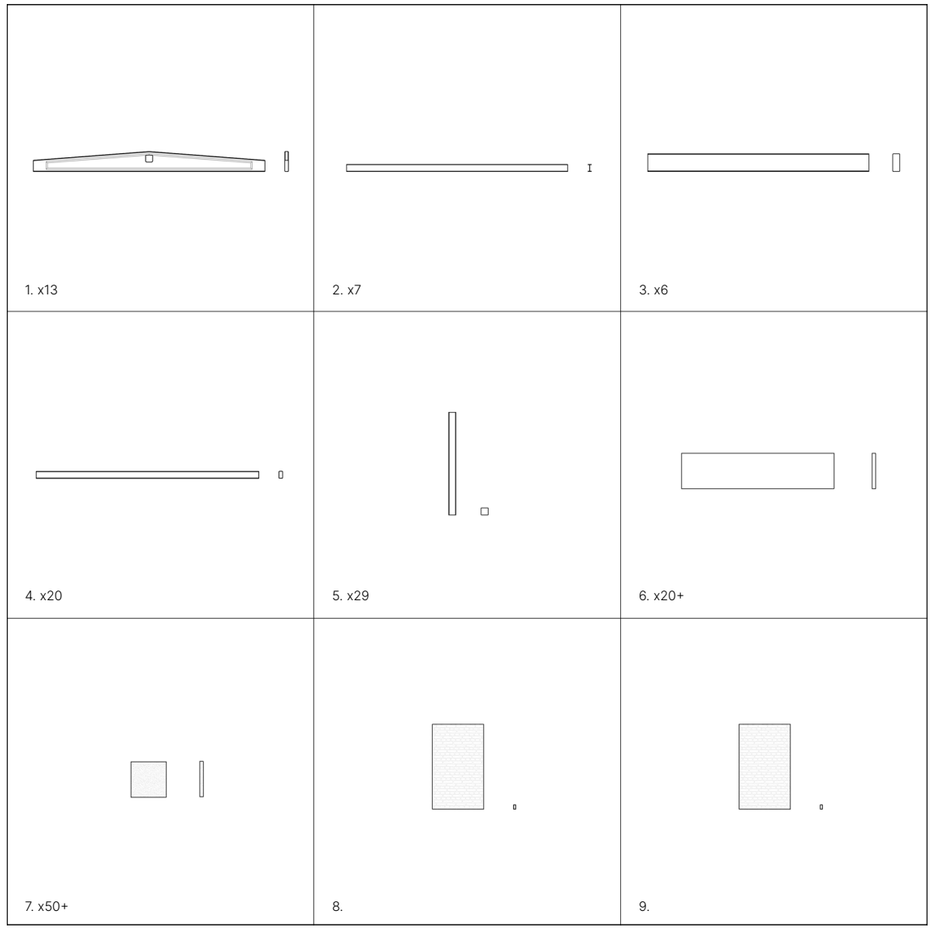
Understanding the building through Stewart Brand’s concept of shearing layers reveals it not as a fixed object, but as an evolving system (Brand, 1994). The primary structure and spatial volumes have remained largely intact, while surface treatments, partitions, and services have been repeatedly modified. These more temporary layers carry traces of different occupations, from vocational education to informal activities, and reflect a continuous adaptation to changing needs. Rather than diminishing the building’s value, this accumulation reinforces its character as a working environment. In this sense, the building embodies what Brand describes as “age plus adaptivity,” where ongoing use and alteration contribute to its relevance. The visible wear, exposed materials, and improvised modifications form part of its collective memory, not as a preserved past, but as an active condition.

This reading establishes a position where the building itself becomes the basis for intervention. Instead of imposing a new order, the project builds on its existing logic of adaptation. Layers that have proven durable are maintained, while more temporary or obstructive additions become assets for transformation. Here, strategies such as critical removal operate not as acts of simplification but as ways to reveal spatial continuity, material presence, and latent connections. At the same time, the current program, rooted in craft and recreational use, is understood as a value to be extended rather than replaced. This aligns with adaptive reuse, as described by Bie Plevoets and Koenraad Van Cleempoel, in which intervention negotiates continuity and change through reinterpretation (Plevoets & Cleempoel, 2019). The aim is therefore not to restore or redefine the building, but to continue its capacity to evolve, allowing new uses to emerge from its existing spatial and material conditions.

Render, structural elements

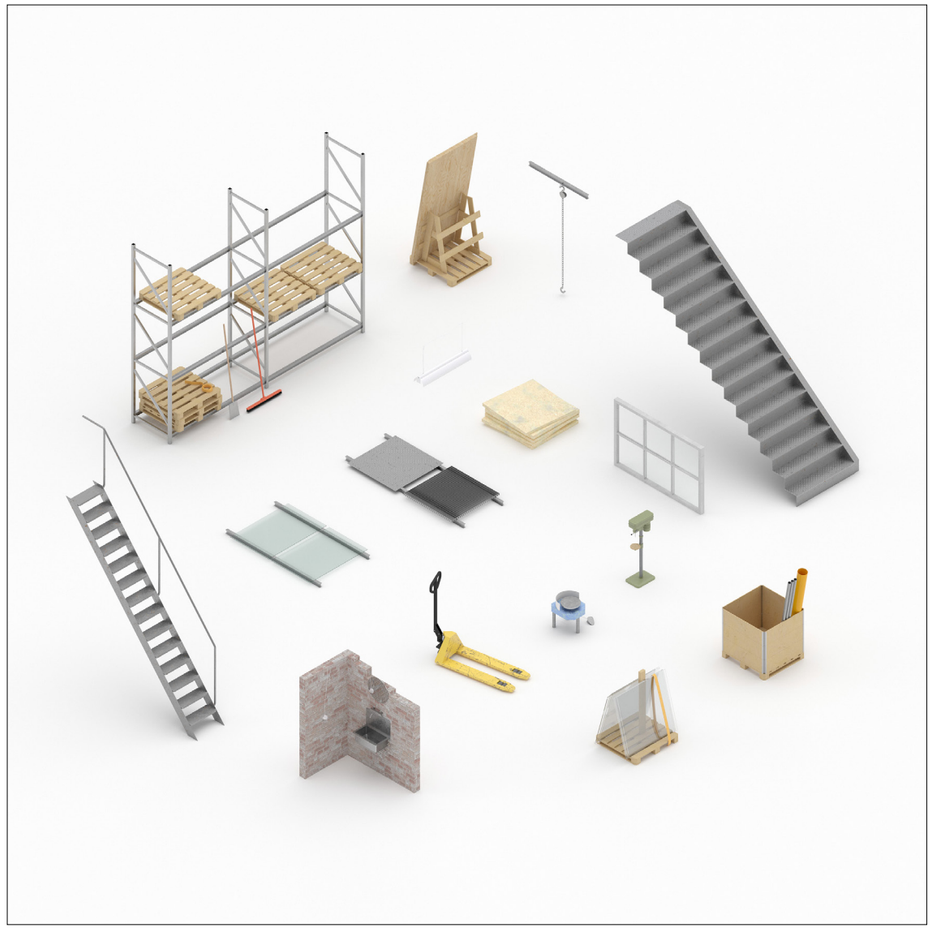
The primary structure consists of concrete, brick, and steel. Columns are positioned along the inner edge of the brick facade, establishing the rhythm and scale of the production halls. Concrete beams span 13 meters with a depth of 1 meter, dimensioned to support heavy machinery, while secondary beams carry the floor slabs. Steel girders between the trusses once supported equipment, and lightweight concrete blocks form the roof structure while providing insulation.

Together, these elements create a robust structural system that enables large open spans and flexible use, forming the basis for retaining and reconfiguring the existing spaces.



Atlas of objects

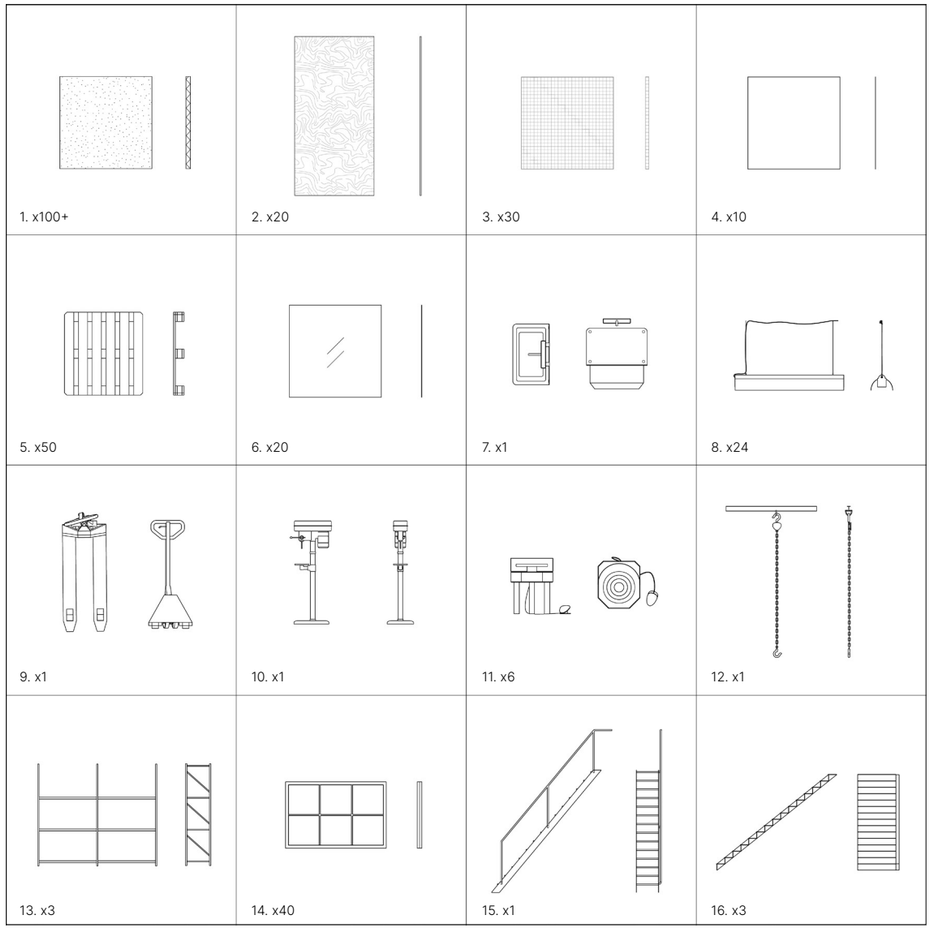
1. Reinforced concrete truss
2. Girder
3. Primary concrete beam
4. Secondary concrete beam
5. Concrete pillar
6. Concrete deck
7. Lightweight concrete block
8. External brick
9. Internal brick



Render, objects

Mapping the building reveals materials and objects from different periods that together form its industrial character; these elements are treated as assets. Original components, such as steel stairs and mullioned windows, show visible wear that speaks of its embedded collective memory. By retaining or reconfiguring them, their presence is extended within new spatial arrangements.

More recent elements, including wooden boards, pallets, glass panels, and tools, reflect ongoing and informal use. While they hold less historical weight, their material properties allow them to be repurposed and integrated into the project.



Atlas of objects

1. Insulation
2. Plywood panel
3. Steel grid
4. Metal panel
5. Pallet
6. Glass panel
7. Sink
8. Lamp
9. Pallet truck
10. Drill press
11. Potter's wheel
12. Chain and hook
13. Scaffolding
14. Window
15. Escape stair
16. Main stair

Industrial heritage

The sawmill is embedded in the broader timber network of Umeälven, where industrial production shaped both landscape and community. Its spatial organization reflects a linear process: logs entered from the water were processed through large-span halls and exited as finished material. This logic remains legible in the structure, defined by a robust grid and directional flow. Beyond production, the site also carried social value, linking labor, settlement, and everyday life. The building is understood as an industrial artifact, shaped by both technical efficiency and collective memory.

Occupancy

Since its short industrial lifespan, the building has undergone continuous adaptation rather than a single transformation. Being in a constantly changing fabric, with uses ranging from education and workshops to recreational activities, has resulted in changes to its layout. Lightweight partitions, new surface layers, and technical additions have ultimately fragmented the spatial clarity. Alterations such as painted walls, patched windows, and improvised rooms reveal this ongoing transition. Despite these changes, the building retains a consistent association with craftsmanship, now hosting workshops, studios, and mixed public uses. This layered condition reflects a “low road” adaptability, where value lies in continued use and modification rather than formal preservation.

Materials and assets

The investigation identifies the building as a composition of durable structure and adaptable elements. Concrete frames, brick facades, and steel components define its primary system, while surface layers and partitions form more temporary additions. Mapping through the production of an atlas reveals a catalogue of reusable components, in the form of structures and isolated elements. Original layers carry material traces of use, while newer additions reflect ongoing occupation. Together, they constitute a resource for transformation.

Design strategy

The design strategy is developed as a continuation of the building’s existing adaptive logic. Rather than imposing a new order, it builds on the investigation’s findings, treating the structure, spatial hierarchy, and current use as active resources. Drawing from adaptive reuse theory, the building is approached as an evolving system where durable structures support changing spatial and programmatic conditions. The strategy operates through a set of actions that negotiate continuity and change, aiming to restore spatial clarity while extending and connecting existing uses.

Critical removal

The first approach, critical removal, targets later additions that obscure the building’s spatial and material logic. Lightweight partitions, suspended ceilings, and applied surface layers are selectively removed to re-establish visual connections, improve light conditions, and reveal the underlying structure. This is not a return to an original state, but a way of exposing latent qualities that remain embedded in the building. By working with both permanent and temporary layers, removal becomes a precise tool for clarifying spatial sequences, supporting a re-evaluation of existing matter.

Reconfiguration

Reconfiguration builds on this by repositioning existing elements and extending current functions. The contrast between large-span production halls and smaller atelier spaces is retained and adapted to accommodate craft, education, and public interaction. Shared spaces are introduced to bridge production and public functions, allowing different activities to coexist. Removed components are not treated as waste but as a material resource, which is relocated or adapted for new functions. In this way, continuity is maintained not only by preserving the structure but also by reusing elements that carry material and cultural traces.

Addition

Additions are introduced where necessary to support new functions and improve accessibility. New circulation cores reorganize movement through the building, establishing clearer programmatic zones while maintaining flexibility over time. These interventions follow the compositional logic of the existing building while remaining legible as contemporary layers. Together, these strategies address spatial fragmentation and limited accessibility, positioning the building as an open, adaptable framework that can continue to evolve alongside its users.

Proposal

Proposal
Site & skin
Space plan
Structure
Services
Stuff
Proposed drawings
Model photos

Design proposal

The proposal transforms Sandvikssågen by addressing spatial fragmentation, limited public accessibility, and the constrained use of existing programs. Through selective adaptation, the building is opened up to support contemporary craft production together with new forms of public engagement. A new entrance and café establish a public connection towards a common square where recreational activities continue beyond the building itself. The former warehouse has been adapted into a wood workshop. Removing the attic allows the upper hall to regain its spatial continuity as an exhibition space. The ateliers are refined through clearer spatial division and improved shared facilities, supporting a broader range of practices. Circulation is reorganized through two new cores that separate public and production flows, improving accessibility while maintaining functional clarity. The proposal repositions the building as an open framework where craft, production, and public life operate in relation to one another as a way of sharing skills and knowledge.

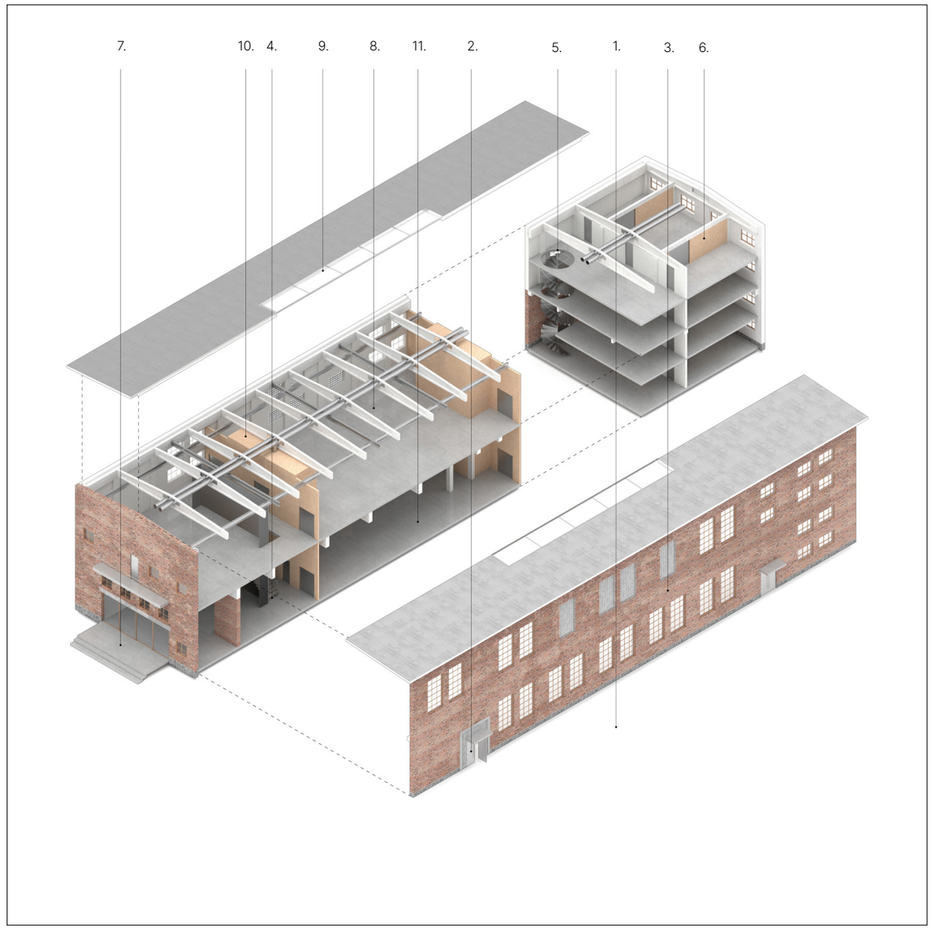
Six “S”

Interventions are precise and specific to their immediate location but aim at addressing the building as a whole. Actions are therefore categorized based on Steward Brands concept of shearing layers and the six “s”: Site, Skin, Structure, Systems, Space plan, and Stuff (Brand, 1994). Drawings are colour-coded according to the following design actions:

- Existing
- Removed
- Reconfigured
- Added

Design interventions

1. Addition of a public square
2. Relocation of the main entrance
3. Reconfiguration of the fenestration
4. Reconfiguration of the main staircase
5. Addition of a new staircase
6. Reconfiguration of walls
7. Opening to the outside
8. Addition of new technical systems
9. Addition of a skylight
10. Addition of new cores
11. Reconfiguration of salvaged materials



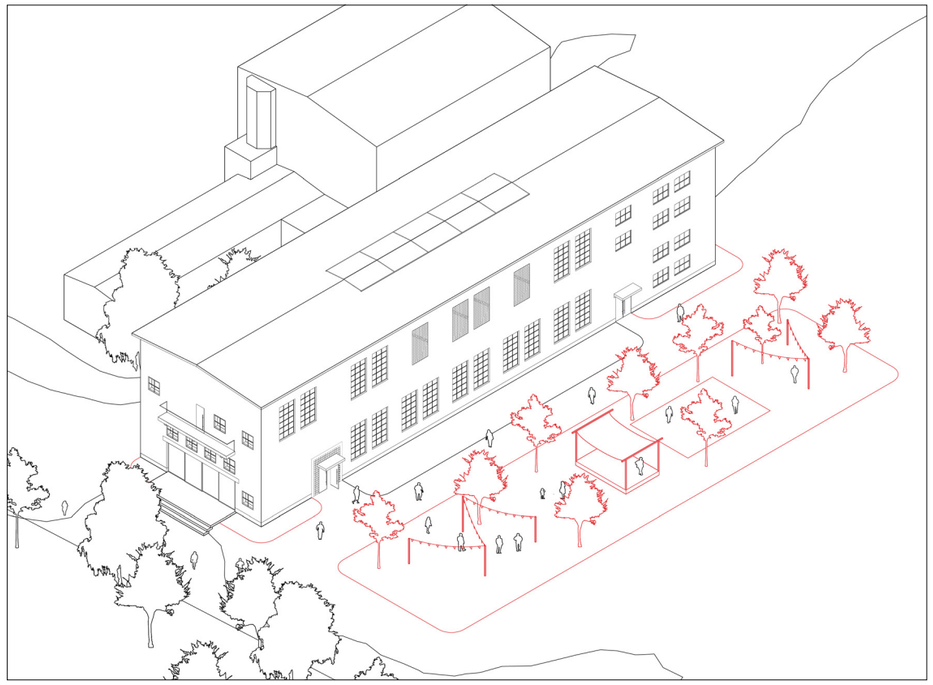
Render, exploded axonometric,
proposed interventions

N

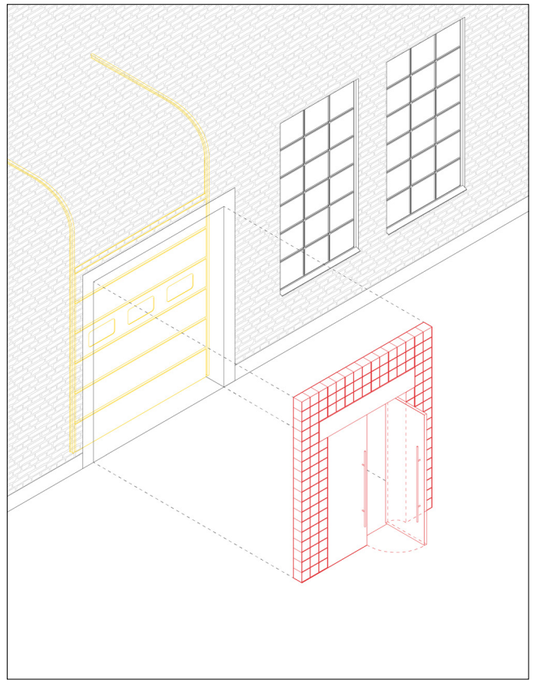
Render, exterior

Photograph, current state

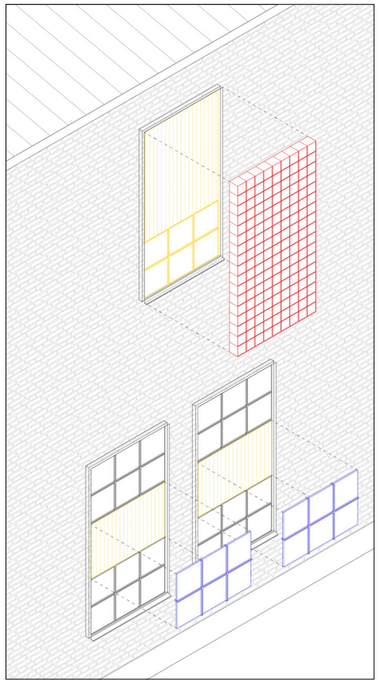
The site has largely remained intact, with most alterations occurring at the surface level to integrate the building with the surrounding landscape. The former parking lot is transformed into a public resource, a vibrant park where visitors can play boules and attend live performances, allowing the program to extend beyond the building itself. The east facade has remained closed since the 1960s, when it functioned as the entrance for log handling. Removing a portion of the facade re-establishes the connection to the water and invites visitors into the café. The outdoor terrace is assembled from repurposed concrete slabs extracted from the first floor, simultaneously creating a double-height interior space. Panels covering the windows are removed to improve daylight conditions, while original frames are retrofitted using existing window partitions currently stored in the attic.



Axonometric, public square 1:500



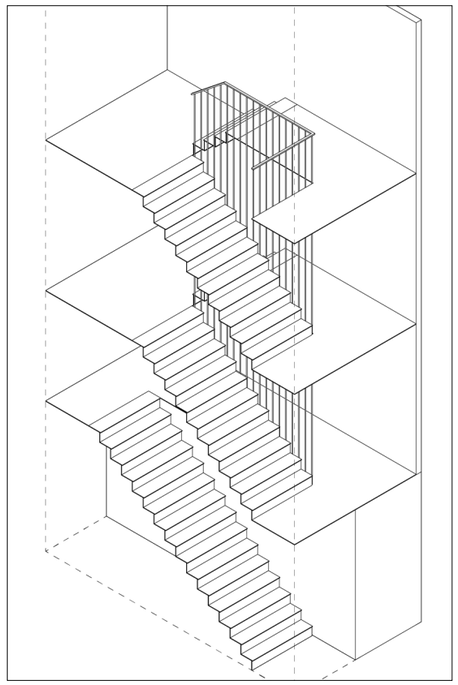
Axonometric, main entrance 1:100



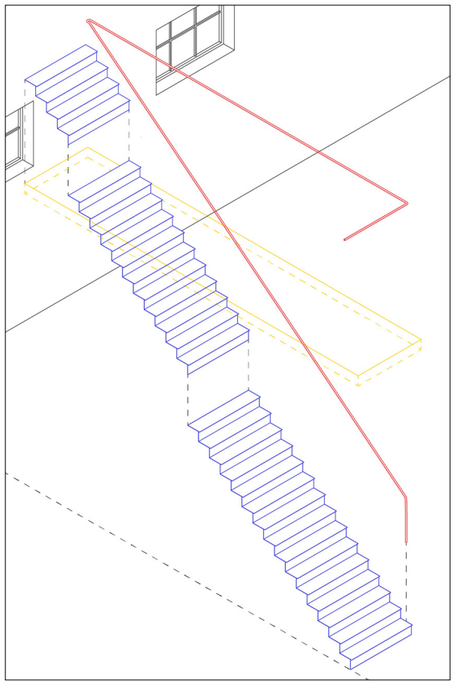
Axonometric, fenestration 1:100

Render, entrance hall

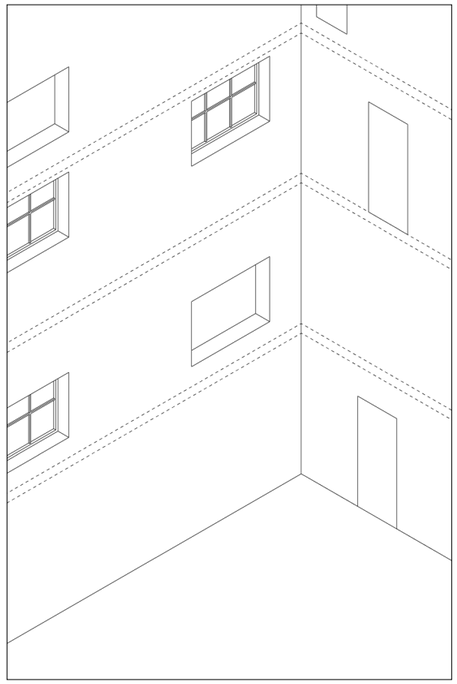
The entrance hall becomes a new spatial focal point. The former garage door is removed and replaced by steel doors, framed by glass blocks which maintain the industrial material palette. The reception desk serves the café during daytime and functions as a bar during evening events. The main staircase, originally located in the western part of the building, has been dismantled and reassembled behind the reception to establish a new vertical connection to the exhibition and shop above. A compact spiral staircase replaces the former stair, enabling a shared space outside previously enclosed studios.



Axonometric, existing staircase 1:100



Axonometric, proposed staircase 1:100

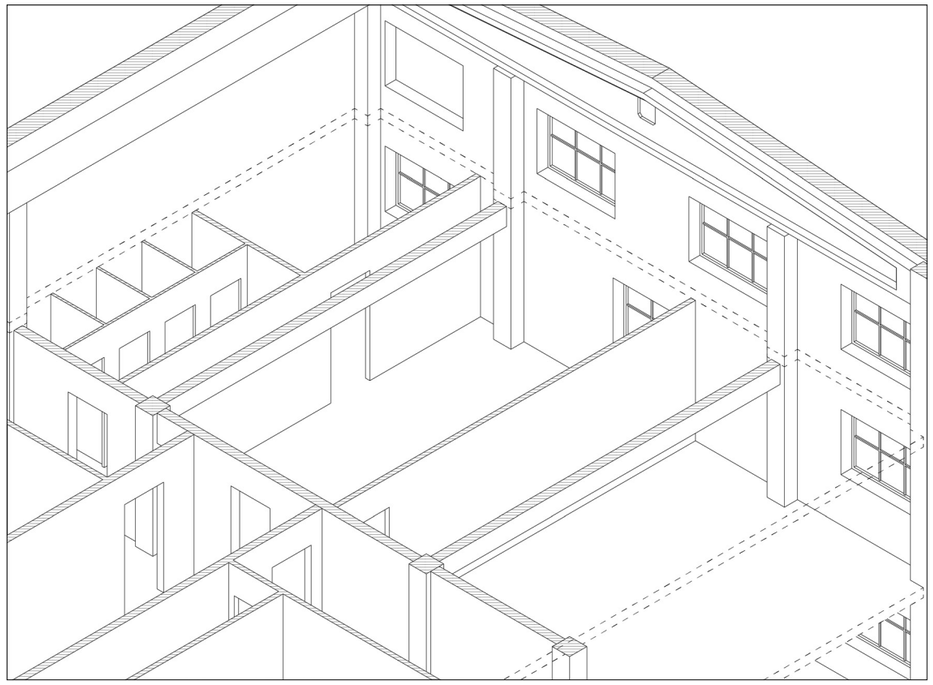


Axonometric, existing condition of west end 1:100

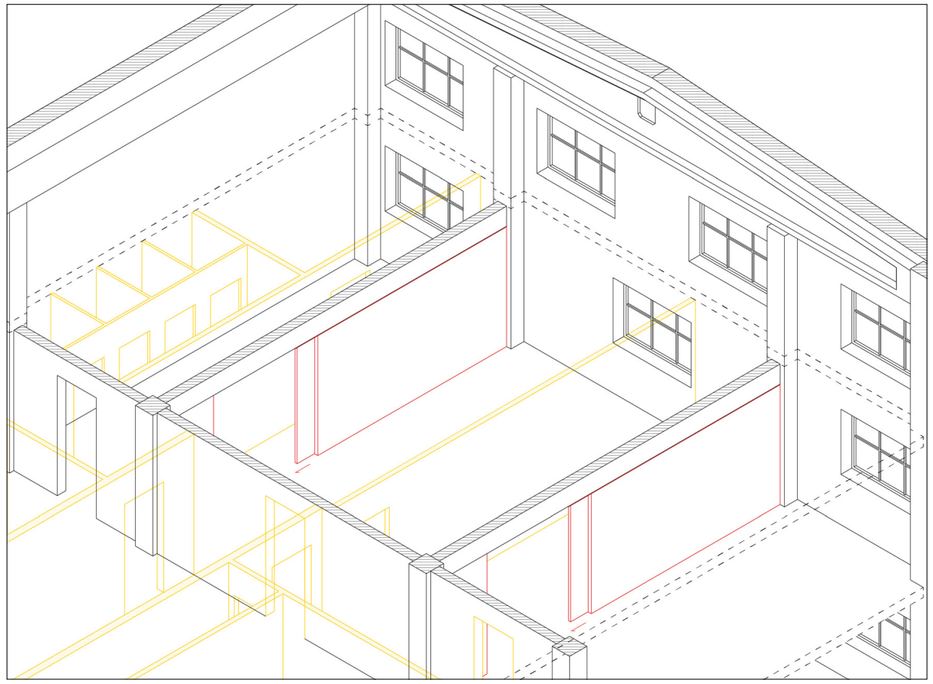
Axonometric, proposed staircase 1:100

Render, pottery studio

Recent partition walls in the ateliers are removed to restore spatial continuity while adapting to the original structural rhythm of the beams. The structural brick wall along the short side of the building is retained as a permanent spatial divider. A new set of walls is introduced with large closable openings, creating an enfilade rhythm through the studio spaces. This establishes a flexible system in which functions can be combined or separated. During educational activities or shared events, the openings allow the studios to extend into one another, while storage and kiln rooms can remain enclosed when required. The same layout is applied across all four floors, creating a coherent spatial system throughout the building.



Axonometric, existing condition of atelier 1:100

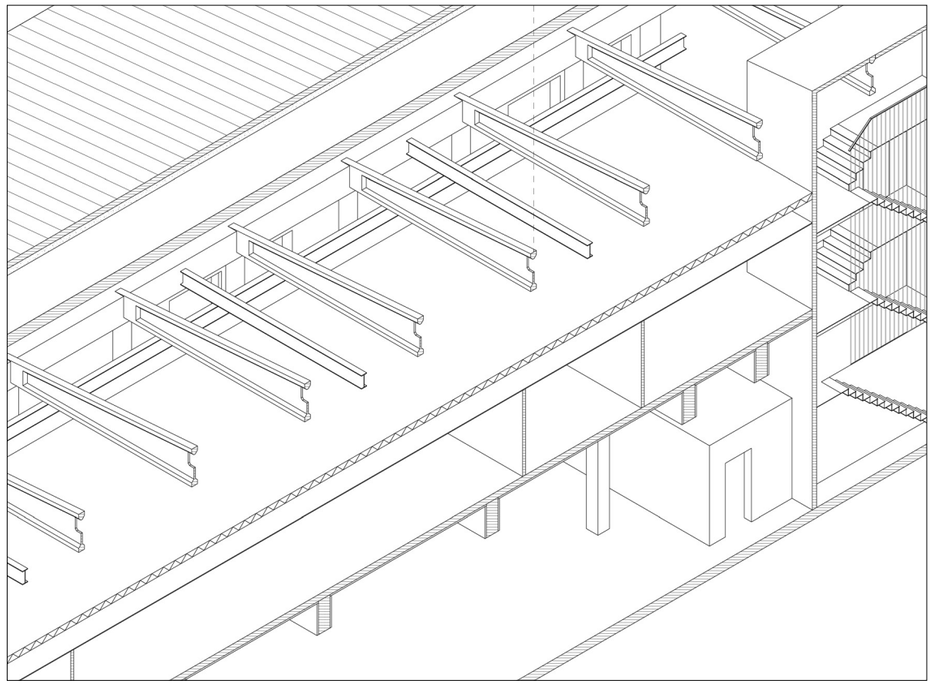


Axonometric, proposed transformation of atelier 1:100

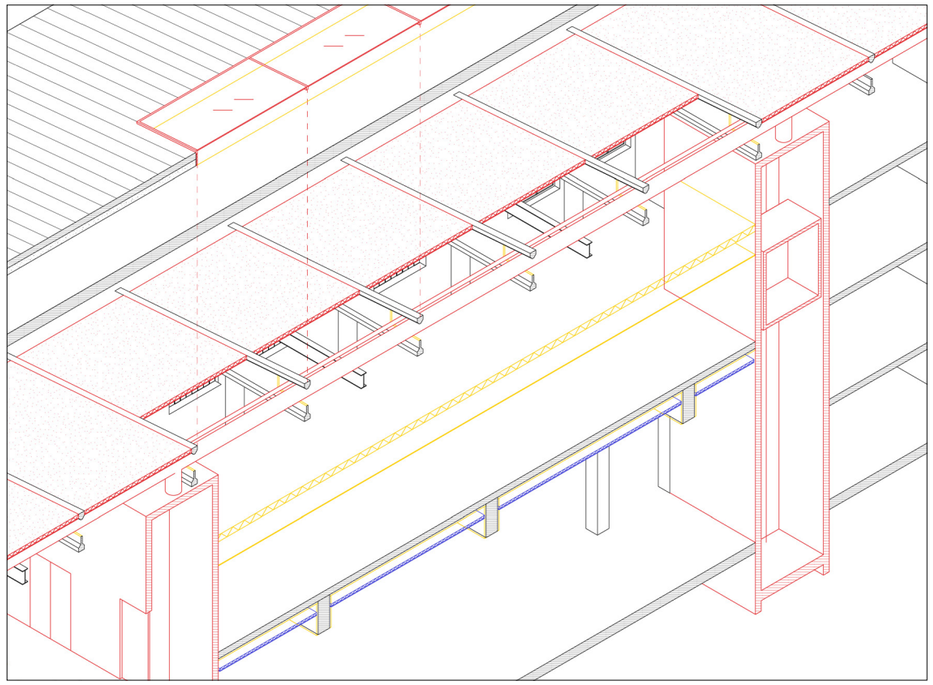
Render, exhibition

Photograph, current state

The existing boules court places considerable strain on the building, and relocating it outdoors allows the activity to continue while freeing the upper hall for new use. The current attic floor functions primarily as a concealed technical layer; by removing it, the full spatial volume of the former production hall is revealed, while technical systems remain visible through punctured openings in the trusses. Exposing the steel beams previously used for log handling allows them to regain a practical role within the space. Converting the hall into an exhibition space enables practitioners to communicate their work while inviting the public into the production environment. The scale of the hall is emphasized through new overhead openings that introduce indirect daylight. Concrete glass blocks replace existing window frames, diffusing softer light suitable for exhibitions while maintaining the overall industrial expression.



Axonometric, existing condition of services 1:150

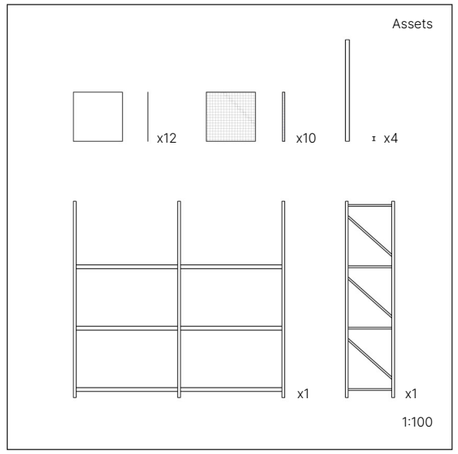


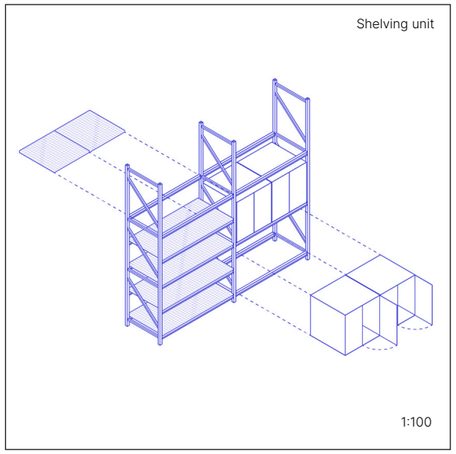
Axonometric, proposed transformation of services 1:150

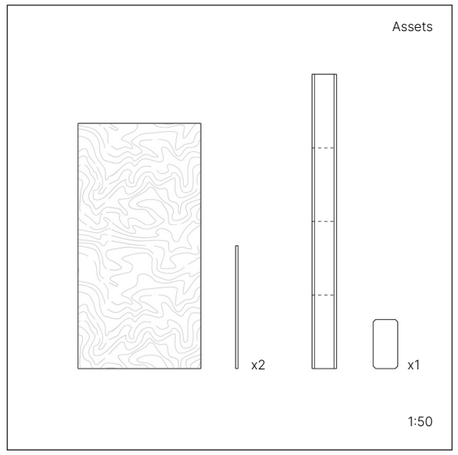
Render, wood workshop

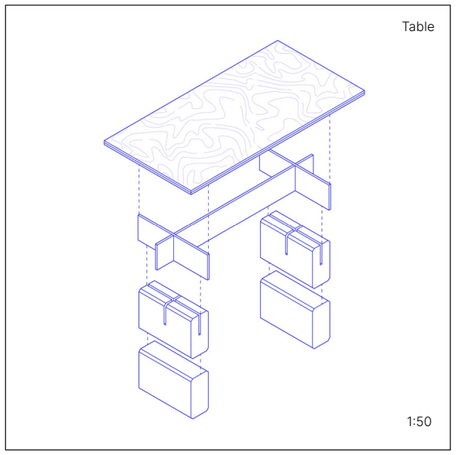
Photograph, current state

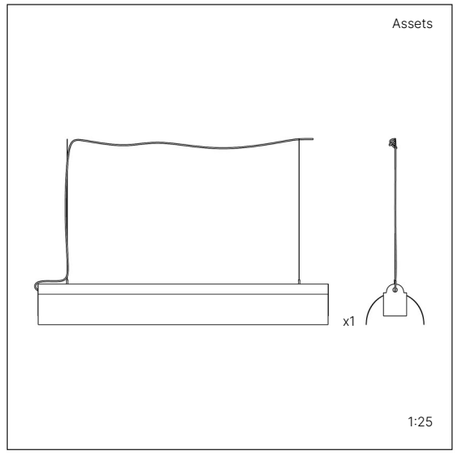
The current warehouse, originally the machine hall, has been converted into a wood workshop supporting the existing furniture carpentry located in the boiler plant, which currently suffers from limited space and poor accessibility. Water-damaged acoustic insulation is replaced with recovered insulation and wooden boards from the attic floor, repurposed as acoustic panels; these are mounted between the concrete beams to emphasize the structure. Existing paint layers are removed to expose the rough brick and tectonic qualities of the original structure. Objects and materials sourced from the warehouse are retained and reused within the workshop, including shelving units, fluorescent tubes, and worktables. Tools carrying traces of previous occupations link past and present production, allowing the space to continue the building's legacy of craftsmanship.

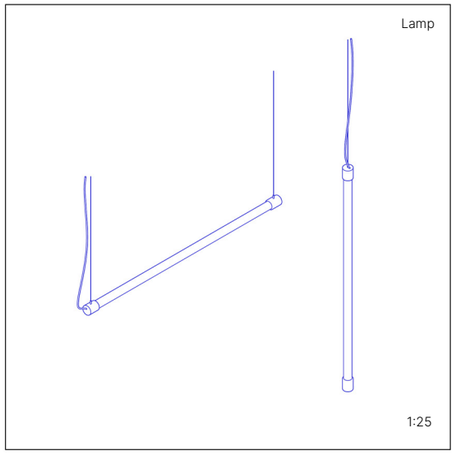




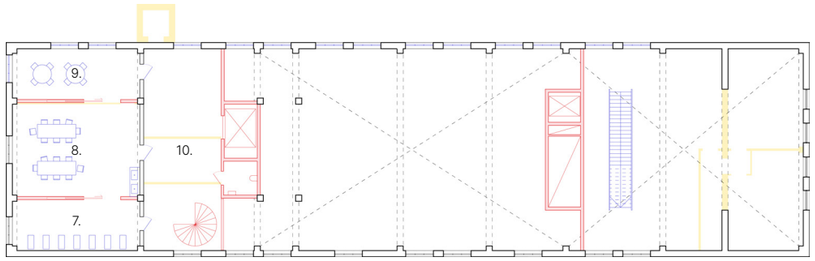








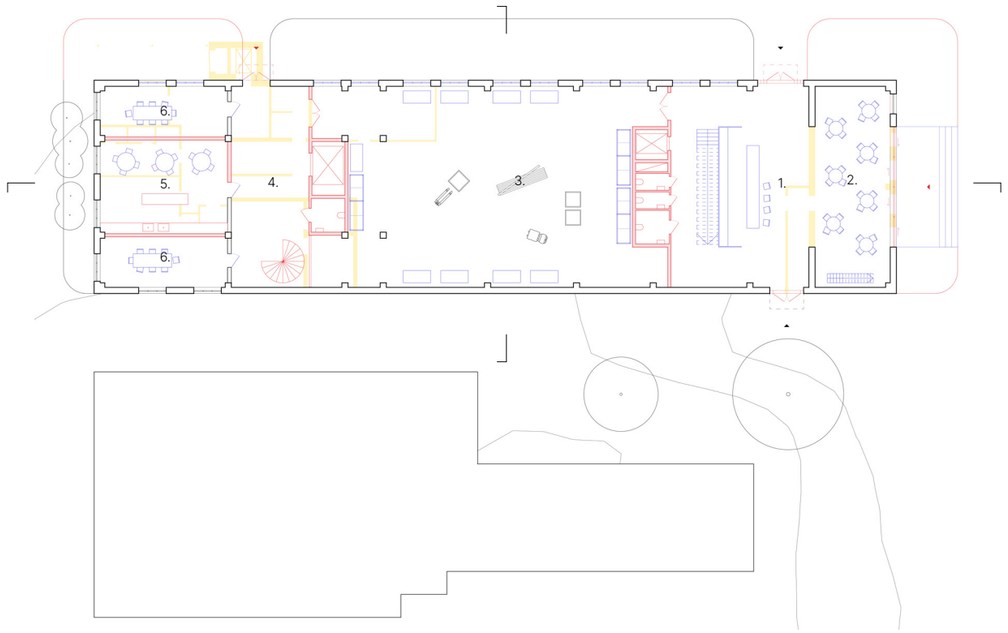
Atlas of reconfigured "stuff"



First floor
1:400

7. Storage
8. Educational space

9. Studio
10. Break out

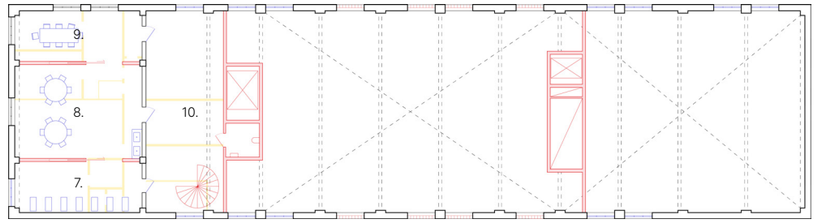


Ground floor
1:400

1. Reception bar
2. Café
3. Wood workshop

4. Lobby
5. Kitchen
6. Office

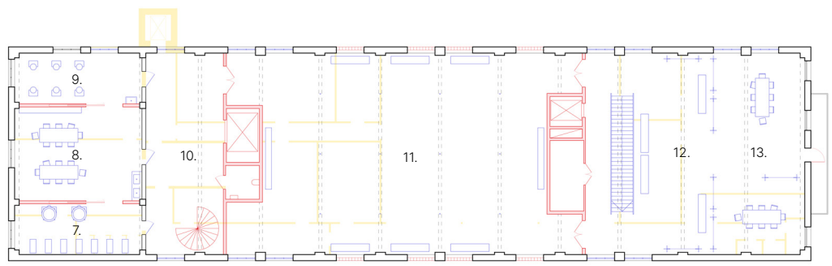
N



Third floor
1:400

7. Storage
8. Educational space

9. Studio
10. Break out

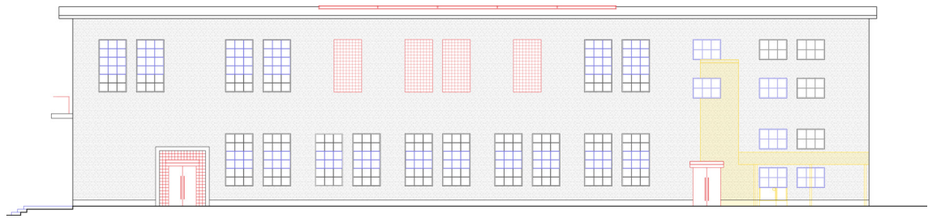


Second floor
1:400

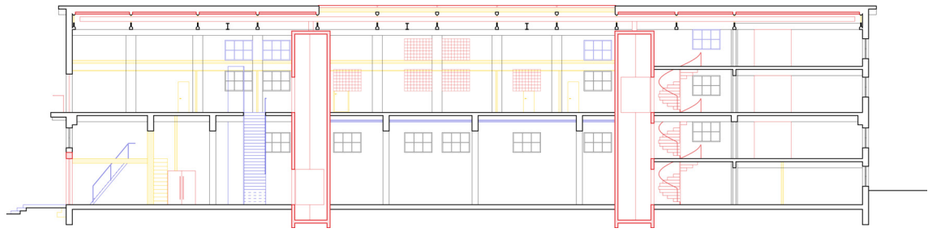
7. Storage
8. Educational space
9. Studio
10. Break out

11. Exhibition
12. Shop
13. Common workshop

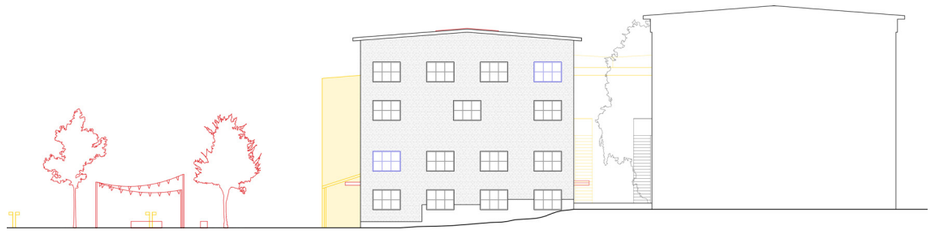
N



North elevation
1:400

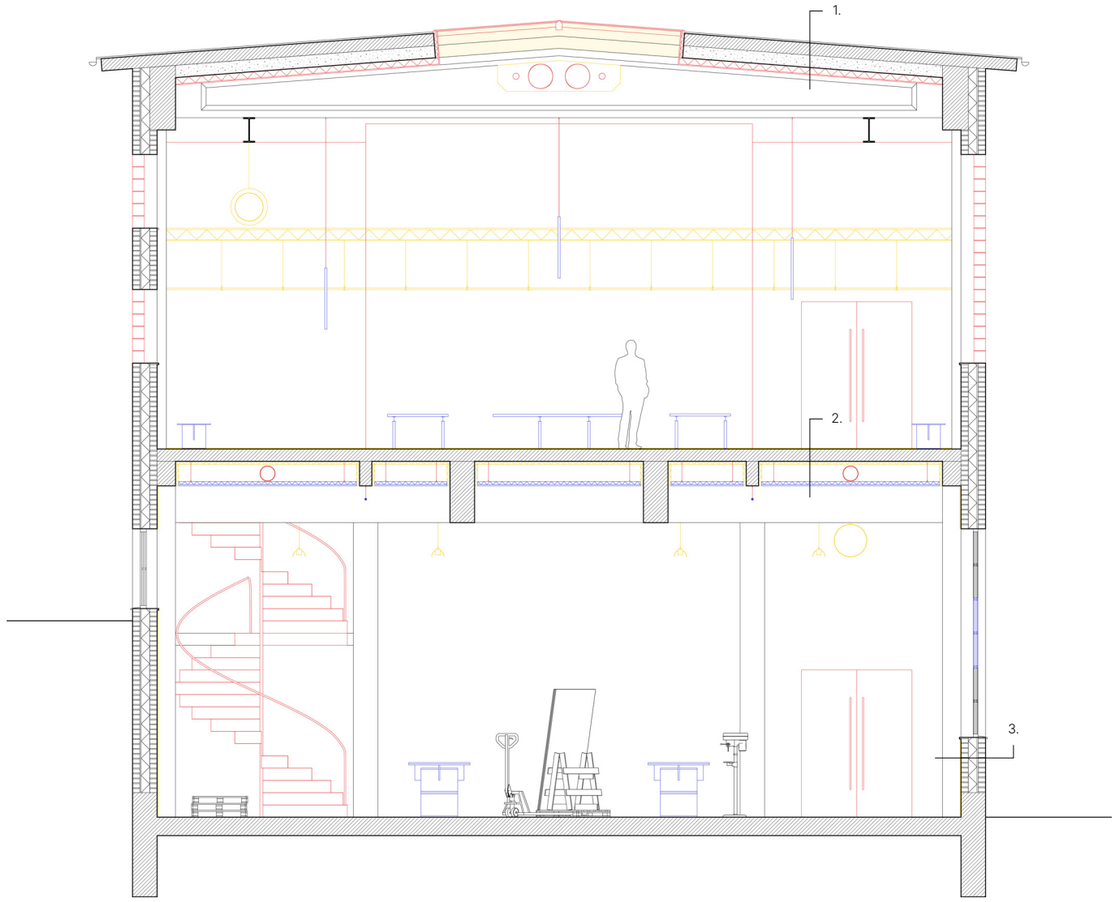


Long section
1:400



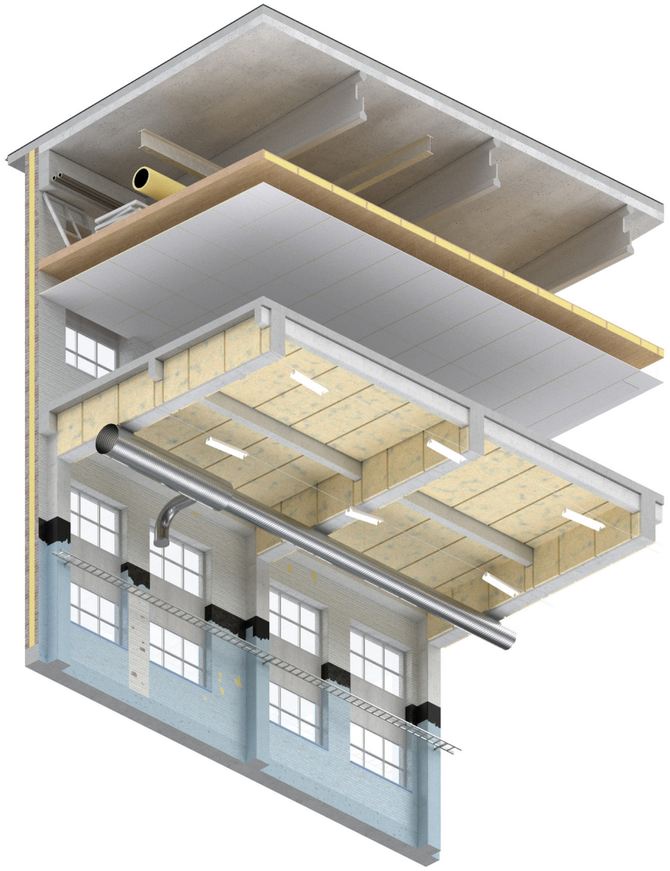
West elevation
1:400

East elevation
1:400

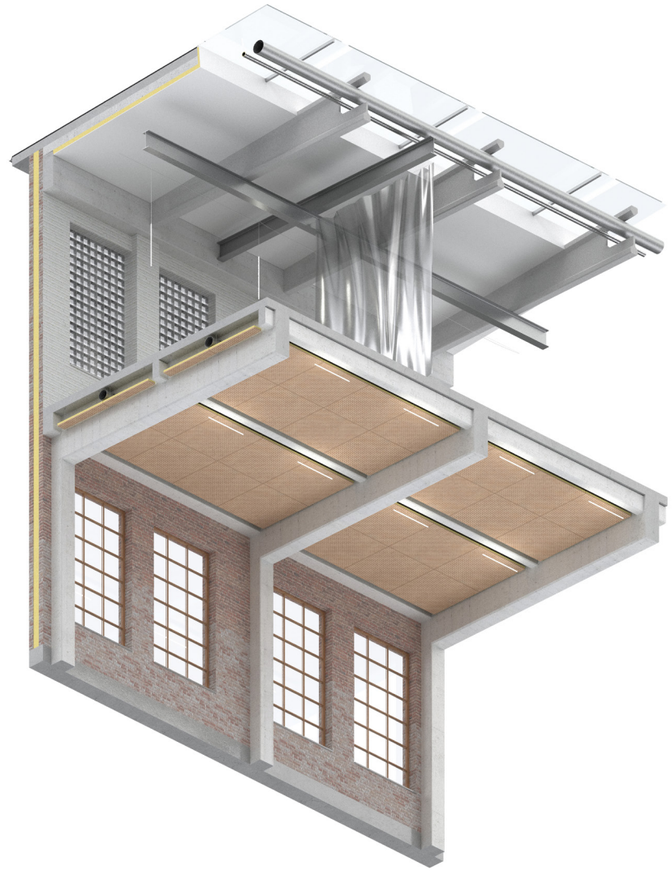


Detail section
1:100

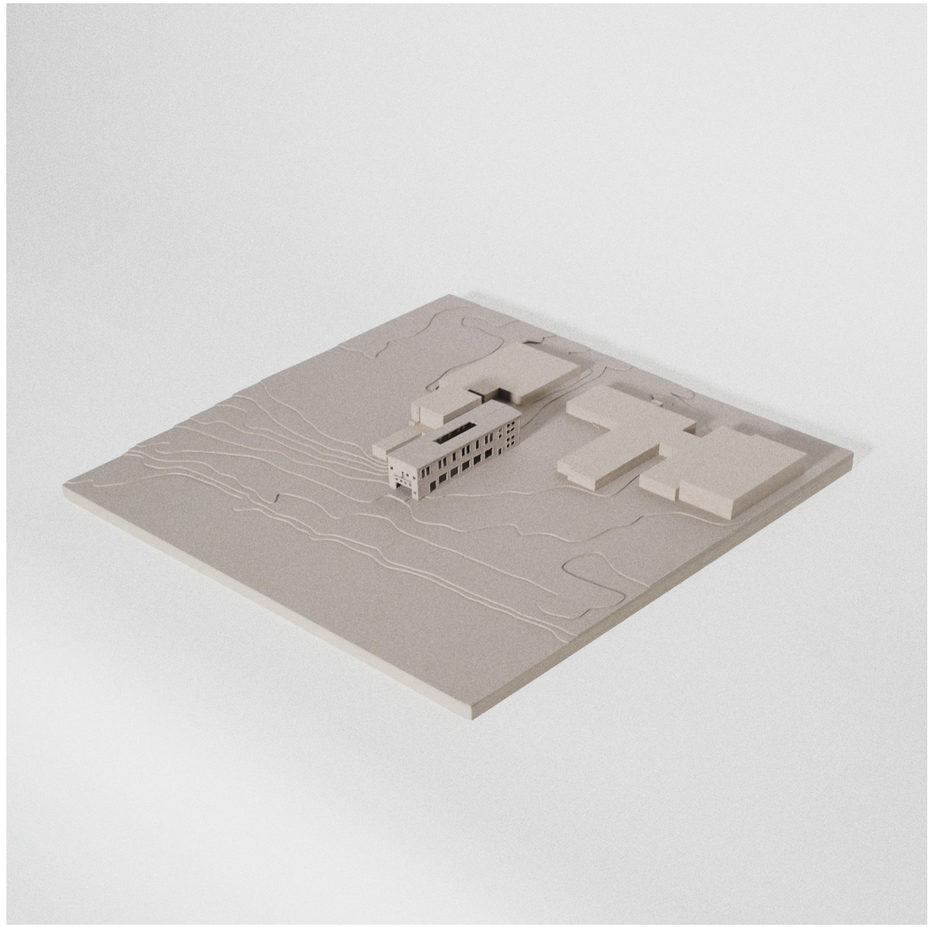
1. Roof	1mm metal roof sheets 4mm bitumen membrane 200mm reinforced concrete slab 200mm lightweight concrete blocks (Added) 100mm XPS thermal insulation (Added) 20mm plaster boards
2. Floor	(Removed) 3mm linoleum mat 200mm reinforced concrete slab (Removed) 50mm acoustic insulation (Reconfigured) 50mm acoustic insulation (Reconfigured) 20mm wooden panel
3. Facade	250/120/65 mm masonry brick 40 mm air gap Vapor barrier 20 mm wood board 100mm insulation 250/120/65 mm masonry brick (Removed) paint layer



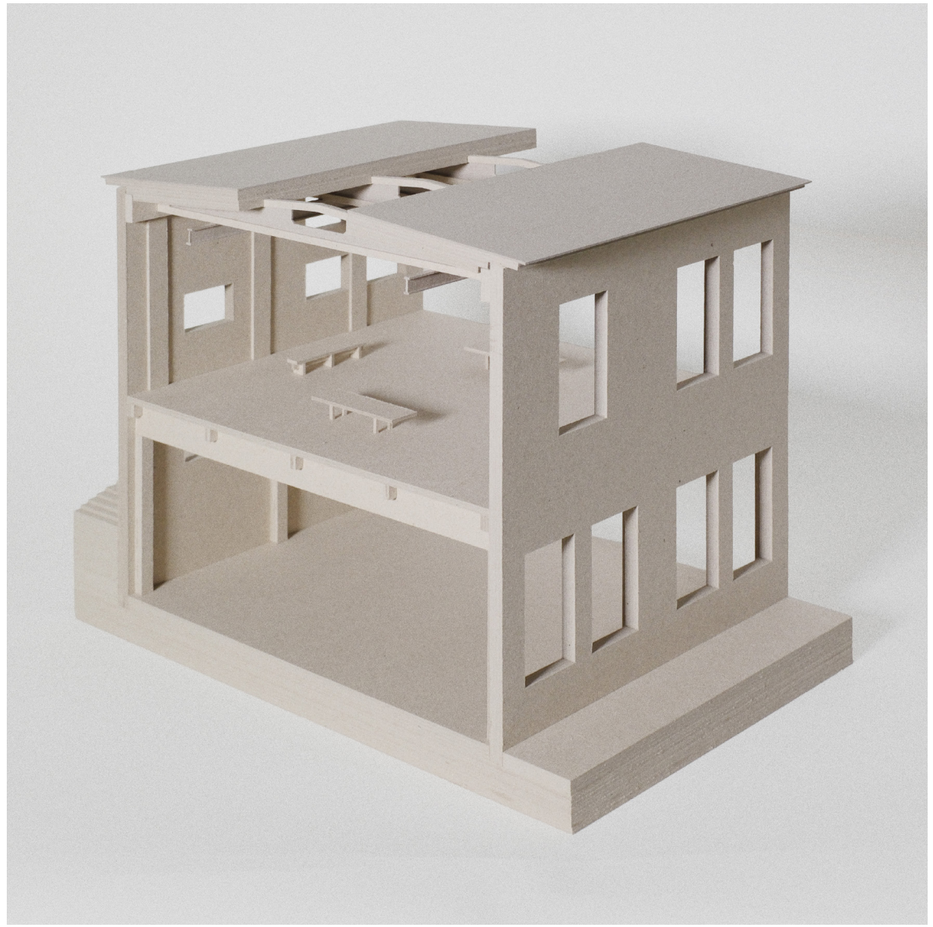
Render, north facade cut out,
existing condition



Render, north facade cut out,
proposed transformation



Physical site model
1:500



Physical detail model
1:50

Discussion

Discussion

Through the transformation of Sandvikssågen, the thesis investigates how a former sawmill can support contemporary craft while becoming a more public and socially engaged environment. Rather than restoring a previous condition or imposing a new identity, the proposal builds on the existing state and ongoing adaptation. Structures, materials, and objects are treated as spatial assets that can be reworked through removal, reconfiguration, and addition to reveal latent qualities while enabling new forms of use. The project approaches transformation as something unfinished and open to interpretation, redefining the building's value through adaptive reuse.

The investigation became central to the development of the proposal. Through archival studies, mapping, drawing, modelling, and cataloguing, the building was analysed as a composition of layers, systems, and reusable components. Objects were isolated from their current placement and understood as independent elements capable of taking on new roles within the project. In this sense, the atlas functioned not only as documentation but also as a design instrument. This led to a valuable insight: the primary focus shifted from the current values to an understanding of how insignificant elements can gain value in relation to their spatial context. The investigation further revealed that Sandvikssågen has historically changed through informal and continuous adaptation rather than coherent planning. Partitions, repairs, patched surfaces, and accumulated alterations reflect practical needs across time. Instead of treating these changes as a threat to heritage, the thesis understands them as part of the building's evolving identity, and as part of the building's cultural value.

The design strategy operates through critical removal, reconfiguration, and addition. Here, "critical" refers to a selective and evaluative process in which each intervention is assessed in relation to spatial clarity, material presence, and current use. Following Stewart Brand's distinction between long-lasting and adaptable layers, the proposal preserves the primary structural system while reworking more temporary layers, such as the space plan and services. Large-span halls are retained and adapted into workshops and exhibition spaces, while existing ateliers are retained for their continued flexibility. In contrast, later additions that restricted light, movement, or spatial coherence were removed. Removal becomes more than subtraction; it serves to expose concealed relationships and recover spatial continuity. The removal of the attic floor illustrates this approach by revealing the scale of the production hall and reintroducing steel beams previously used for log handling into new practical functions.

This process also reframes the building as a material resource. Components removed from one location can be redistributed and adapted elsewhere within the project. Insulation from the attic floor, for example, is reused as acoustic treatment in the wood workshop, while recovered boards and industrial fittings are integrated into new spatial arrangements. Through this approach, the building is understood less as a fixed artifact and more as an assemblage of elements capable of disassembly and reconfiguration. Material continuity is therefore maintained not solely through preservation, but through reinterpretation and continued use.
The thesis contributes to discussions on adaptive reuse by positioning transformation as a negotiated process rather than a conservation-driven one. Value is understood not primarily through historical authenticity, but through a building's capacity to support changing forms of occupation over time. At the same time, the project exposes tensions within this position. Although "critical reuse" is framed as a method, its application depends heavily on architectural judgment. Decisions regarding what should remain, what should be removed, and what should be reconfigured are inherently subjective and shaped by contemporary priorities. This raises questions concerning authorship and authority in adaptive reuse practices: who defines which layers carry value, and according to which criteria? These questions become particularly evident in the context of critical removal. While the strategy can clarify spatial logic and expose hidden qualities, it also risks erasing traces that may hold cultural or temporal significance. This reflects Ruskin's concern that alteration may simplify the complexity embedded within historic fabric. The project argues that removal must be justified by revealing qualities that strengthen long-term spatial, material, or social value. To contextualize this, in some spaces, recent surface layers were removed to expose raw brick and concrete, reinforcing the industrial character and supporting workshop use. In others, spontaneous modifications were retained because they contribute to atmosphere, occupation, and memory. The project does not propose a universal hierarchy of value, but instead frames intervention as a continuous negotiation between preservation and change.

Several limitations remain unresolved within the proposal. Integrating public access with active craft production introduces conflicts regarding noise, safety, and accessibility. Likewise, the ambition for flexibility contains an inherent contradiction: while open floor plans and reconfigured circulation enable future adaptation, the proposal simultaneously establishes a new organizational order tied to the current program. Although current occupants informed the process, the project still relies on architectural assumptions regarding how value is produced and experienced, raising questions about whether these new values are shared by users or if they establish a formal solution that disregards the informal values that exist. The proposal is developed primarily through drawings and spatial studies, meaning structural, acoustic, and technical systems remain conceptual and would require further professional development. Considering the method, its framework is intended to

support work with similar industrial environments. Its effectiveness depends heavily on close site-specific investigation. This reveals a contradiction: the more precisely a building is understood, the more grounded the intervention becomes, yet this also reduces the method's transferability.

Despite these limitations, the project points toward a broader relevance within the transformation of ordinary industrial heritage, which Brand describes as the "low road" of architecture. Unlike formally protected monuments, these buildings are often defined by pragmatic construction, ongoing alteration, and functionality. Their lack of status creates opportunities for more experimental forms of reuse. The reference projects further illustrate how different forms of heritage demand different approaches. At the Neues Museum, historical traces are carefully stabilized and contrasted through precise additions, given the building's cultural significance. Antivilla instead operates through exposure, removal, and radical reinterpretation of industrial fabric. Together, these projects demonstrate that adaptive reuse cannot rely on a single method but must respond to the way value is embedded in each specific context.

The thesis ultimately positions architecture as an ongoing process shaped through occupation, alteration, and reinterpretation. In this context, being "critical" does not imply a fixed formula, but rather the constant negotiation of what kinds of values there are and how to engage deliberately with them. Change may be necessary, but it should be grounded in the building's logic. Transformation, therefore, becomes a way of extending the life of industrial heritage not by preserving a stable identity, but by allowing that identity to shift over time. The long-term relevance of these buildings may consequently lie less in maintaining a singular historical image and more in their capacity to support continued reinterpretation.

Bibliography

AI appendix

AI has been cautiously used to discuss the relevance of references. In the process of writing, it has strictly been used for grammatical feedback of text by the author. In the iterative process, AI tools have been applied solely to self produced work. It has been used in editing of the author's photos by extending the image frame or removing obstructive elements.

Publications

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Image sources

Figure 1: Lundgren, V. (n.d.). River man in bateau, Umeälven [Photograph]. Västerbottens museum. https://samlingar.vbm.se/objects/c57-152734/

Figure 2: Von Bruchhausen, J. (n.d.). Neues Museum staircase [Photograph]. David Chipperfield Architects + Julian Harrap. https://davidchipperfield.com/projects/neues-museum

Figure 3: Unknown. (n.d.). Neues Museum exhibition [Photograph]. David Chipperfield Architects + Julian Harrap. https://davidchipperfield.com/projects/neues-museum

Figure 4: Haas, C. (n.d.). Antivilla exterior [Photograph]. Brandlhuber+ Emde, Burlon. https://bplus.xyz/en/projects/0131-antivilla

Figure 5: Overmeer, E. (n.d.). Antivilla interior [Photograph]. Brandlhuber+ Emde, Burlon. https://bplus.xyz/en/projects/0131-antivilla

Figure 6: Unknown. (n.d.). View over the sawmill in Sandvik, Holmsund [Photograph]. Wikimedia Commons. https://sv.wikipedia.org/wiki/Fil:Ume%C3%A5_stadsarkiv-Vy_%C3%B6ver_Sandviks_s%C3%A5gverk-nr33.png

Figure 7: Lantmäteriet. (1960). Sandvik, 1960: Aerial view [Photograph]. https://minkarta.lantmateriet.se/

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Figure 10: Umeå kommun. (1983/2025). Archive drawing, 1983 [Scanned image]. Samhällsbyggnadsförvaltningen. https://www.umea.se/kommunochpolitik/diariumarkivochsekretess/stadsarkivet/bestallhandlingar.4.7c1df79418a3ef90b264ad33.html

Figure 11: Unknown. (n.d.). Timmermagasinet, Umeå [Photograph]. Västerbottens museum. https://samlingar.vbm.se/objects/c57-120054/

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Figure 11. Timmermagasinet, Umeå, n.d.

Sandvikssågen

Transformation of a former sawmill through critical reuse and spatial reconfiguration

Adrian Dahlberg, 2026

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