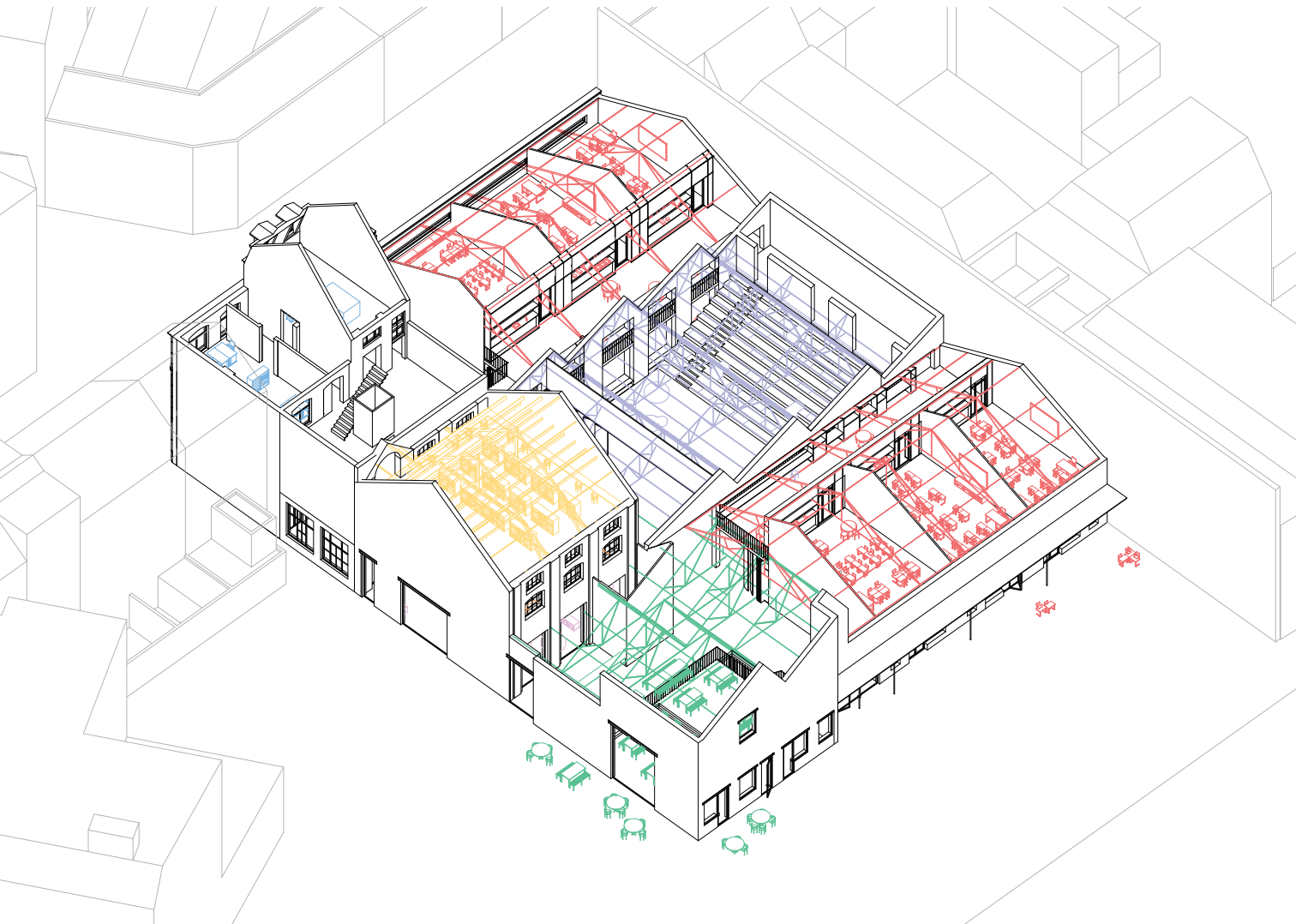


DE

LEERFABRIEK



Femque Tangelder

Urban Architecture
E.I. Ronner
L.G.A.J. Reinders

Abstract

In the north of the Heyvaert neighbourhood lies a former lead- and leather factory which was used from 1875 to 1970. It grew during this time through the addition and expansion of different volumes. All these additions feature different, characterizing shaped roofs, such as sawtooth or pitch roofs, creating a building typical of the area.

The building is now a large car garage, a trade renowned in the Heyvaert neighbourhood. Although this industry is thriving, it also causes significant nuisance. The government's goal is to improve the quality of life in accordance with established environmental and urban objectives. One of the largest interventions is the linear Parc de la Sennette, a network of green zones through the neighbourhood.

The education in the area will also have to improve, the Heyvaert neighbourhood has one of the highest education inequality rates in Brussels with children traveling all over the city to attend a Dutch speaking school. The former factory with its large halls lends itself perfectly to being transformed into a primary school located next to the Klein Zenne park.

In the centre of the school will be a main axis that connects the park on one side to the street and the rest of the neighbourhood on the other. In addition, this axis will internally connect the classrooms and assembly hall with the adjacent functions such as childcare, adult education, library and back offices. The canteen at the end of the axis on the park side, will open up the school toward the park and residents of the neighbourhood.

All these functions are located under different roofs, each of which also has its own type of load bearing structure. To preserve this identity of the building addition will be made in a freestanding timber structure that remains a distinct element in itself. The whole design aims to retain the character of the existing building while allowing it to continuously adapt to changes in the neighbourhood over time.

Brief

Urban Architecture

Urban Architecture studies urban sites on a scale where urban planning does not satiate and simultaneously how architecture influences the site's environment in public, private and collective domains. In doing so, architecture plays a role at the various scales of the city, letting surrounding resources inform the design.

The Heyvaert Quarter in Anderlecht, Brussels, is a district characterized by the second-hand car trade to Africa. At the time of the neighbourhood's inception it was characterized by the secondary trade associated with the slaughterhouses in the north and south of the district, and the River Senne flowing from south to north between these industries. Until the 19th century when the canal was constructed west of the district and the Kleine Zenne was covered. After the closure of the slaughterhouse's secondary activities in the 20th century, because of hygiene laws, the large vacant spaces were used for housing cars, which developed into a dominant car trade.

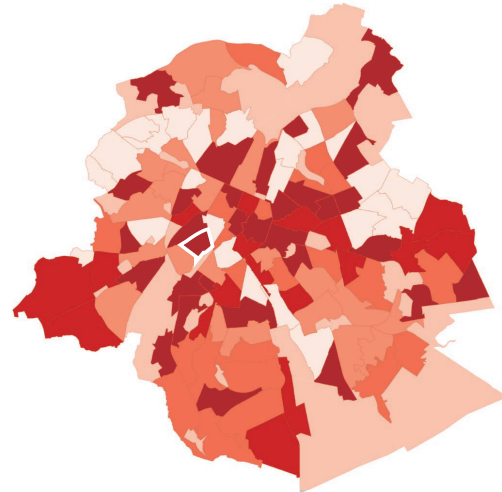
Although the industry is thriving, it also causes significant nuisance. The municipality of Anderlecht wants to improve the quality of life, in accordance with established environmental and urban objectives, by means of the linear Kleine Zenne park. It will create a network of green zones throughout the densely built neighbourhood. Creating an engaging relationship with the existing buildings in the public urban space.



A child's perspective

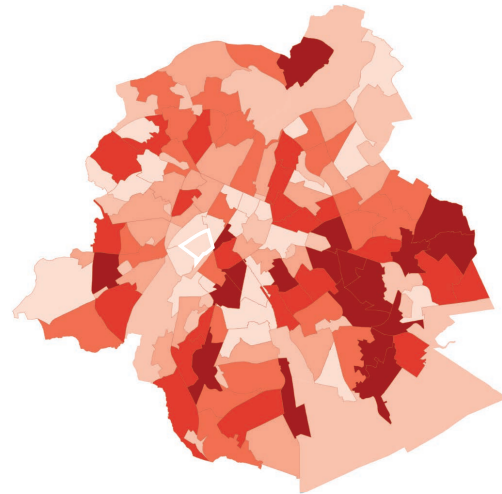
Research by SAAMO (2025), an organization engaged in social development, shows that there are not enough places in daycare, preschool and primary school for all the children in the Heyvaert district. There are only 0.48 places per child in childcare, 0.81 places in preschool and 0.61 in primary education. Perspective Brussels (2025) also shows that there are fewer than 0.7 places available per child and that fewer than 60% of children attend school in their own neighbourhood. Besides this shortage of places in schools there are also challenges around literacy with an above-average number of people not speaking French or Dutch. While parents would like to send their children to a Dutch-speaking school because of the opportunities in higher education and job prospects.

Since the Fieldworks Q5 course, I've been very interested in the role children play in architecture and public space. The appropriation of space and ownership and how children experience their living environment. Belgian primary school 't Speelscholeke, a school that focuses on learning through experience and experiment with living together, was open to me giving a workshop in which I asked the students to draw their route from home to school. They drew their transportation, pink bike paths and houses of their classmates. It was striking that the Antwerp Ring, which runs so prominently through their neighbourhood seemed to play no role. Could you create something similar in the Heyvaert neighbourhood, a district likewise strongly influenced by the presence of cars? Can a school so open to different experiences and the appropriation of space by children ensure that their living environment is experienced as so multifaceted and positive?



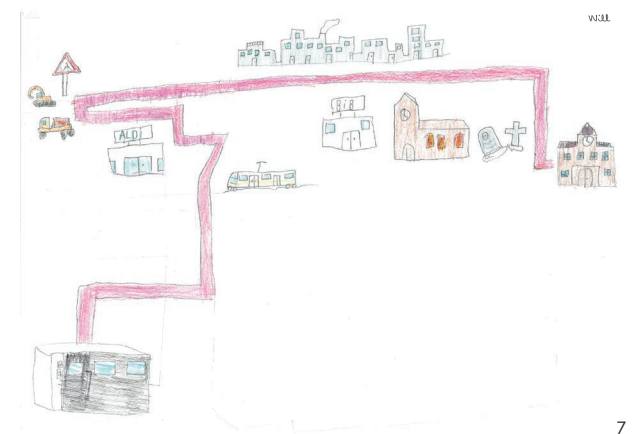
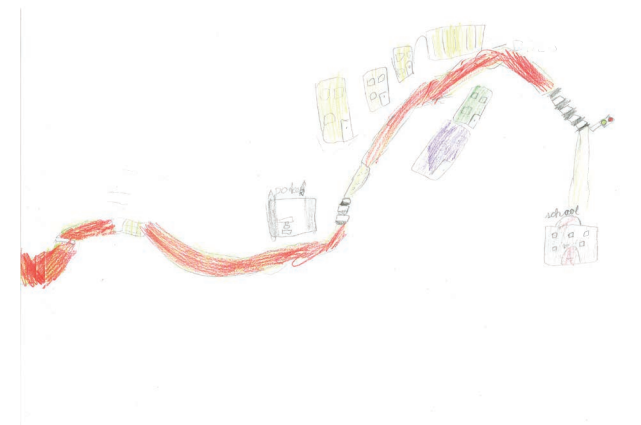
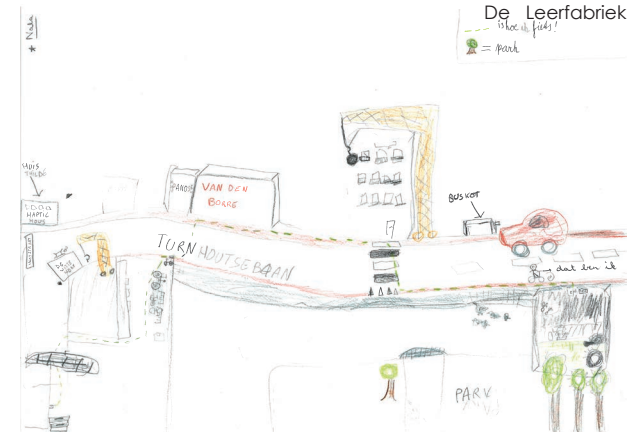
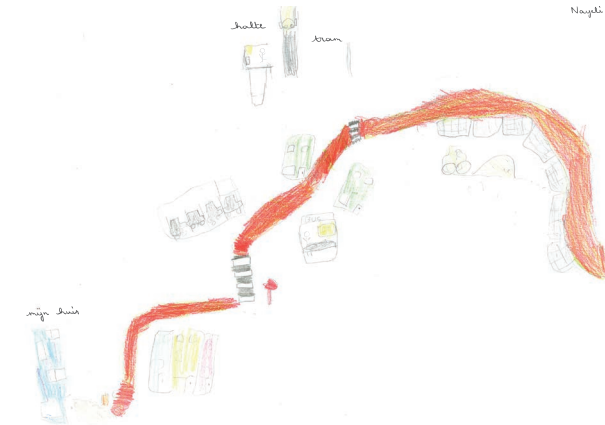
Relatieve opvangcapaciteit van de lagere scholen op het grondgebied (nm leerlingen / nm kinderen) — 2023-2024

Het beschikbare
< 0.70
0.70 - 1
1 - 1.50
1.50 - 2
> 2



Aandeel van de kinderen van de wijk dat schoolloopt in het lagere onderwijs in de buurt van hun woonplaats (%) — 2023-2024

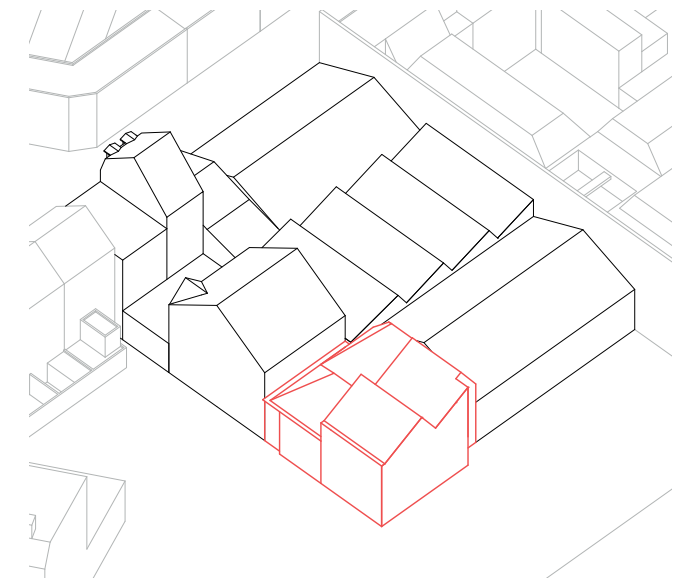
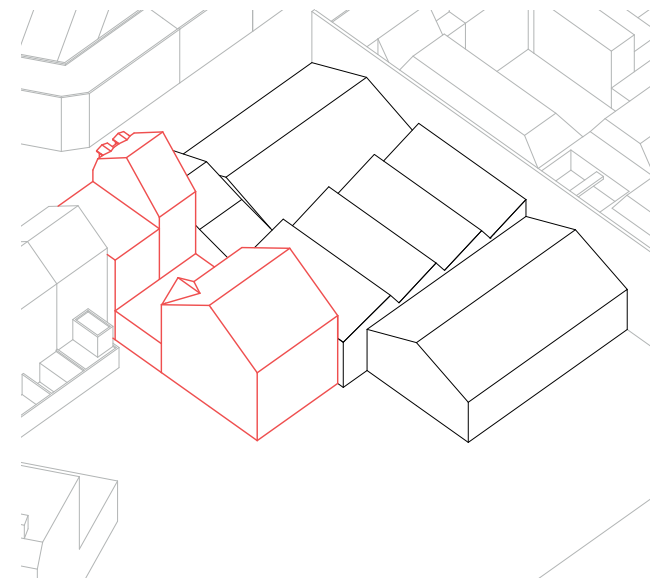
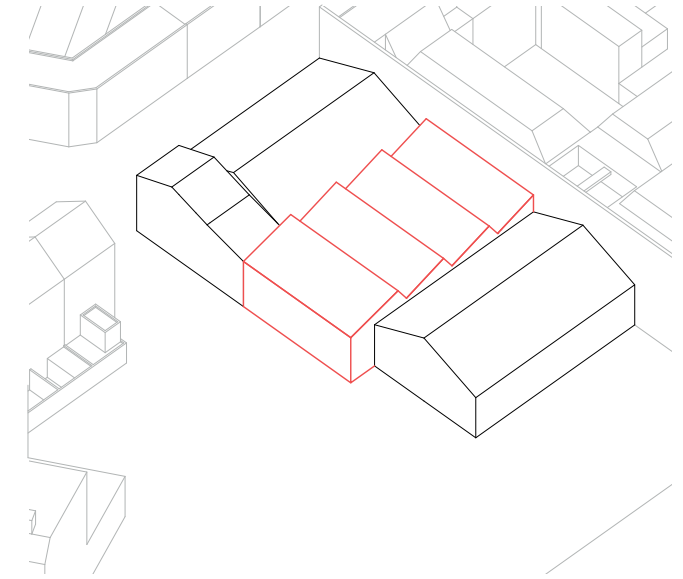
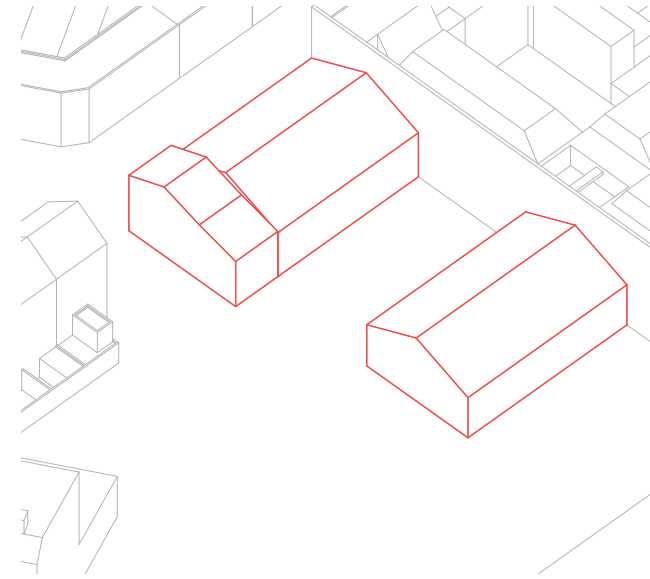
Het beschikbare
< 60
60 - 65
65 - 70
70 - 75
> 75



Edmond Lamal lead- and leather factory
Rue de la Bougie 23, 25, 27, 29

The new school will be located in the north of the Heyvaert district in a late lead- and leather factory with a rich monumental history. In 1875 Mr. Edmond Lamal commissioned the construction of the factory consisting of three building volumes (Monument Heritage Brussels, 2024). A shallow single story buildings and two workshop with gable roofs with a courtyard in between. In 1897 the factory was expanded into a warehouse and office at the expense of the courtyard with a vaulted roof and no. 27 received a carriage passage and additional living story. In the new century, 1906, Nos. 23 and 25, a house with a chamois leather factory behind it, built in 1877 and 1884. In 1924 the bottom floors were combined and converted into office and the vaulted roof of the warehouse was replaced by a four tiered shed roof before 1944. Three years later, the final volumes were added to the factory. In 1970, after nearly a hundred years the factory sadly closed its doors.

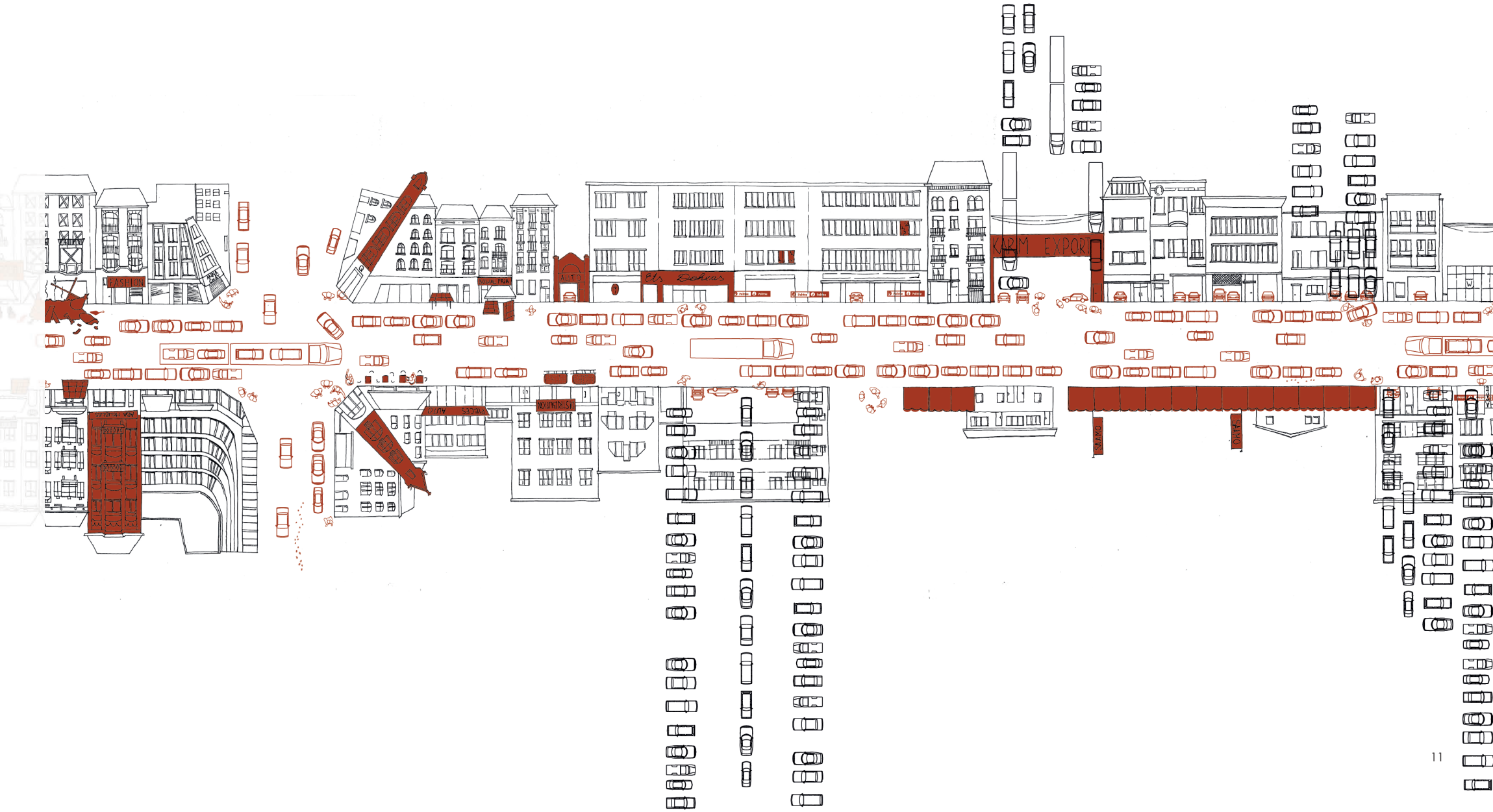
In this project, the goal is to work with the existing situation of the Heyvaert quarter and the site together with the linear park, to contribute to improving education for children and adult through the design and architecture in relation to the urban context. How can the site and the existing buildings on it be designed into a school that contributes to improving the quality of life in the neighbourhood.



Project

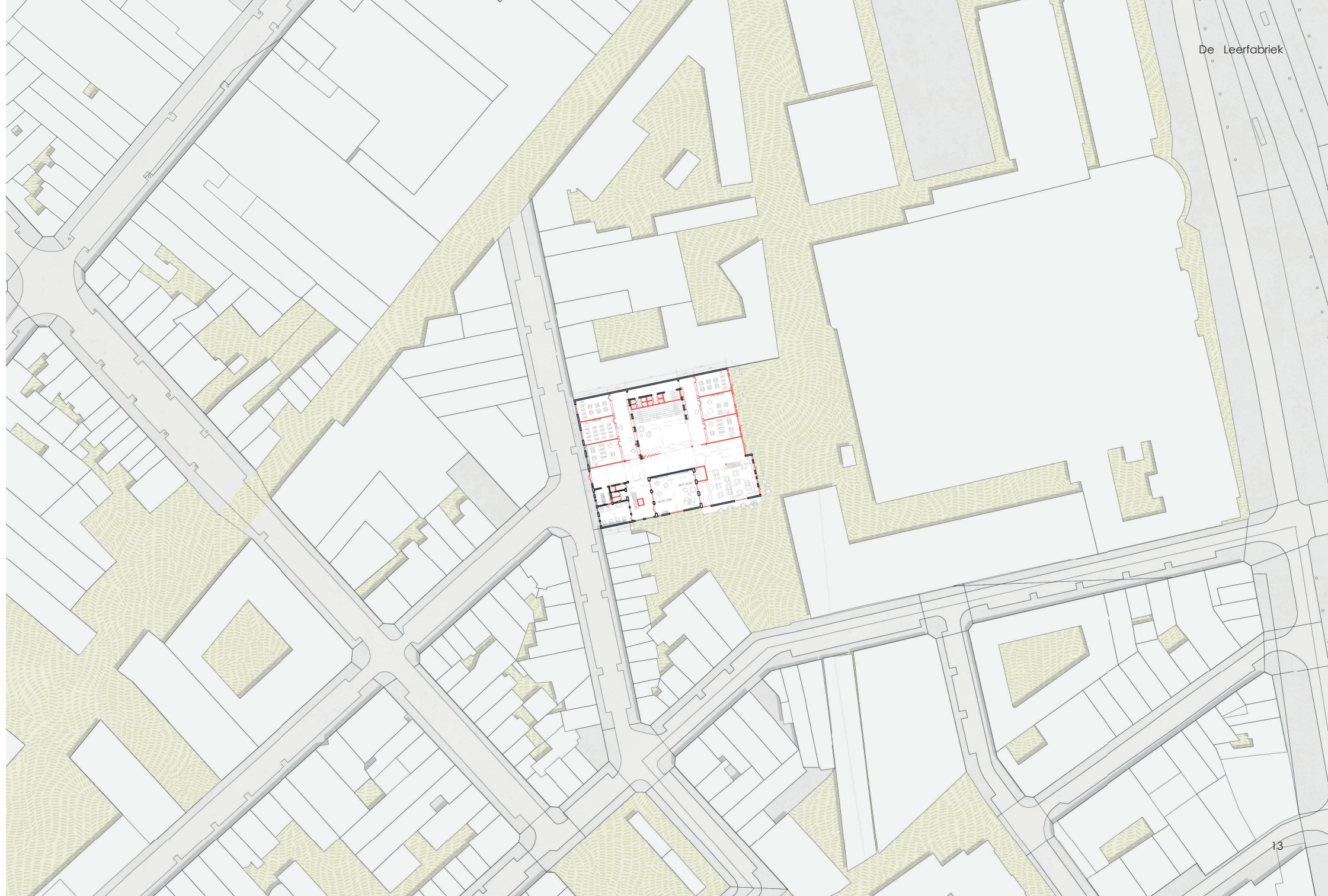
Rue Heyvaert Jumping Scales Ieporello (group work)

In the midst of the Heyvaert district lies the Rue Heyvaert, the main road where everything comes together. The street is represented as a sequence of the facades on both sides of the street. The act of hand drawing the facades making details stand out that were unnoticed by solely site visits. These drawings are the architectural backdrop for the red layer. The layer of impression of; waste in public space, oversized signing, small grocery shops, gathering people, garages and many cars. The third layer unfolds what is hidden behind the street's facades. The many garages representing a dense network of cars and global connection.



Heyvaert Quarter

The main branch of the linear park will run through Heyvaert Street. However, branches of the park will also be realized in other parts of the district. For instance, from Ninoofsepoortpark towards the Alphons Lemmens Square, coming along the site of this project. This line of the park runs exactly where the Kleine Zenne used to run. With the linear park, the connection of the building to the Kleine Zenne via the rear is restored. Between the Heyvaert Street and the Kleine Zenne, the site is situated between two important branches of the linear park.

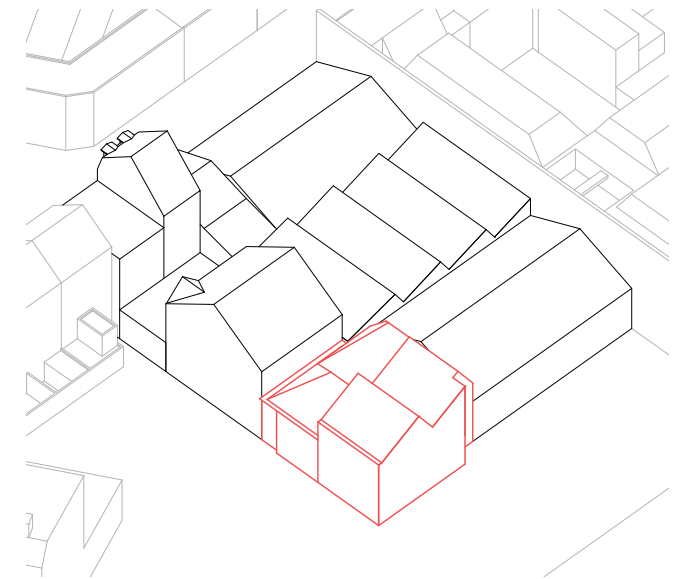
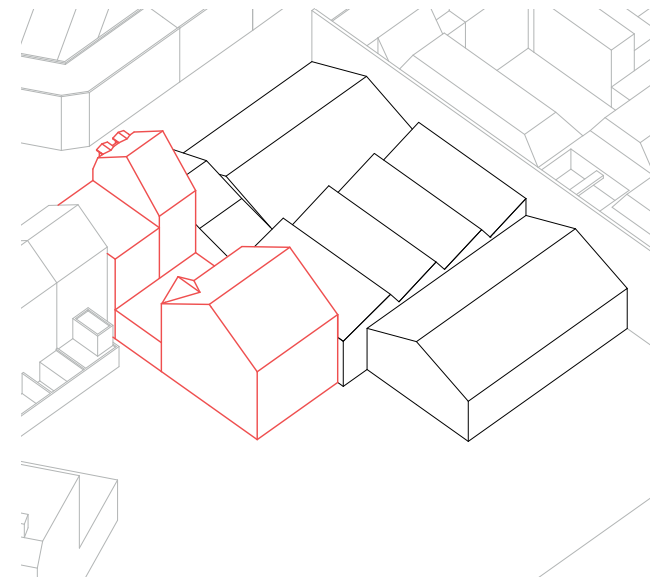
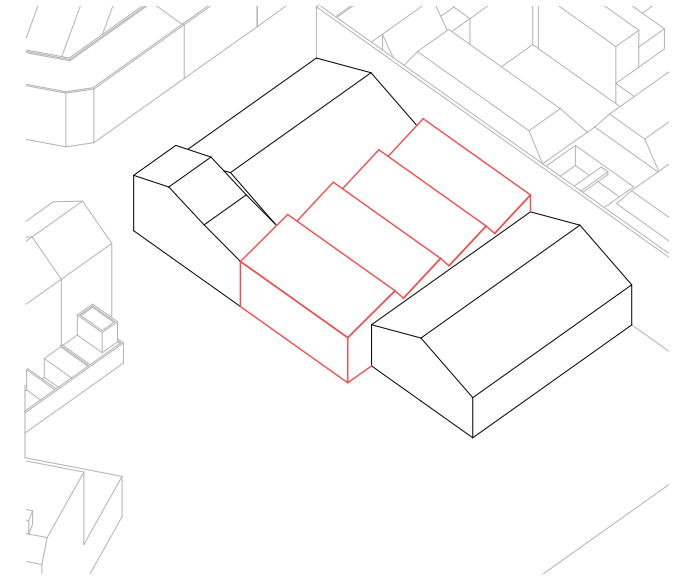
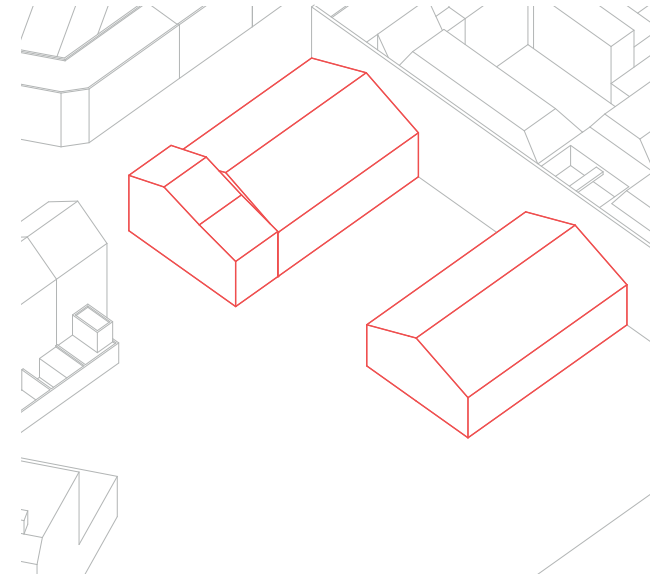


Rue de la Bougie
The site between the houses and the arts institute.



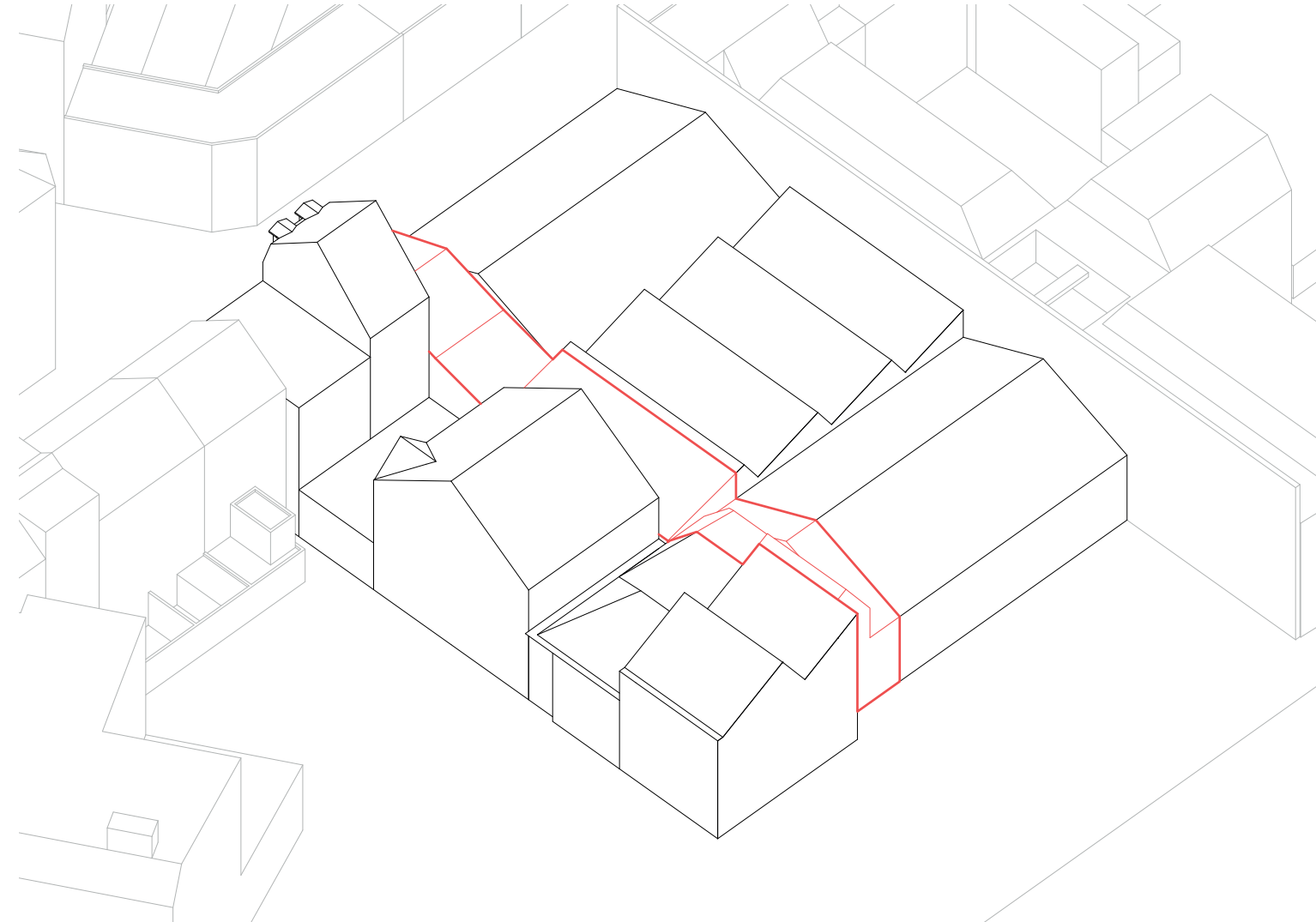
Concept Construction and History

The buildings on the site were constructed over several decades, commissioned as a lead- and leather factory by Edmond Lamal. First, the shallow single-story building and two workshops with gable roofs were built; later, a warehouse with a shed roof in between. Then, the existing houses next to it and the factory behind it were added, and finally, a final volume completed the factory. The expansion of the factory over the years, the annexing or adding of volumes, creates an interesting design. All volumes, with varying characteristics ranging from elongated gable roofs to complex shed roofs, result in a building that is very typical of the Heyvaert neighborhood.



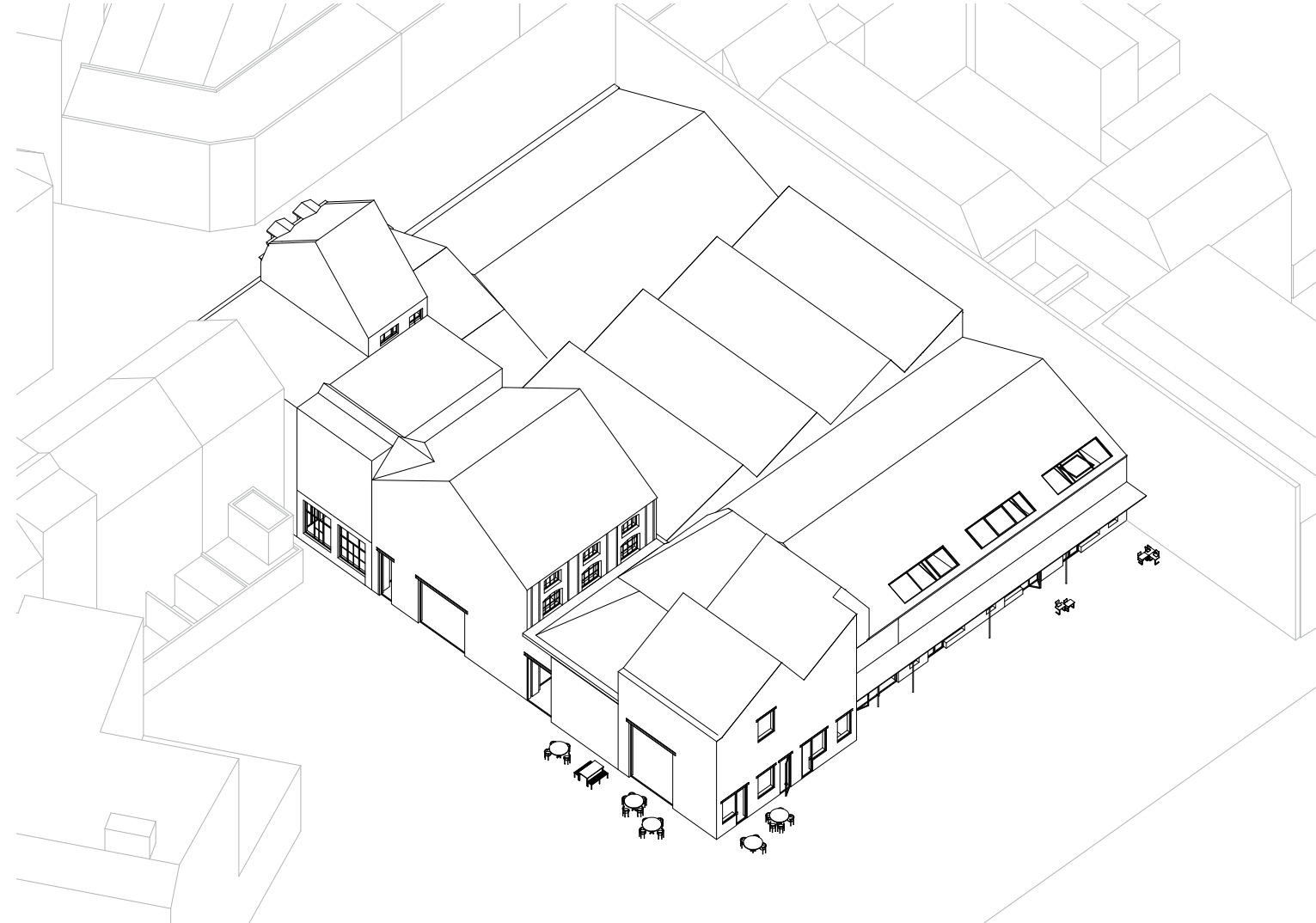
Concept Axis

What is not yet visible on the roof is that a main axis runs through the plan. From the first volume on Rue de la Bougie, a path has been extended to the former River Zenne, where Parc de la Sennette will be located. This connects the street and park sides of the site. Additionally, in the building's layout, all spaces are arranged around this axis and are thus interconnected. The axis will play an important role in connecting the new Zenne Park with the rest of the Heyvaert neighbourhood, connecting the functions within the building to one another, and thereby also the relationship between residents and visitors of the Heyvaert district.



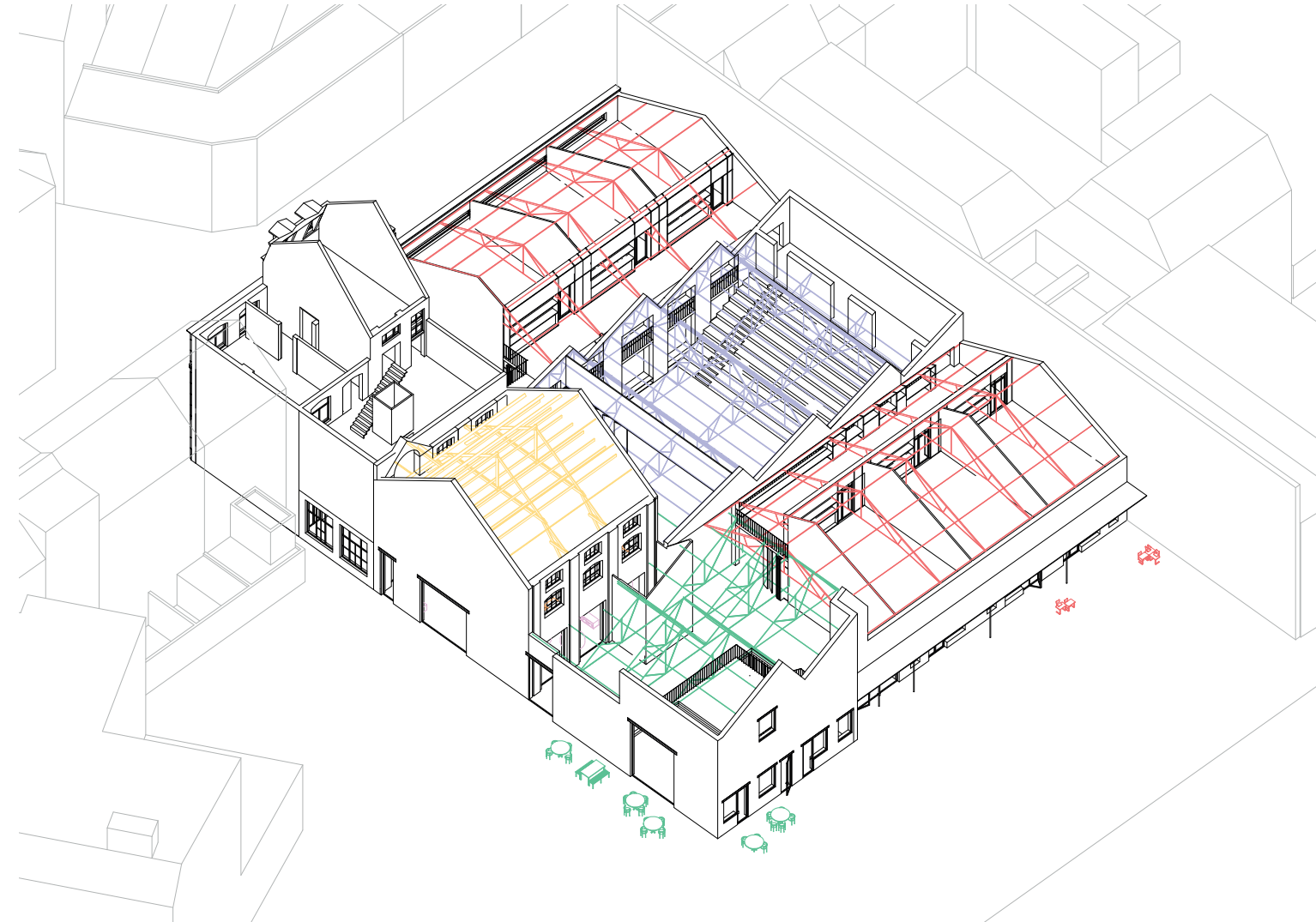
Construction and roof

The characteristic features of the building; the composition of the various roof types together with the axis connecting one side of the building to the other side, passing under these roofs, will, together with the ambitions for this school, repurpose this former lead and leather factory into De Leerfabriek.



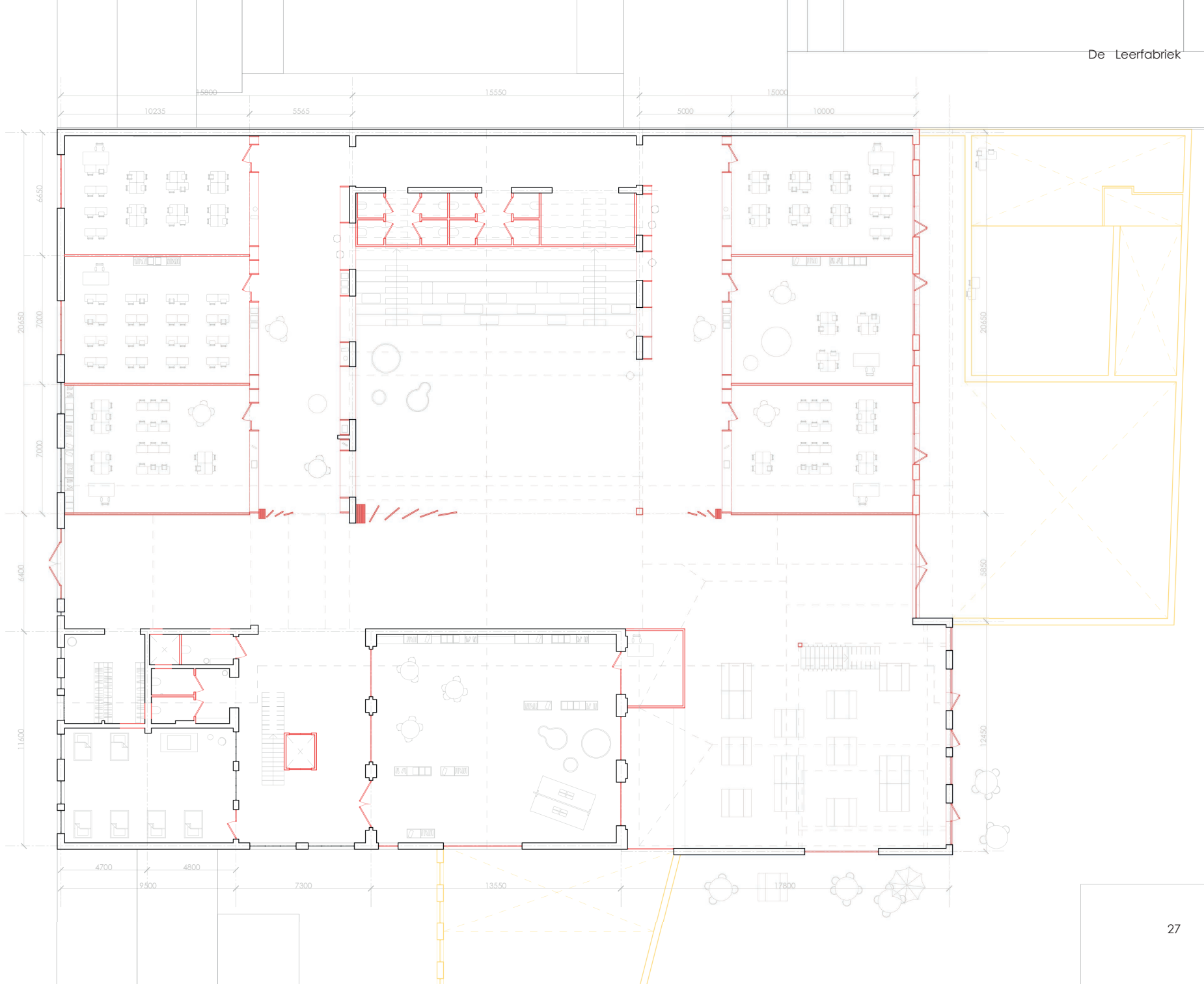
Construction and roof

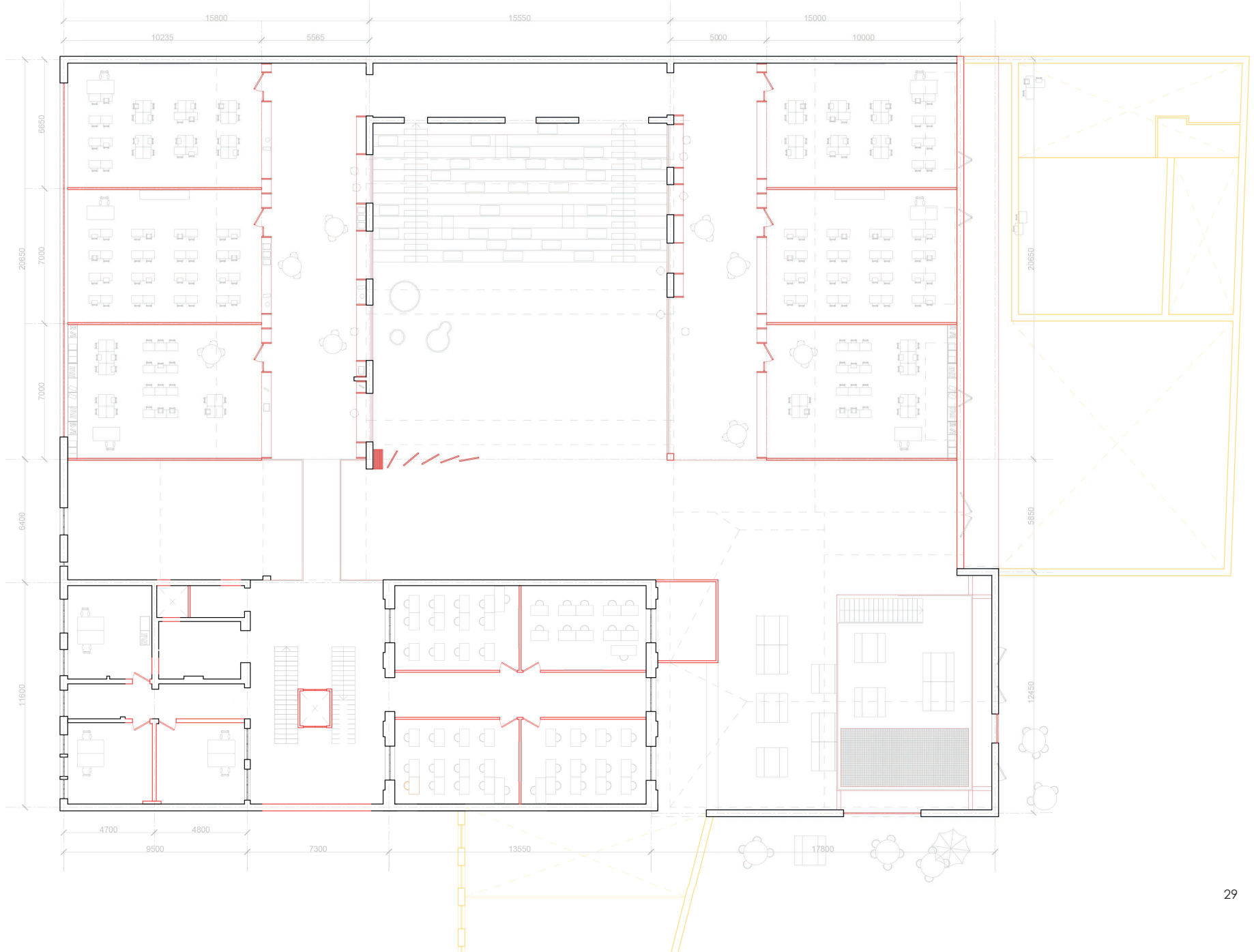
The evolution of the building over the decades has resulted in volumes with different characteristic roofs, each with a unique supporting structure. This quality of the building is very impressive and is therefore used to inform the layout of the different functions that will be housed in the building. In doing so, the building is left in its original state as much as possible.

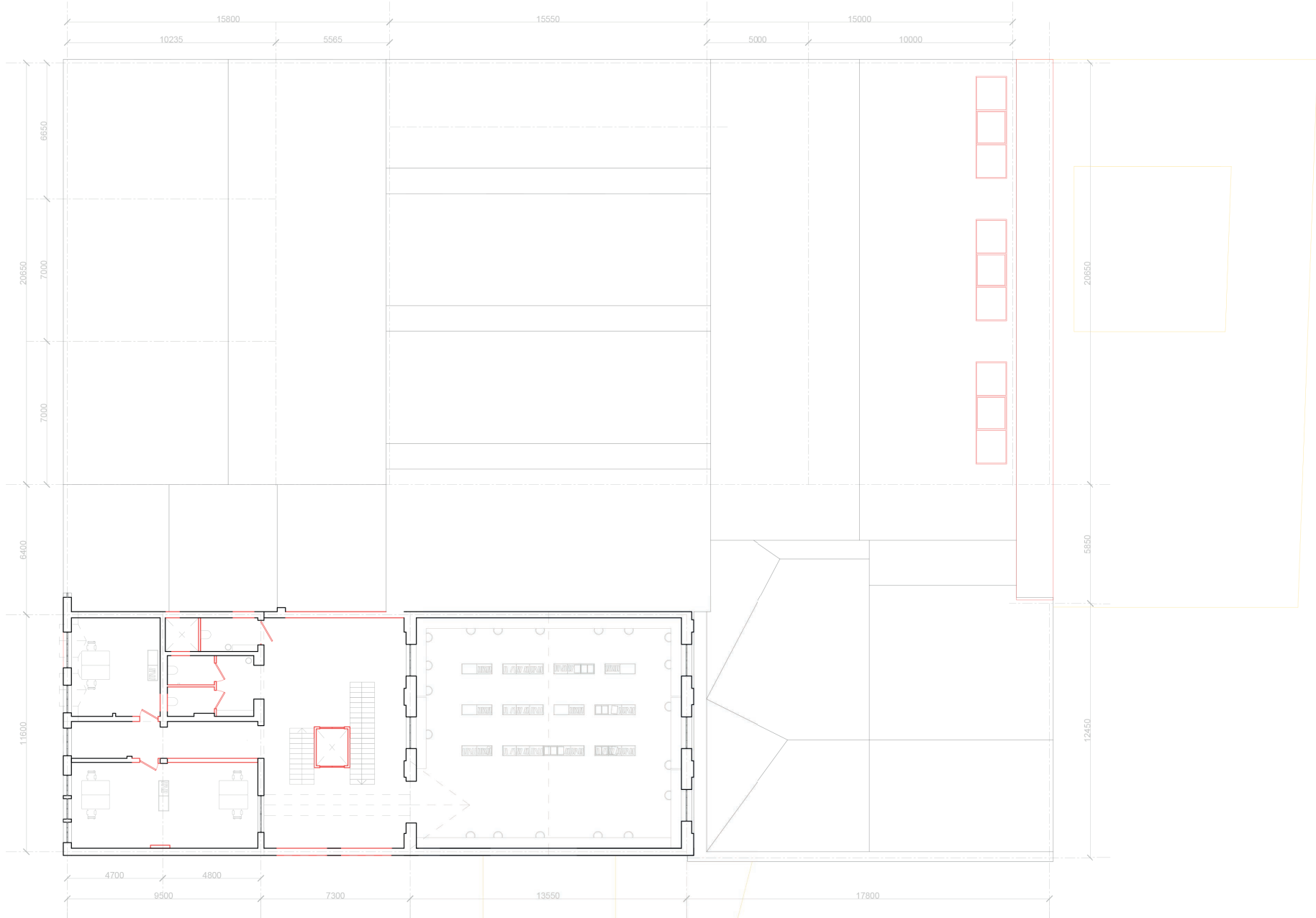


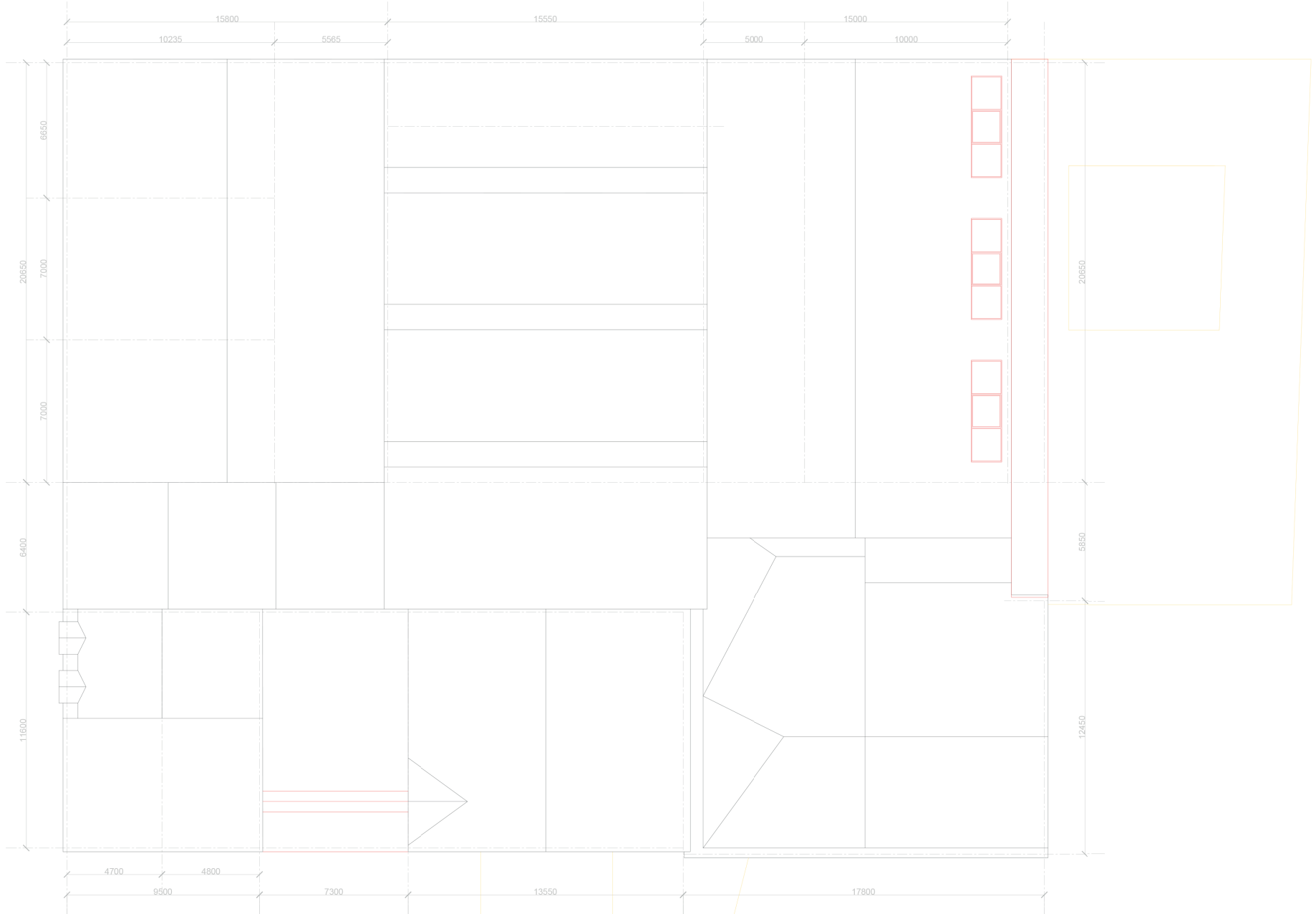
Situation

In the ground floor plan, black represents what remains, red what was added, and yellow what was removed. This also shows that the existing situation was utilized as much as possible, not only in the layout of the spaces but also in the facade openings such as windows and doors. In the bottom left, you can see existing openings with existing windows, while in the top left, existing openings from former wooden doors are visible with newly designed windows. On the corner on the right, you see new openings in an existing wall, and above that, openings in a completely newly constructed facade. A good example of the effort that has been made to respect the existing charm of the building, which is formed, among other things, by the existing windows and doors.



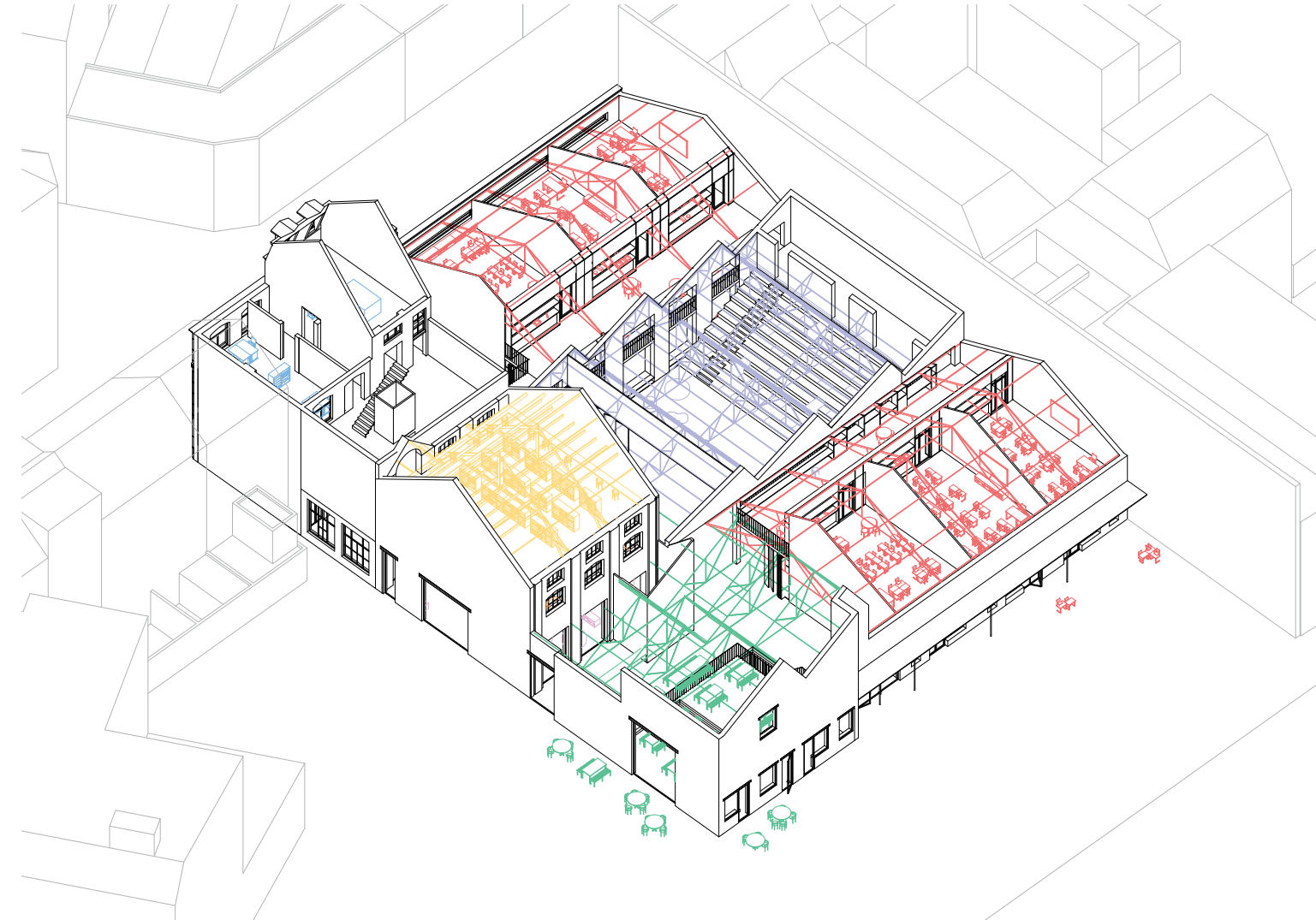






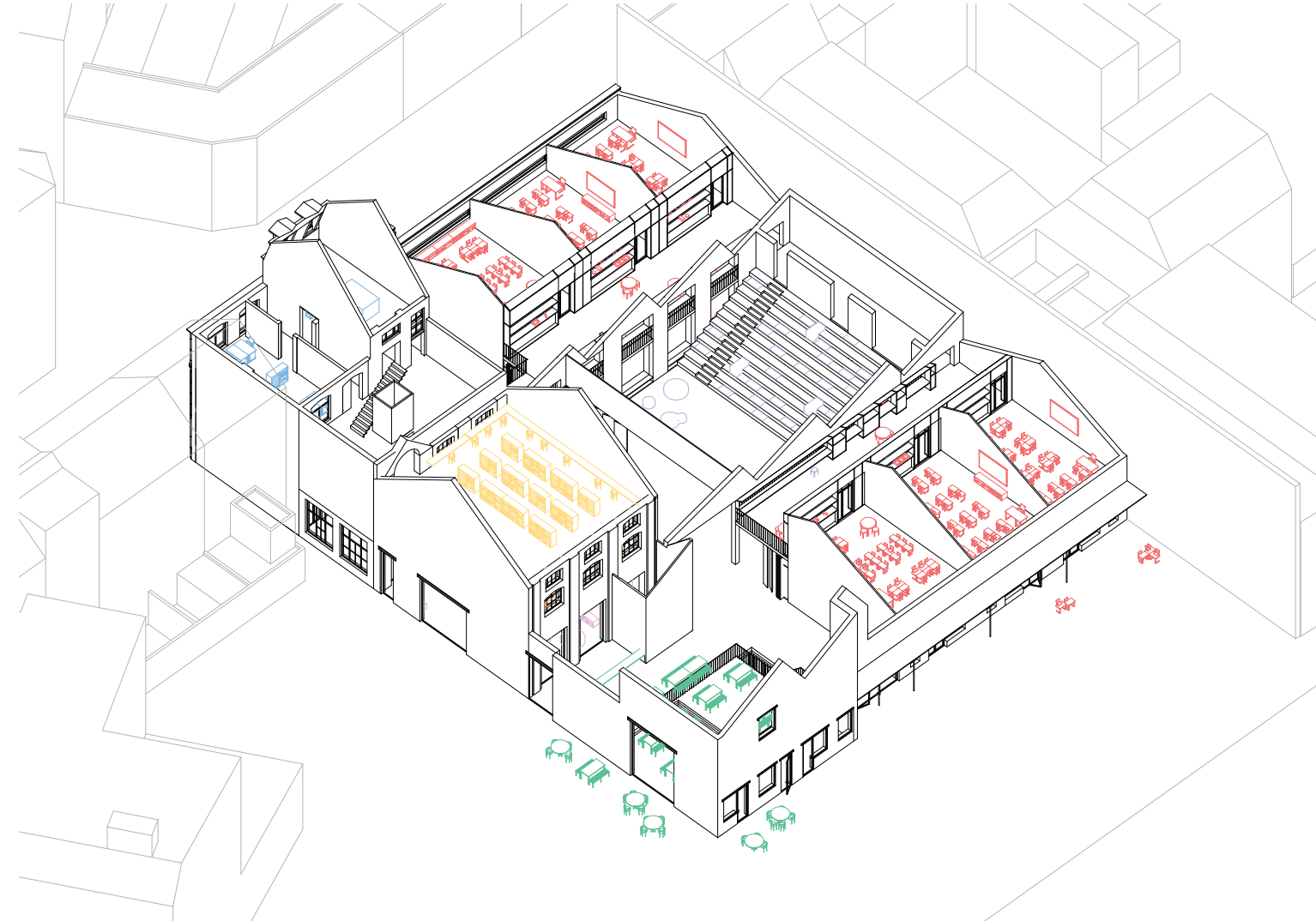
Function and construction

Under the gable roofs on either side of the building are Polonseau trusses, a truss structure consisting of two trusses and a tie rod. Between the gable roofs, under the shed roof, are truss girders supporting a perpendicular triangular truss structure for the shape of the shed roof. Also under the roof on the corner combination of a shed roof and a hipped roof, there is the same steel structure as under the large shed roof. There is a height difference between these roofs, allowing skylight to enter. In the middle, under the high gable roof, there is no steel but a sturdy timber structure. Working with the existing situation is very important for this design. The load-bearing structures have therefore been used as a guideline for arranging the various functions within the building. The structure hanging above your head will inform the area of the building you are in.



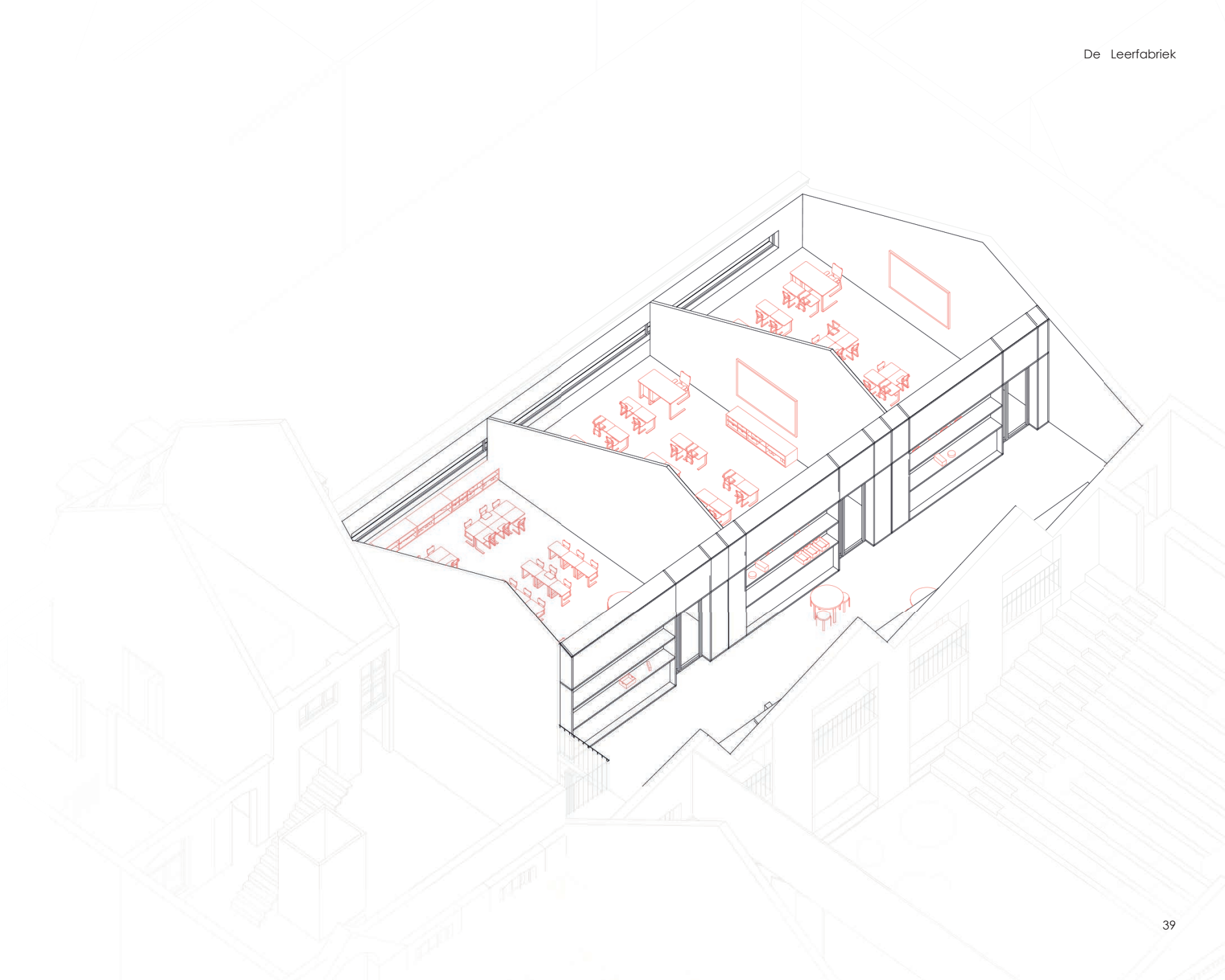
Function and construction

Without the roof and the load-bearing structure, it is visible that different functions are housed in every volume of the building.



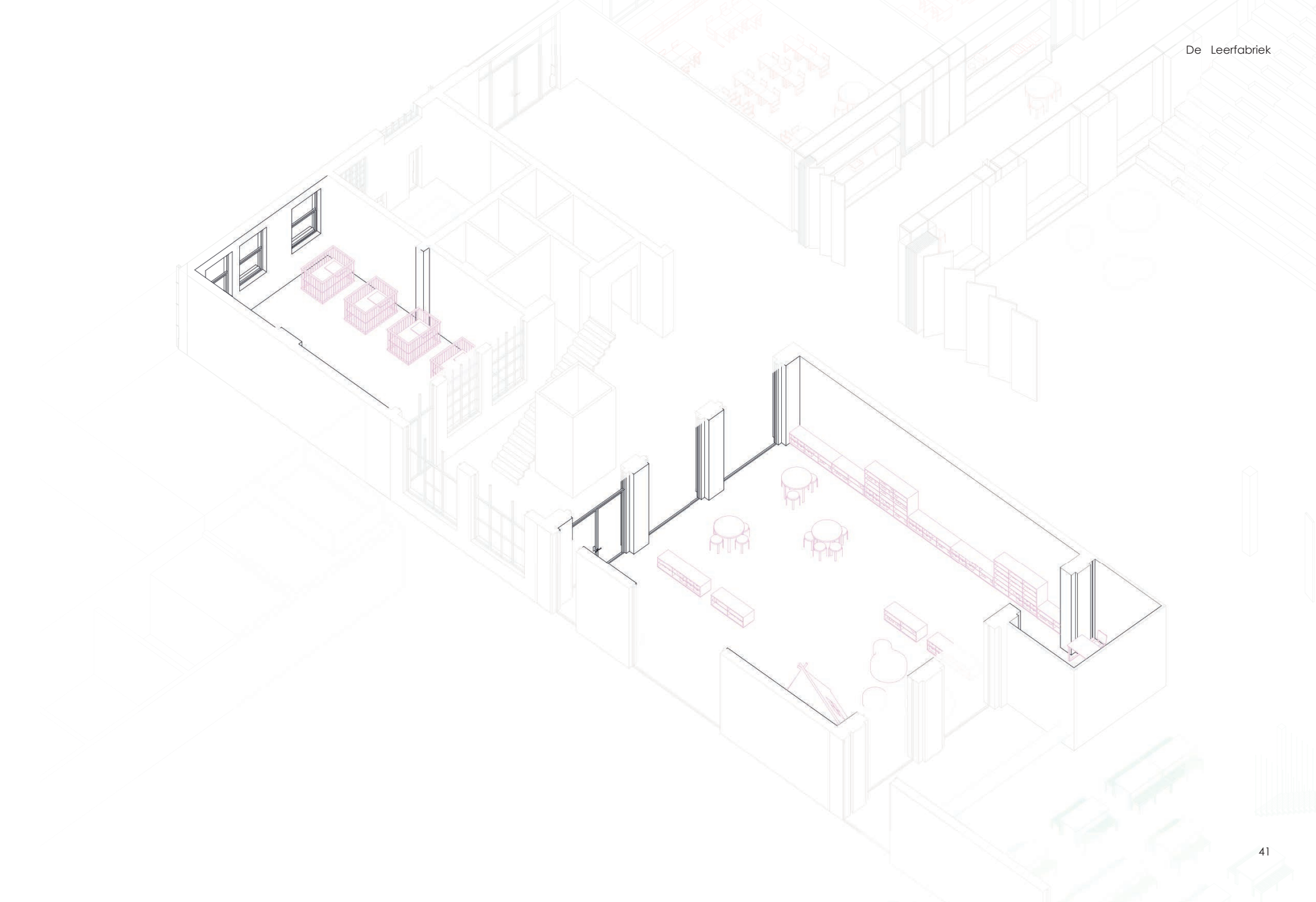
Function classrooms

The classrooms are located under the gable roofs with Polonseau trusses. They are situated at the ends of the building to ensure sufficient daylight. There are also many openings facing the corridor to create a connection between the corridor and the space under the shed roof. At 70 square meters, the classrooms are spaciouly laid out. In addition the wide corridor can be utilized as an additional learning area. This circular corridor connects the classrooms to each other and to the rest of the building.



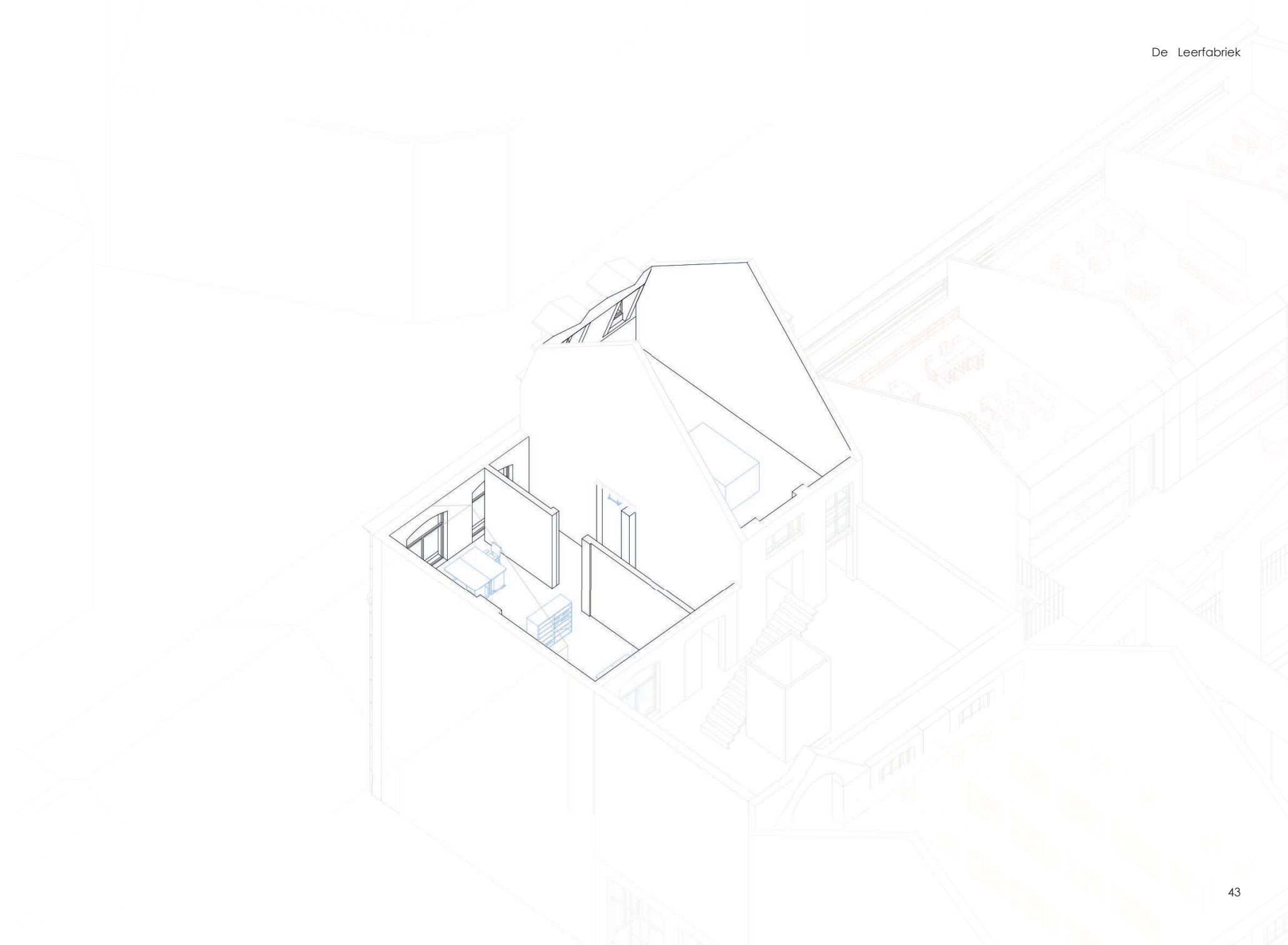
Function daycare and nursery

The kindergarten is situated on the ground floor on the other side of the axis. In the Belgian school system, kindergarten and primary education together constitute basic education. The kindergarten for children aged 2.5 to 6 ensures that the children can get used to the school environment, after which they have 6 consecutive years of schooling in primary school from age 6 to 12. A school may call itself a primary school if it offers both functions. Therefore, this kindergarten has been designed in a separate volume, including a nursery for the very youngest.



Function
staff and supporting facilities

In a school, all additional functions are also very important. Above the nursery are the staff and supporting facilities. Consisting of the secretariat and administration, wardrobe, storage, toilets, installation room, but also a meeting room, first aid (health class) and a prayer room.



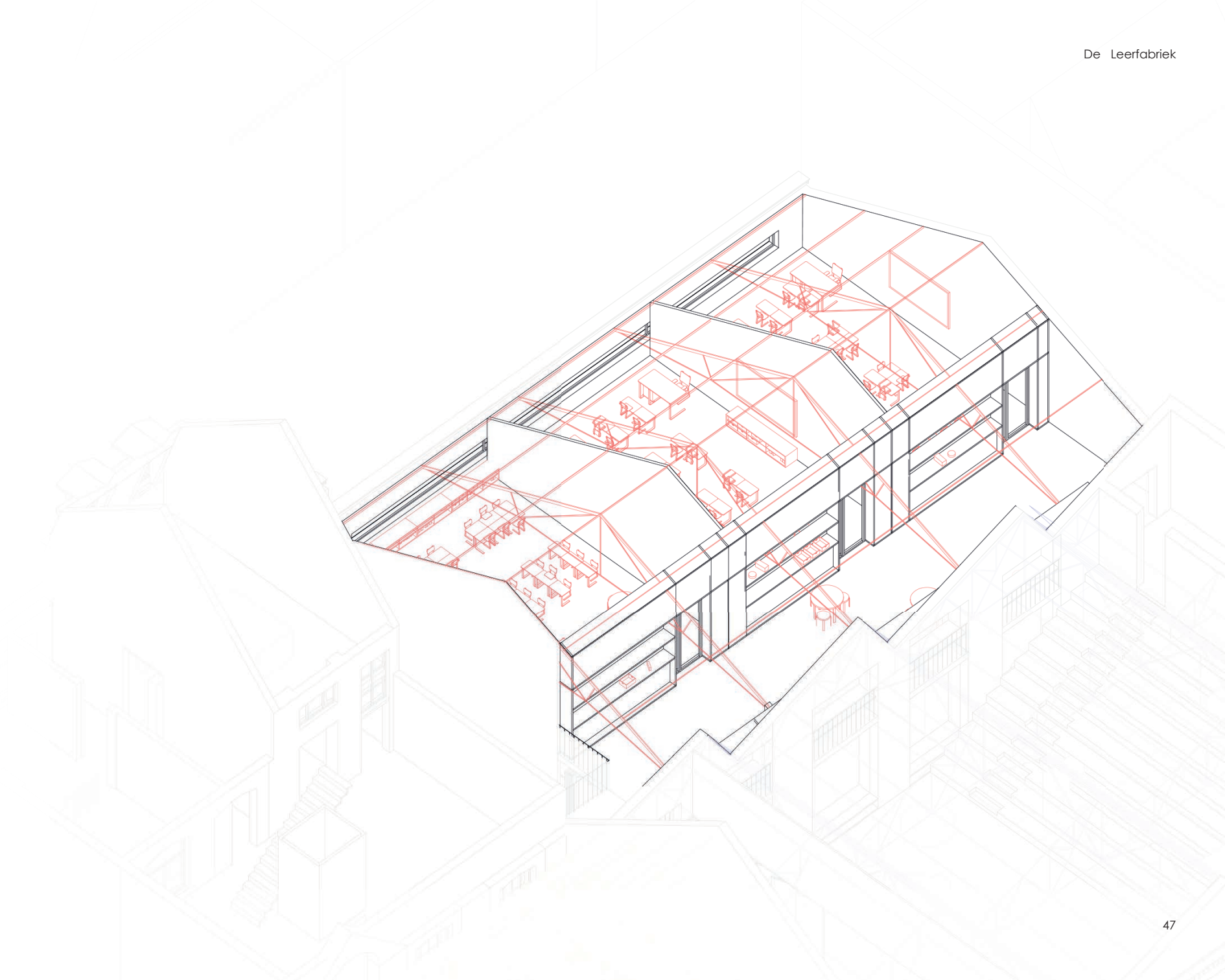
Rue de la Bougie

These supporting functions are situated behind the existing facade on Rue de la Bougie. The building's evolution over the years is also clearly visible on this facade. To the right are the additional functions, where these two volumes have been merged into one. In the centre is the large entrance, formerly a carriage entrance connected to the building's axis. To the left, in the former factory halls, are the classrooms. Subtle adjustments have been made to this facade to allow sufficient daylight, such as replacing doors with windows and opening up the facade within the cornice that extends across the width of the facade.



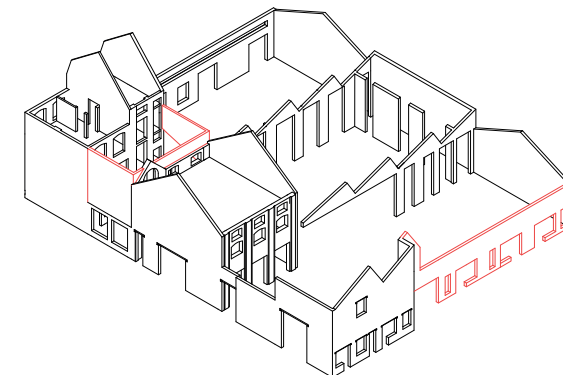
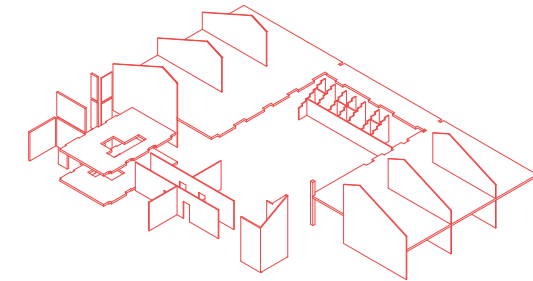
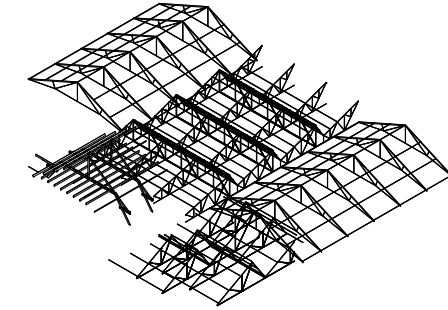
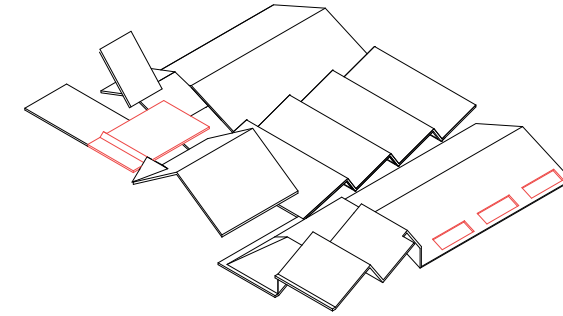
Construction Additions

In the model it becomes clear how the classrooms have been structurally added to the existing situation. The approach is to leave the existing building intact as much as possible. Within this existing situation, a lightweight timber frame structure has been added to realize the layout of the classrooms with a new floor. In this way, as little possible is altered to the original building to accommodate the new function.



Construction
Construction diagram

In the constructive diagram, the load-bearing masonry walls are at the bottom. Within these, a self-supporting timber frame structure will be installed. The roofs remain supported by the existing walls, supported by the various types of roof construction.



Function

Multi-use assembly

In this perspective it is clearly visible how important the existing structure is to the atmosphere of the building. The skylights also play a major role in that feeling. This multi-use assembly, centrally located in the building, can be used in various ways. As seen here by the preschoolers from the daycare.



Function

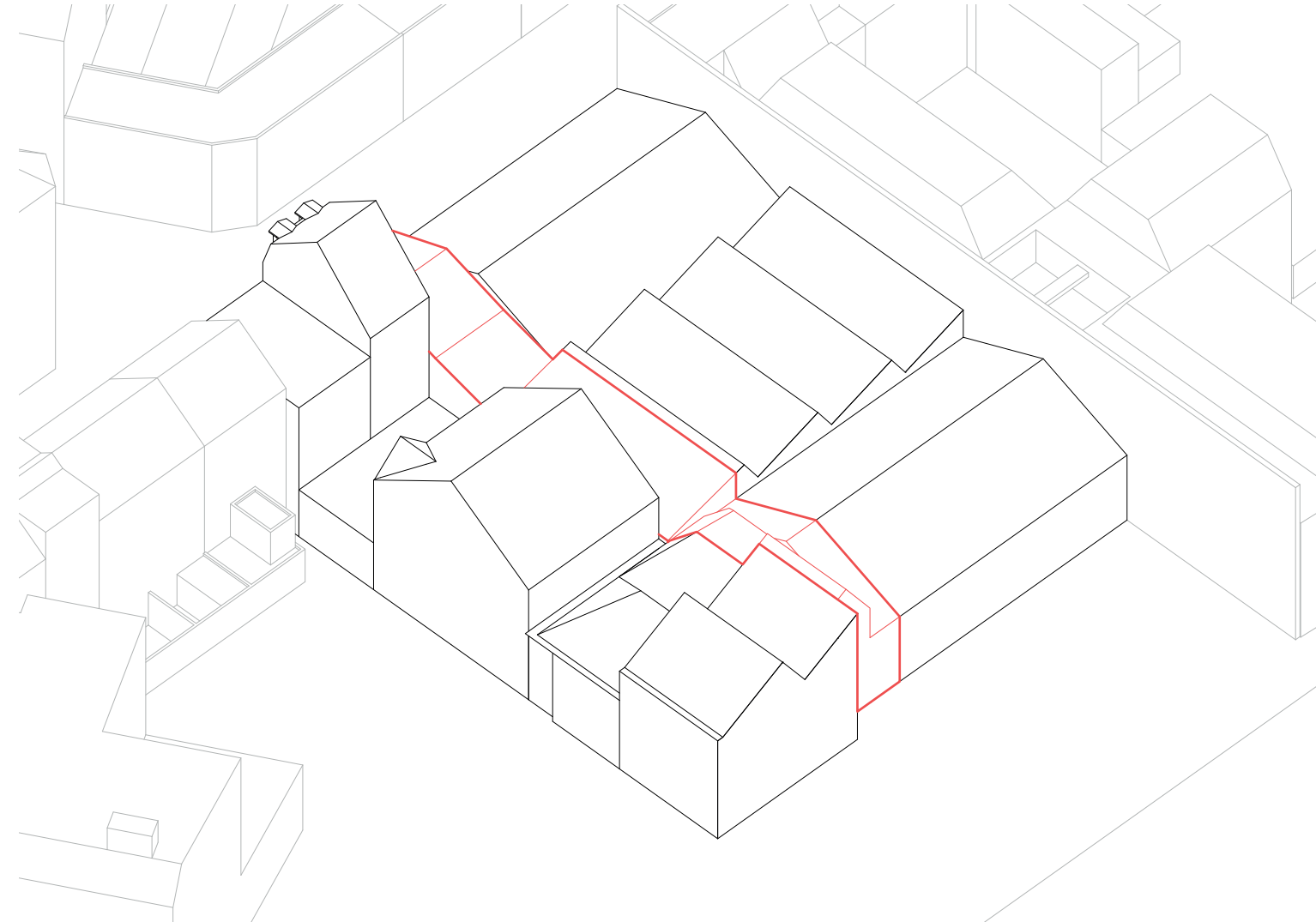
Multi-use assembly

It can also be used by a class as an extra learning space. Connected to all surrounding classrooms by means of open hallway closets and stairs. A space where the children can learn or relax in a more informal setting.



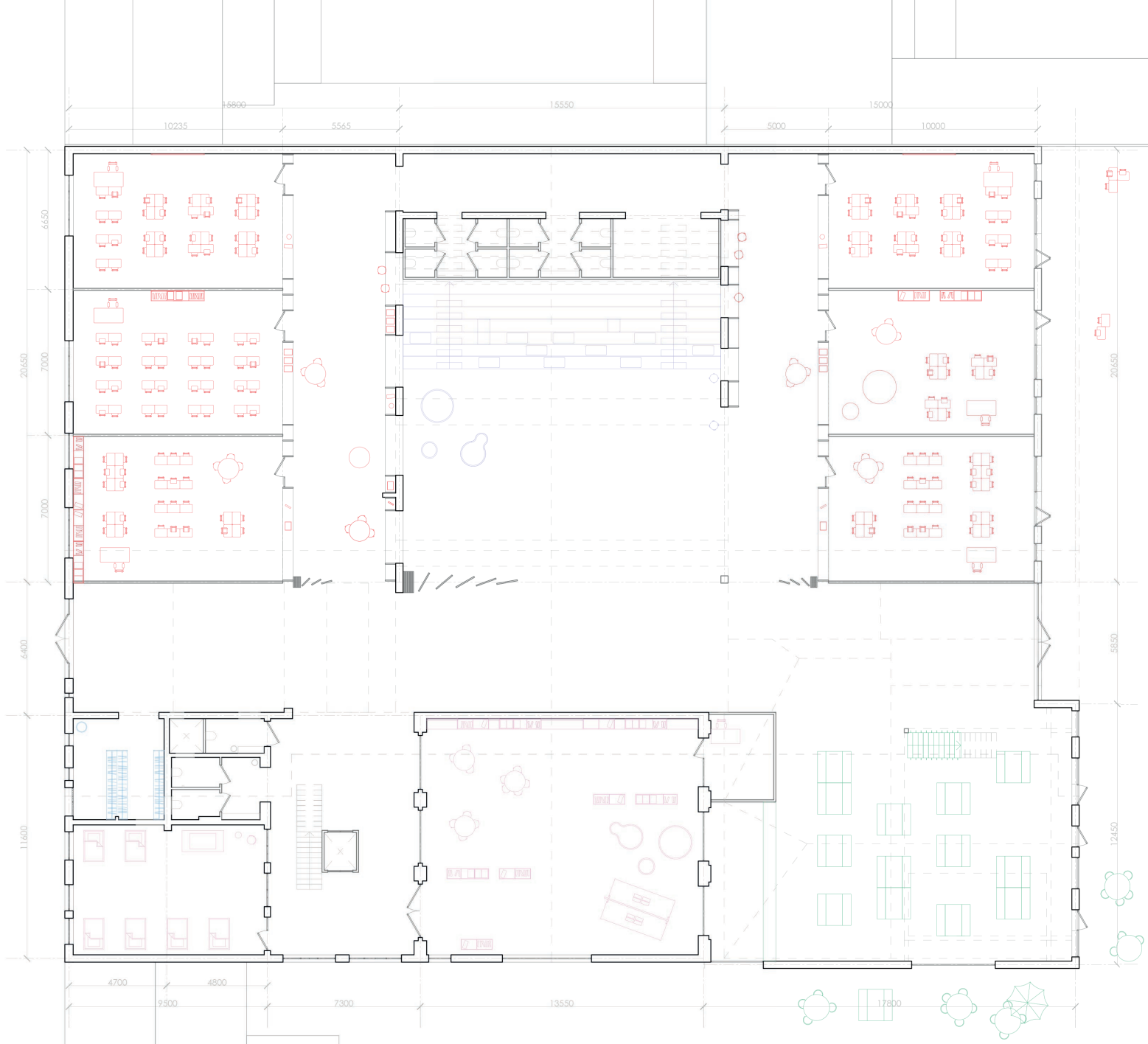
Axis

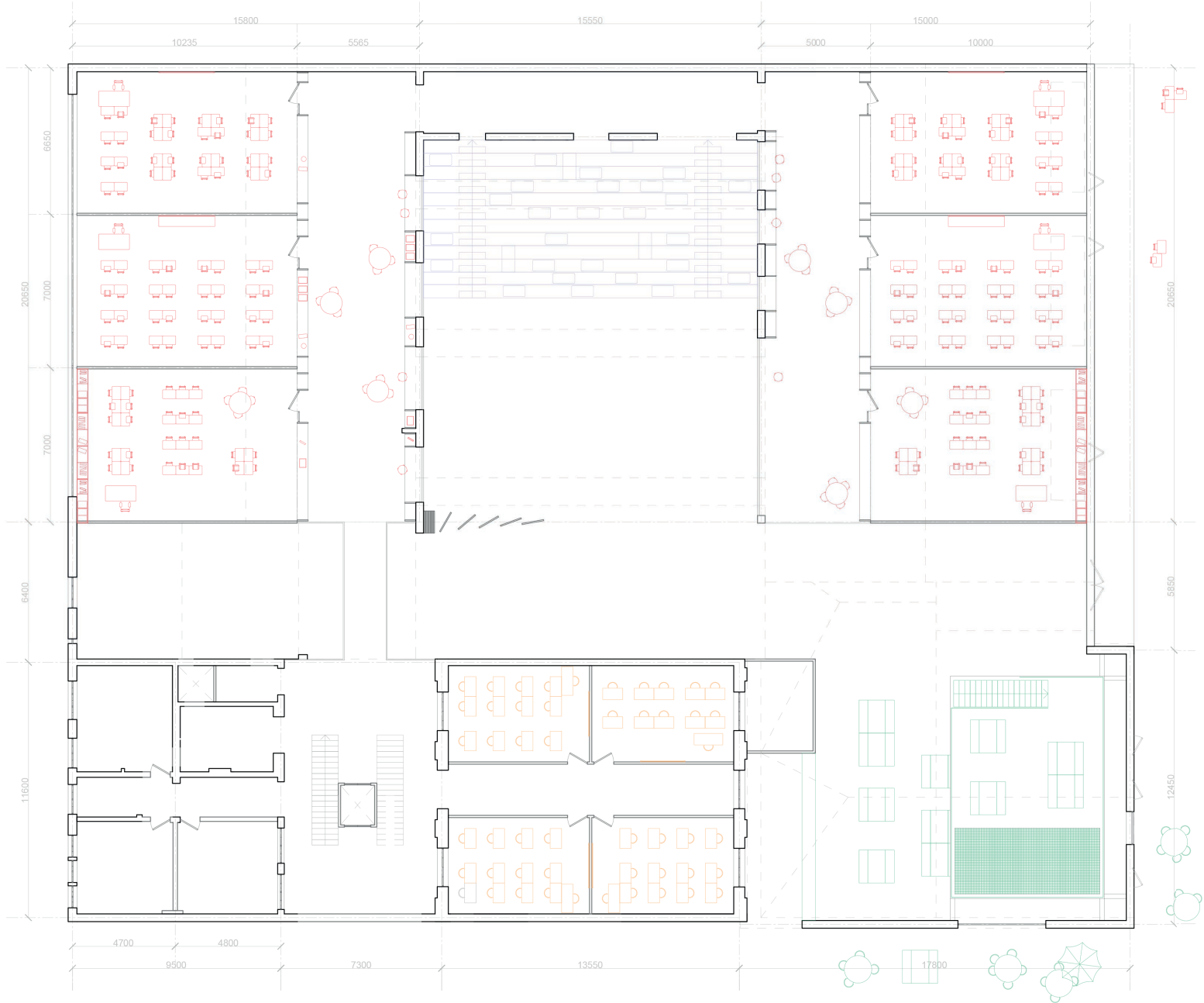
The axis in the centre of the building is of great importance for connecting this multi-use assembly and the other functions with each other and their users.

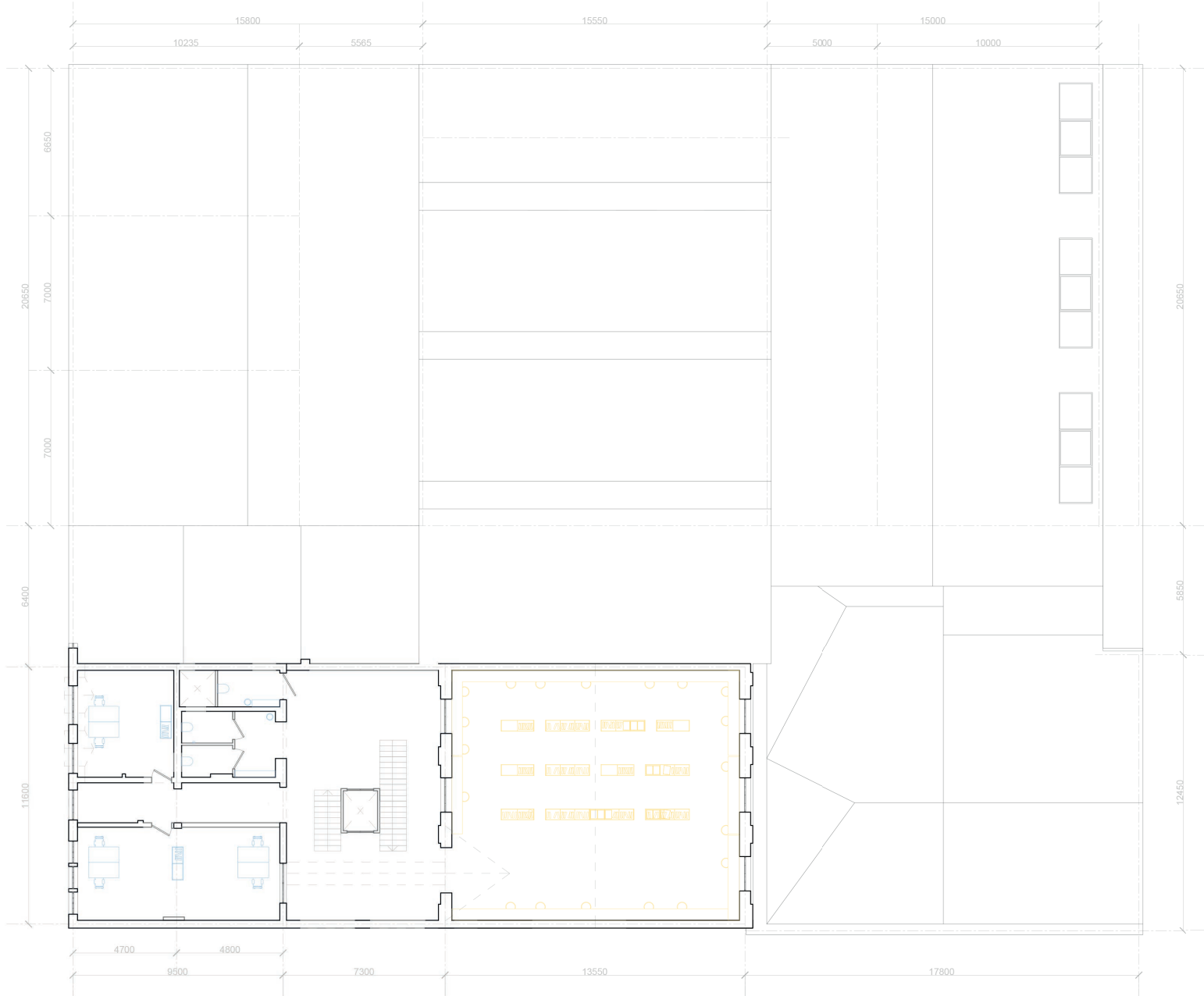


Axis

The floor plan clearly shows how this axis extends from the street side to the park side and vice versa, thereby connecting these outdoor spaces. All functions are also situated along this central axis, ensuring they are well connected to one another and accessible from the outside.



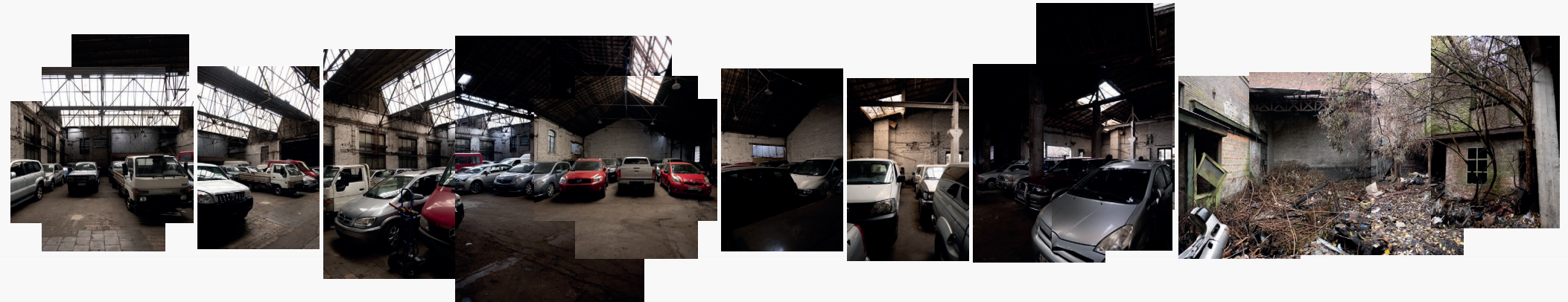
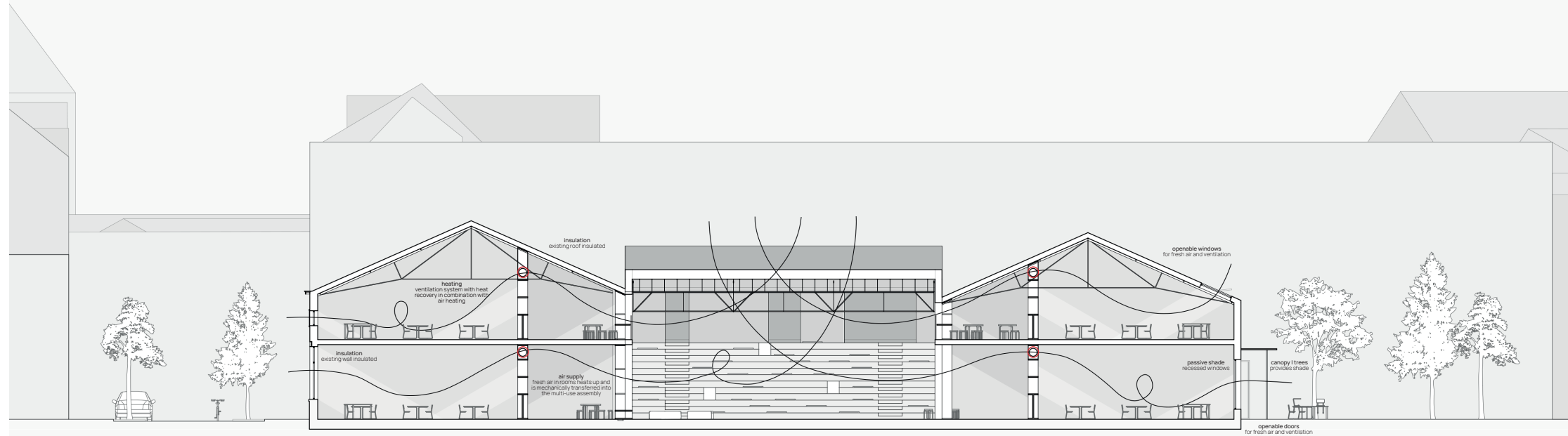




Axis
North | Climate

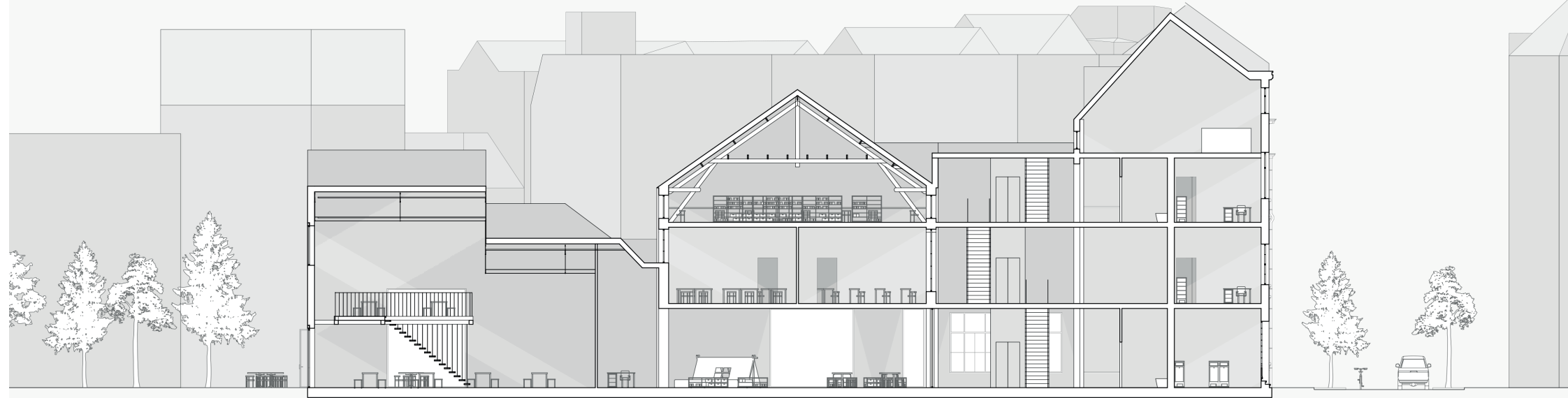
This is the section on the north side of the axis. The photos were all taken from this axis, clearly showing how the large spaces are connected to the axis. The shed roof in the centre ensures sufficient daylight in the building through the skylights.

The building is ventilated using fresh air entering through the openable windows. Via the corridor closets, air can be transferred by means of mechanical ventilation to the multi-use assembly, where it exits the building via the roof. The classrooms are also heated via this ventilation system with heat recovery in combination with air heating. The existing building is insulated on the inside to prevent excessive heat loss or ingress. On the park side, where the sun shines on the building the most, a canopy serves as an overhang to create shade.



Axis
South

Here, too, it is visible how all the spaces along the axis are interconnected. Additionally, it can be seen that on this side of the axis, the structure has less influence on the atmosphere of the space than on the north side. The library and adult education are located beneath the wooden structure in the high gable roof. This adult education focuses primarily on language instruction for people who do not speak English and has workspaces with a view of the park.



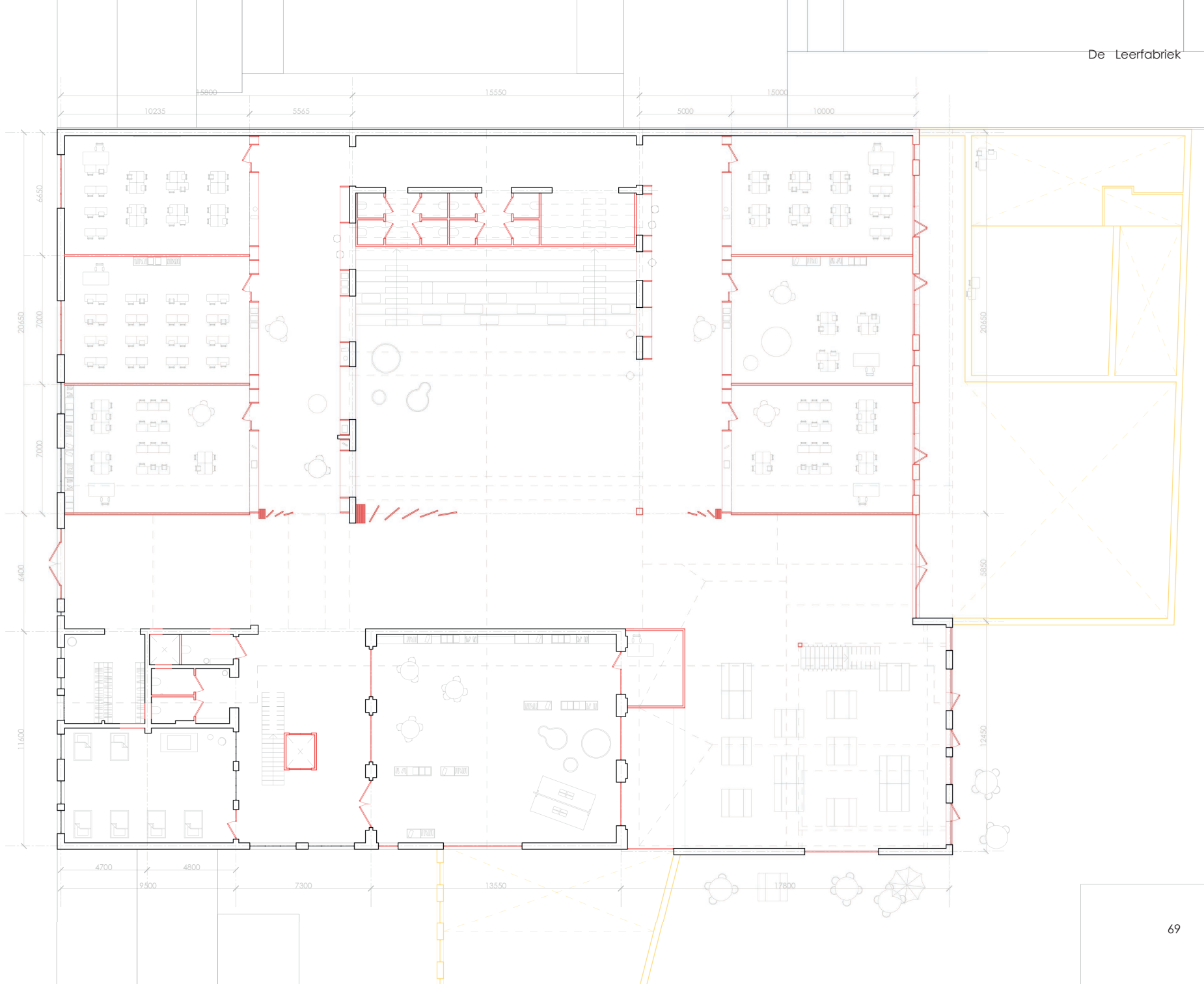
Parc de la Sennette

This is the facade facing Parc de la Sennette. An important part of the design process.



Parc de la Sennette

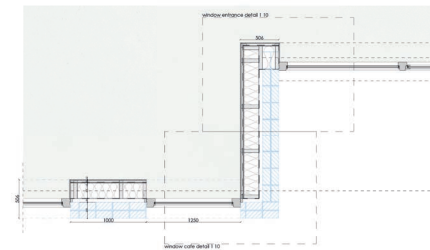
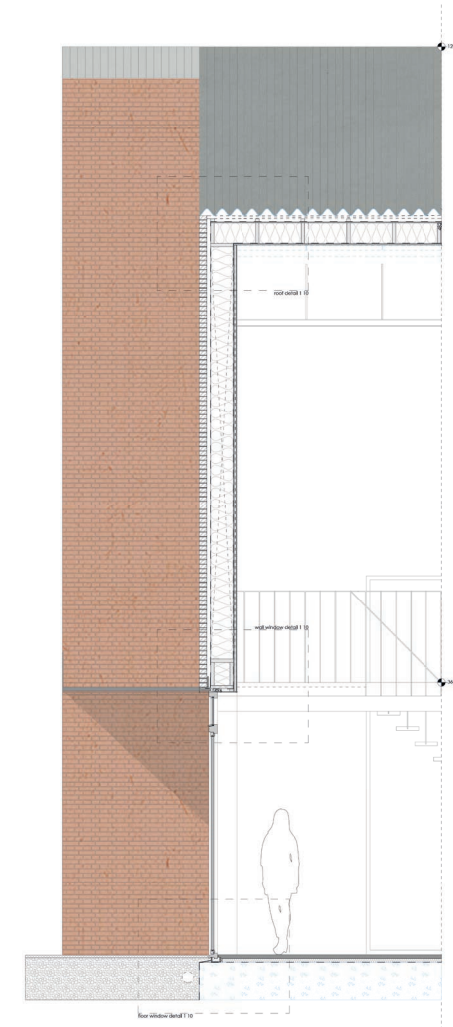
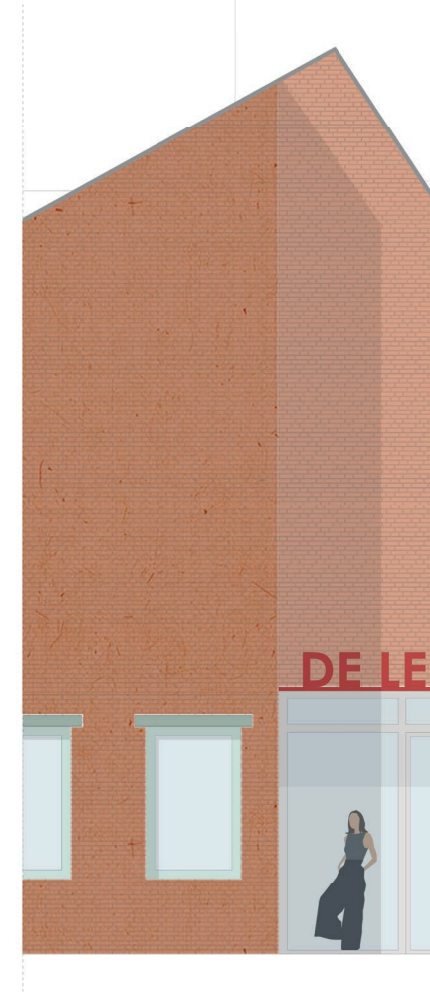
This plan, with yellow being what was removed, clearly shows that there was previously an extension on the east side of the building. This volume is being removed due to its condition, but primarily to enhance the pedestrian flow and safety of the park by creating a space that is as open as possible with many sightlines. However, the removal of this building does result in a noticeable setback in the east facade facing the park.





Construction | Parc de la Sennette
120

That is why this part of the facade has also been worked out on a more detailed scale. The elevation shows how the canopy sets back the facade, making the area next to the entrance more approachable by breaking up the vertical element. In combination with the large windows and French doors, this corner and the entrance are now more inviting.

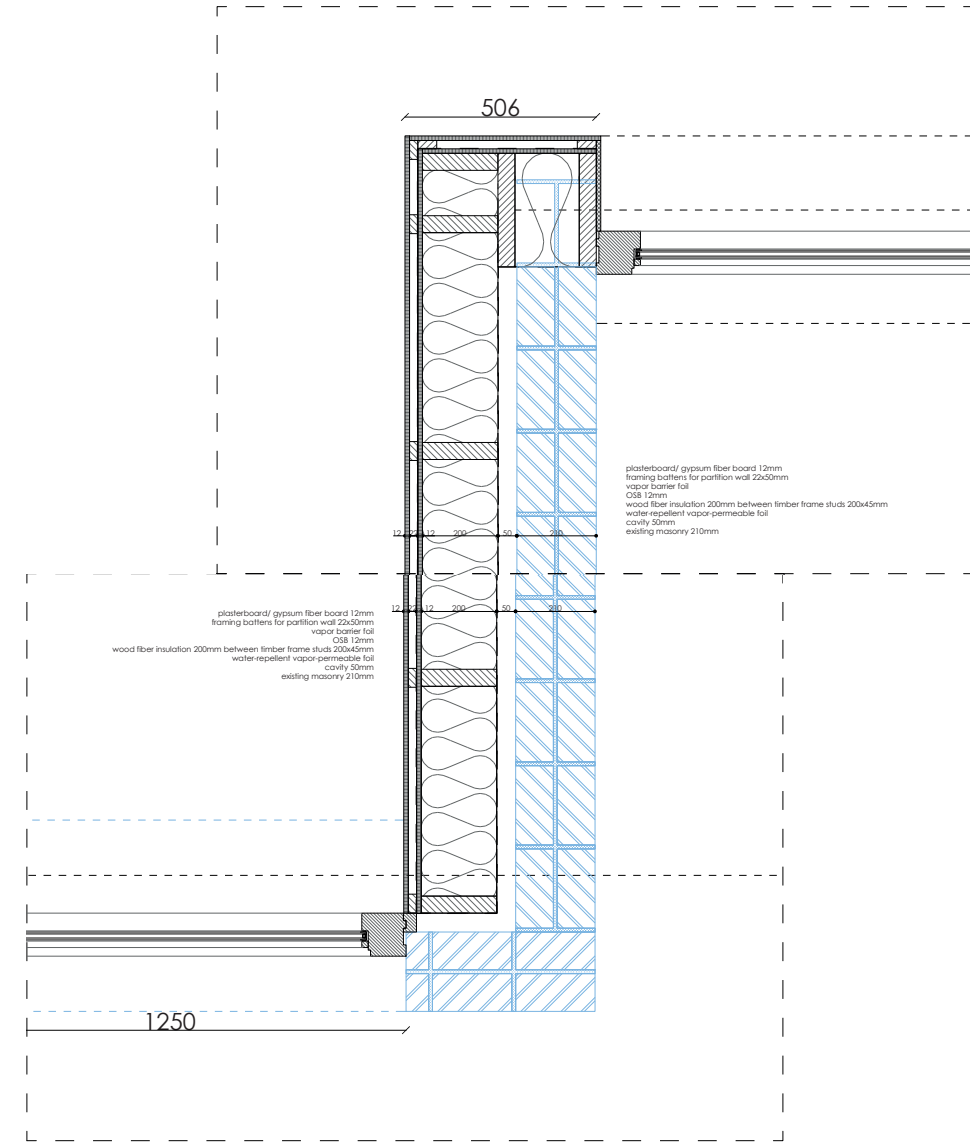


Construction I Parc de la Sennette
1 10 Horizontal

These horizontal section details show the corner locate between the café and the entrance where the façade is set back. The existing cross bond brickwork is shown in blue. On the inside of the brickwork, 200mm wood fibre insulation with a plater finish has been installed after the cavity.

At the café, the windows have been set forward up to the existing brickwork, giving the windows and doors an inviting appearance.

In the other detail we see the junction of the existing brickwork where the façade goes around the corner. Insulation has been applied around this corner right up to the window frame. In the horizontal direction, the insulation is thicker because in the new façade of the classrooms hempcrete was used rather than wood fibre insulation. Hempcrete has a lower thermal resistance, meaning it needs to be thicker, to match the thickness of the hempcrete wall, the isolation is 300mm thick. Here too, the windows have been placed up to the existing brickwork at the front so that the entrance is directly against the façade.

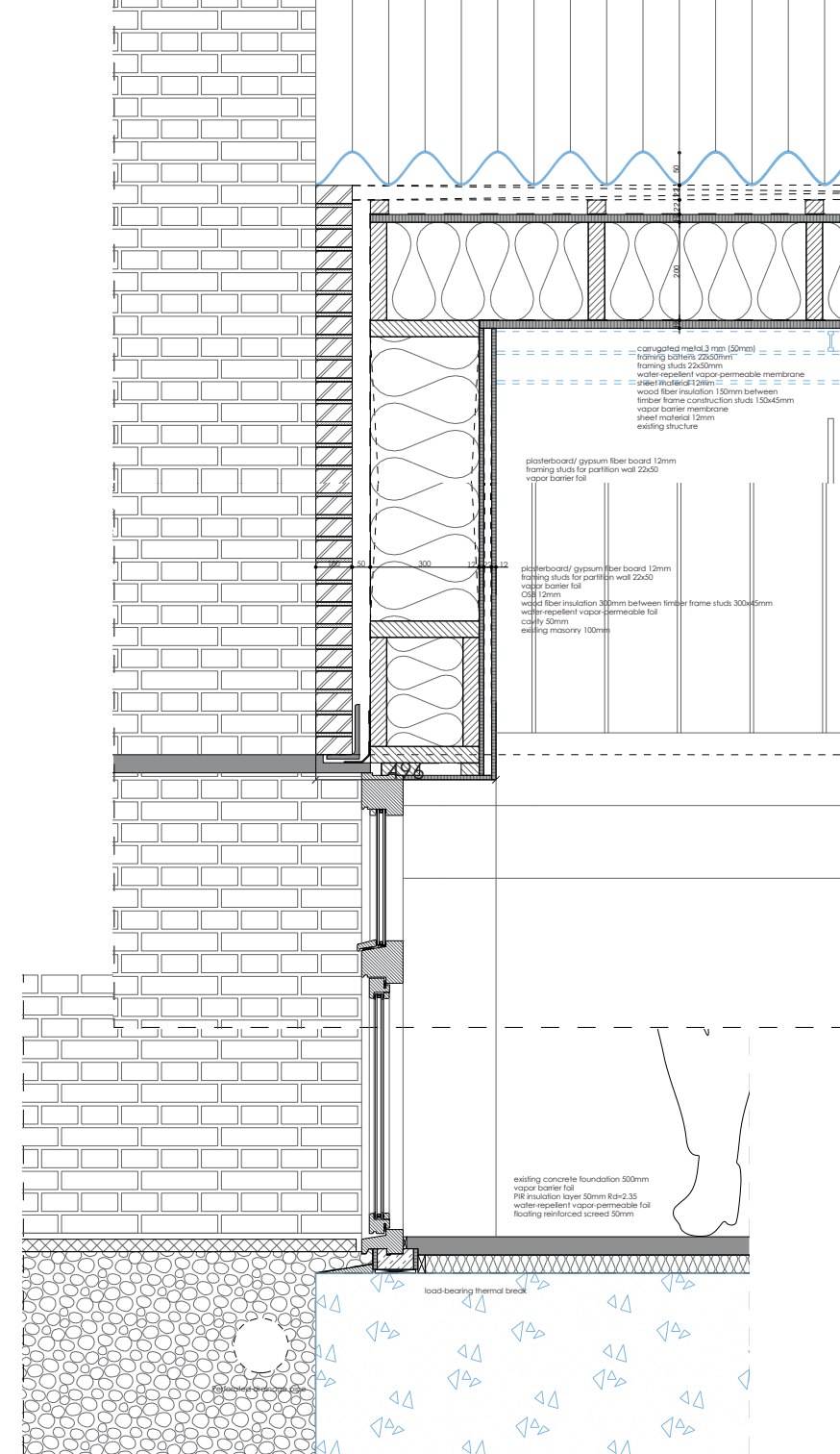


Construction I Parc de la Sennette
1 10 Vertical

This vertical section shows the entrance to the school. Due to the building's industrial history the assumption can be made that the foundation consists of cast-in-place concrete. A wight- and pressure-resistant insulation layer has been placed on the foundation, surmounted by a floating reinforced screed with an appearance in line with the building's industrial character.

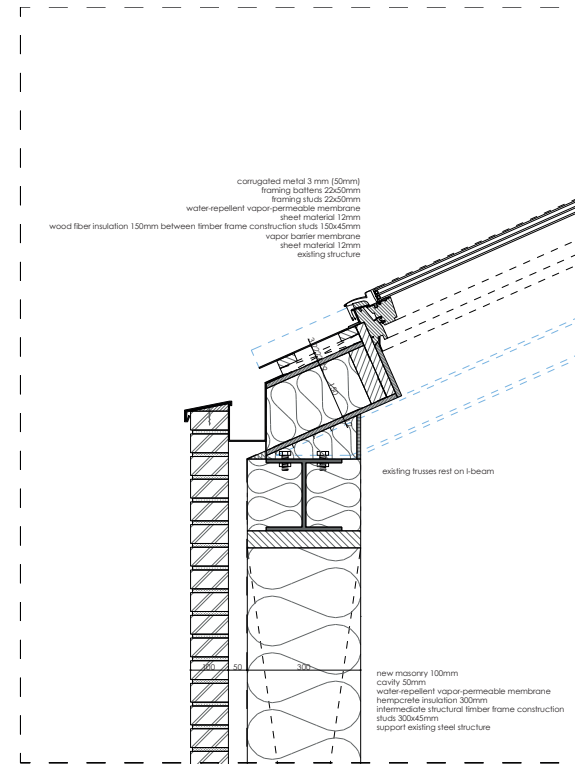
The weight of the wall above must be supported at the top of this façade opening. The detail shows a wooden beam supporting the timber frame insulation structure and the faced support for the masonry. This beam spans from the existing masonry wall to the new façade, allowing large, inviting windows and doors to be placed beneath the structure.

The roof has been placed on top of the existing steel structure, so the structure stays visible, given its importance to the identity of the building. An insulation package has been placed on top of this structure. For the top roofing layer the steel sheet material which currently lies directly on the steel structure will be used.



Construction I Parc de la Sennette
1 10 Additional Vertical

This final detail is located at the joint of the classroom roof where the existing Polonseau trusses meet the new façade. Since the construction of the now removed extension, the wall on which these trusses formerly rested has been replaced by I-columns directly beneath the trusses. With the reinstatement of a wall on that line, the trusses will not follow the same grid as the partition walls between the classrooms that adjoin the façade and the window within them. Therefore, the forces from the trusses must first be moved horizontally before being transferred downwards. Behind the brick front façade, beyond the cavity, is a timber frame construction with Hempcrete. Hempcrete is a self-supporting insulation material that requires not further internal finishing. The timber frame construction, between which the Hempcrete is placed, support a beam to which the existing truss construction can rest.



Parc de la Sennette

In this way, the design of the facade makes it an inviting part of the building and clearly indicates the location of the building's axis and entrance. On the left side, new openings have been created in the existing facade, with windows and doors that invite entry. Additionally, a terrace can be found on the south side. On the right side, where the classrooms are located, the window frames are set further back, and due to the canopy, the facade more inward-facing uninviting to passersby. The path running through the park leads you directly to the right place.



Function Cantine

This is where you enter the canteen, which is situated beneath the staggered shed and pitched roof, between which a window casts beautiful light onto the exterior wall. To make this skylight more visible and to make the size of the space less overwhelming, a mezzanine has been added.



Function Cafe

The space can also be used not only as a canteen for the school and adult education but as a café, so that the building is in use not only during the day but also in the evening, and can ensure the safety of the park through the presence of people in the evening.



Axis

The fact that the building is open in the evening also means that the Parc de la Sennette is still connected to the Heyvaert neighbourhood via the axis.



Function

Multi-use assembly

In addition to being used during the day by the daycare and primary school, the multi-use assembly can also be used in the evening by other users. In doing so, the Leerfabriek not only meets the need for a school but, through this repurposing, provides an added benefit for every resident and visitor of the Heyvaert district.



Reflection

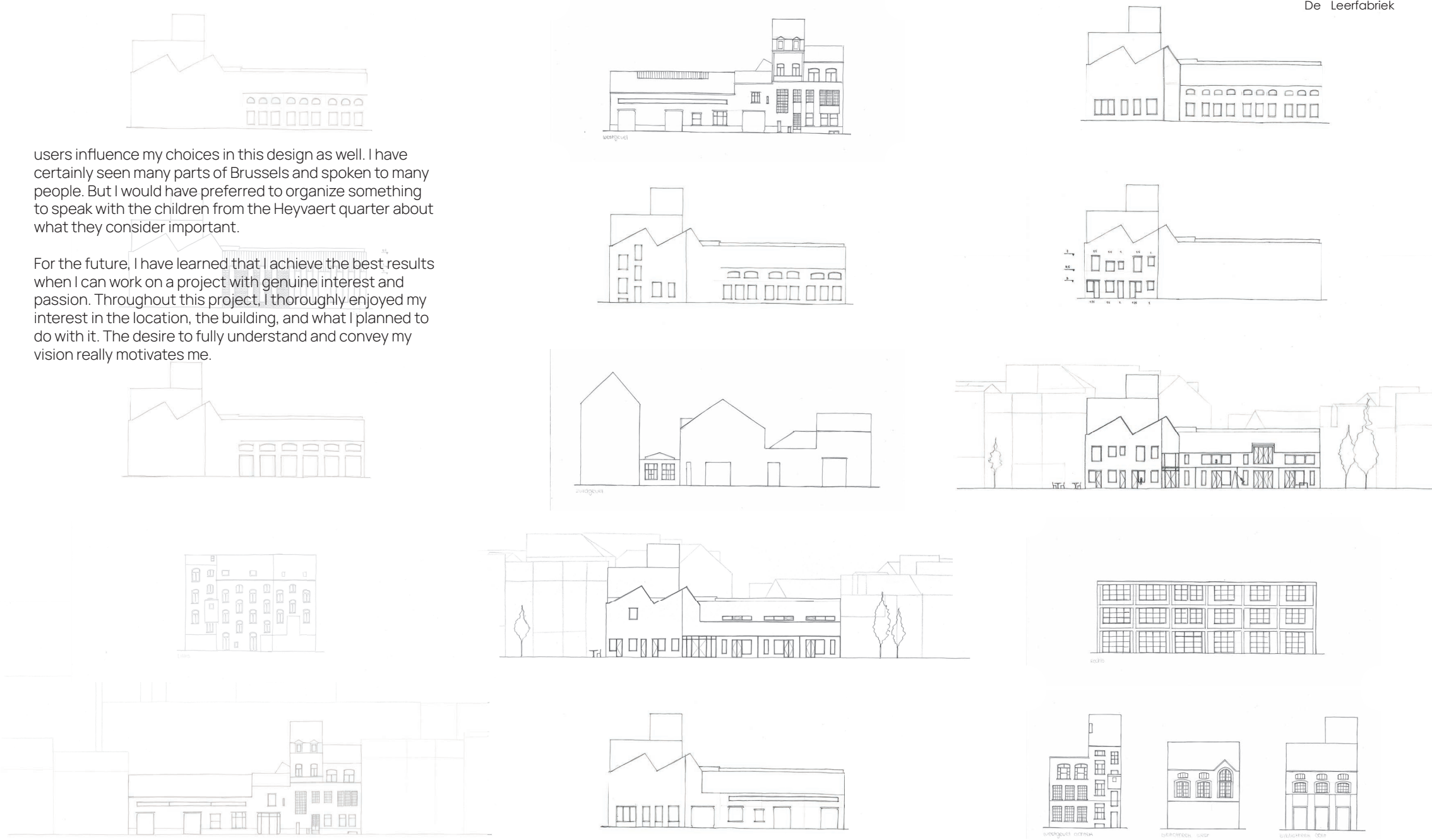
Looking back on the project, I also started thinking back to its initial phases. In the first few weeks, I did many site visits and fieldwork and spoke with many people. This also led to the creation of the leporello and the drawing of the facades, from which I learned a great deal. By visiting Brussels and the archive and investigating the site and the urban context, I conducted research in a way I had not experienced before. Consequently, the initial design choices following these first weeks of research went quite well. This was because I had examined the situation and buildings to such an extent that integrating functions felt like a natural outcome.

It was the smaller-scale aspects later in the process that I struggled with more. The facade facing the Kleine Zenne park is an important aspect of the building into which I invested a lot of effort. I started with an analysis of the existing facades, such as the one on Rue de la Bougie and the facades that you rarely see due to the many additions. Then I started making a lot of sketched and a model all to find the right design.

Looking back now, I can view my facade design (process) in two ways. Architecturally, I should have designed more from the building's characteristic elements. Not necessarily imitating an existing facade, but from the rhythm of the walls, structure, and roofs. And by embracing the awkwardness of the facade, I could have created a freer design. But perhaps even more importantly, I realized that at the beginning of my project, the design choices went much more smoothly because they were much more informed by the experiences I had gained in Brussels and the research I had put into the location. My graduation project also began with the intention, following the experiences in Antwerp, to let the future

users influence my choices in this design as well. I have certainly seen many parts of Brussels and spoken to many people. But I would have preferred to organize something to speak with the children from the Heyvaert quarter about what they consider important.

For the future, I have learned that I achieve the best results when I can work on a project with genuine interest and passion. Throughout this project, I thoroughly enjoyed my interest in the location, the building, and what I planned to do with it. The desire to fully understand and convey my vision really motivates me.



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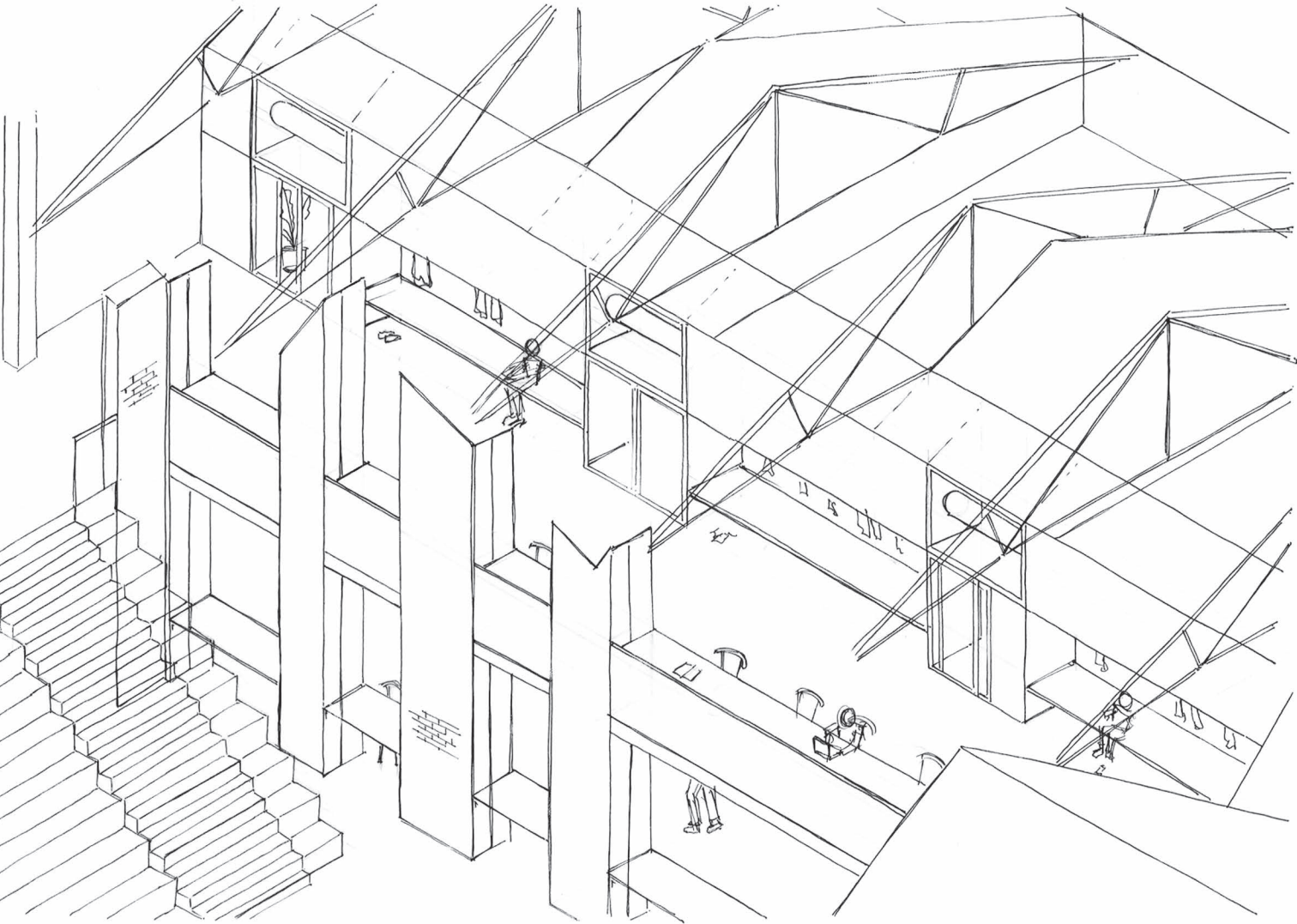
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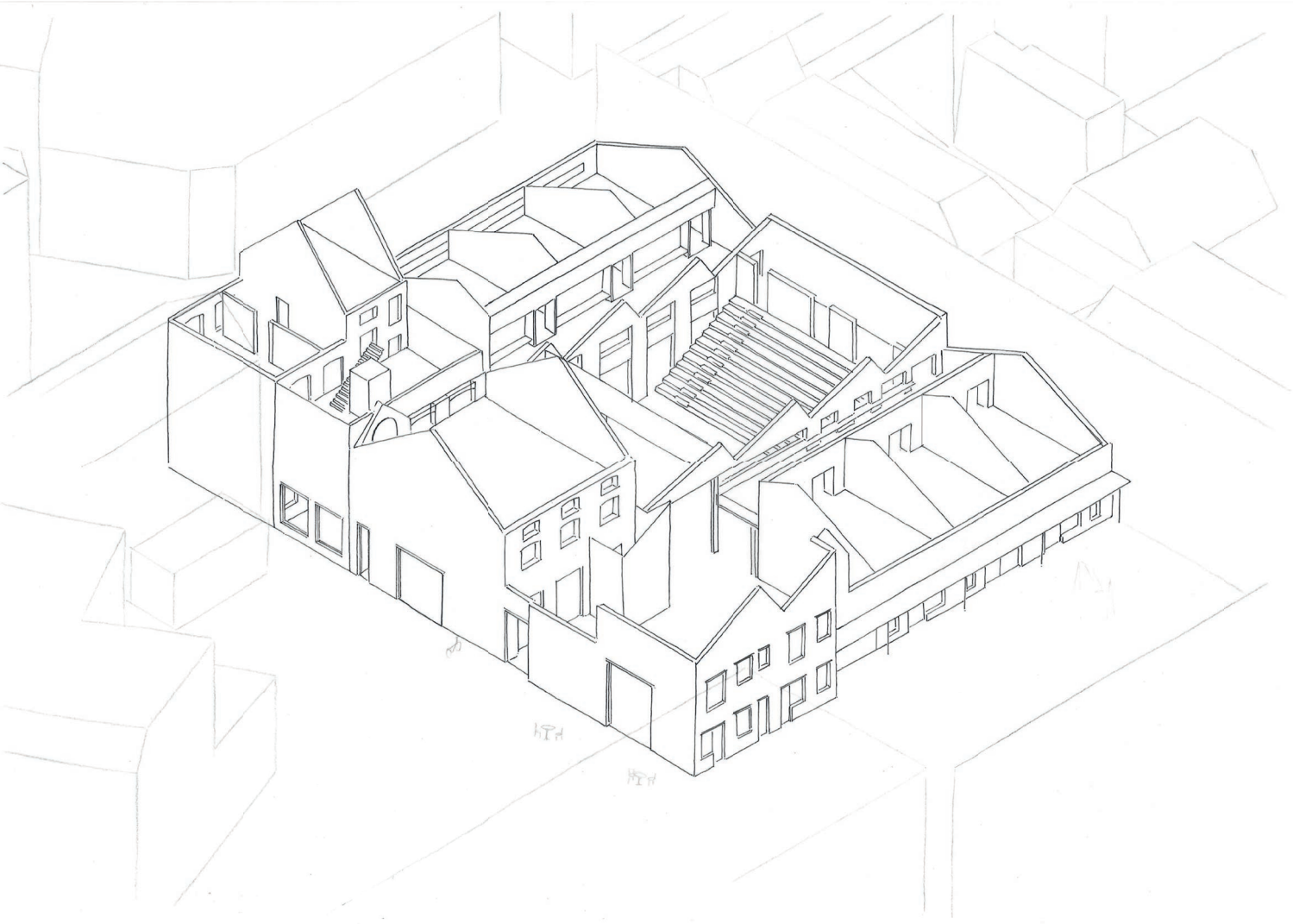
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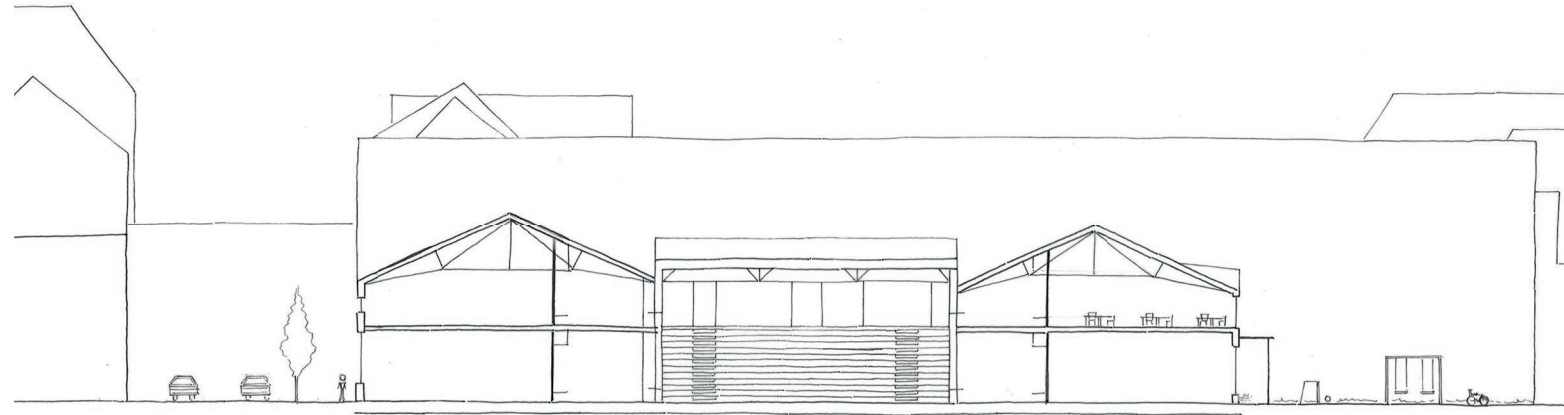


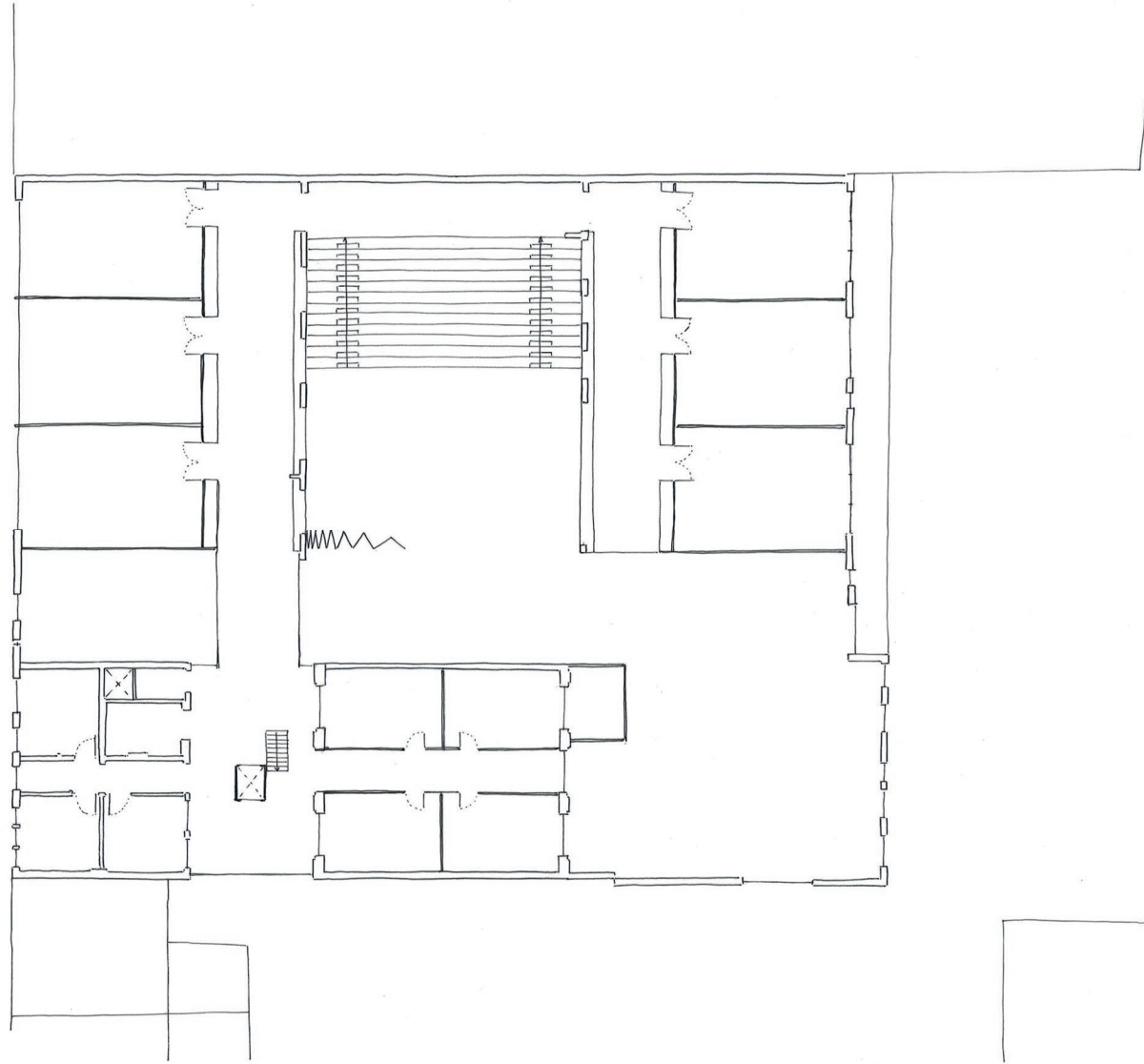
Appendix











QX16 south



