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Revitalisation of the Crnomerec brick factory

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KURZFASSUNG:

Die alte Ziegelfabrik im Zagreber Stadtteil Črnomerec kann auf eine lange Geschichte des Erfolgs und des Untergangs zurückblicken. Es begann 1885 als Familienunternehmen, wuchs zur erfolgreichsten Ziegelei in Südosteuropa heran, aber der Erfolg dauerte nur bis zum 2. Weltkrieg. Seitdem wechselte die Fabrik viele Besitzer, so dass sie 2011 letzten Endes die Tür für immer schließen musste. Was ehemals eine florierende Ziegelfabrik war, ist heute nichts anderes mehr als ein Lagerhaus und eine kleine Turnhalle. Aufgrund seiner fantastischen Lage, direkt neben dem Hauptknotenpunkt des öffentlichen Verkehrs im Westen von Zagreb, seiner Industriearchitektur mit zwei hohen, die Landschaft dominierenden Schornsteinen und seinem Status als "Brownfield Location" sehnt er sich nach einer Revitalisierung. Das Ziel dieser Arbeit ist mein Vorschlag, wie sie gelöst werden sollte, basierend auf der Analyse des Gebiets, seiner Bedürfnisse und verschiedener Beispiele aus Europa.

ABSTRACT:

The old brick factory in Zagreb's district Črnomerec has had a long history of success and downfall. It started off as a family business in 1885., grew into the most successful brick factory in South-East Europe but the success lasted only until the 2nd World War. Since then, the factory changed many owners, with finally having its door shut for good in 2011. What used to be a prosperous brick factory is now nothing more than a storehouse and a small gym. Considering its fantastic location, right next to the main public transport knot in the West of Zagreb, its industrial architecture with two tall chimneys that dominate the landscape and its status as a "brownfield location" it yearns for a revitalisation. The aim of this thesis is my proposition how it should be resolved based on the analysis of the area, its needs and various examples from Europe.

Thank you

Firstly I would like to thank my mentor Ao. Univ. Prof. Dipl.-Ing. Dr.-Ing. Dörte Kuhlmann for all her guidance and patience.

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1. INTRODUCTION

Motivation

When people think of work architects do, they usually immediately think of the new buildings, forgetting what job of an architect also entails, which is to repurpose that what is damaged, unused or unnecessary. The cities across the globe are swarming with these places, most common among them being old industrial sites.

The low cost of the mass production of the goods that the Asian countries like China, Bangladesh, India, etc. offer represents the unbeatable competition with which European countries cannot compete. When the cost of production, shipping and customs of Asian countries is still lower than just producing it in a European country, it begs the question if keeping the factories in business is still monetary profitable. These places have lost their purpose.

Although in western countries the repurposing potential of these locations is fairly well used, in the developing countries this is not yet the case. The capital of Croatia, Zagreb, used to be one of, if not the most important industrial centre in former Yugoslavia, which left it with numerous empty and dilapidated factories. I wanted to concentrate on one site like this which for many years I passed by on a daily basis and challenge myself to make the best proposition for it.

Methodology of work

In order to get to the best solution for the problem I am focusing on in this thesis, it is necessary first to get familiar with it. Its Macro and Micro location, history and people involved with it are all important to get the full picture.

The research materials such as old plans and documents were obtained from Croatian State Archives, where I had the chance to see and photograph very first plans and permit for the brick factory, from the National Archives in Zagreb, where I got the current plans, Zagreb City Office for Cadastre and Geodetic Affairs and State Geodetic Administration Zagreb, which provided me with the historical and current master plan of the area. The analog plans were digitalised by me.

The information about Zagreb and Črnomerec I got from the official websites of the City of Zagreb, various books from the National Library in Zagreb as well as other sources on the internet, e.g. articles and history blogs, which can all be found in the bibliography chapter of this thesis.

Here I would like to also thank Mr. Maul from hobby.a architecture office (Gusswerk and Panzerhalle, Salzburg), who I interviewed to get more familiar with the topic of repurpose which helped me greatly with deciding in which direction I wanted to go.

2. GEOGRAPHY AND HISTORY

Fig. 1. Croatia in Europe
Fig. 2. Zagreb - districts

Zagreb

Country
Republic of Croatia

County
City of Zagreb

Area
city proper 641km2
metro 3,719km2

Elevation
158m

Population
city proper 820,000 (2018 estimate)
metro 1,228,941

Population density
city proper 1,280/km2
metro 330/km2

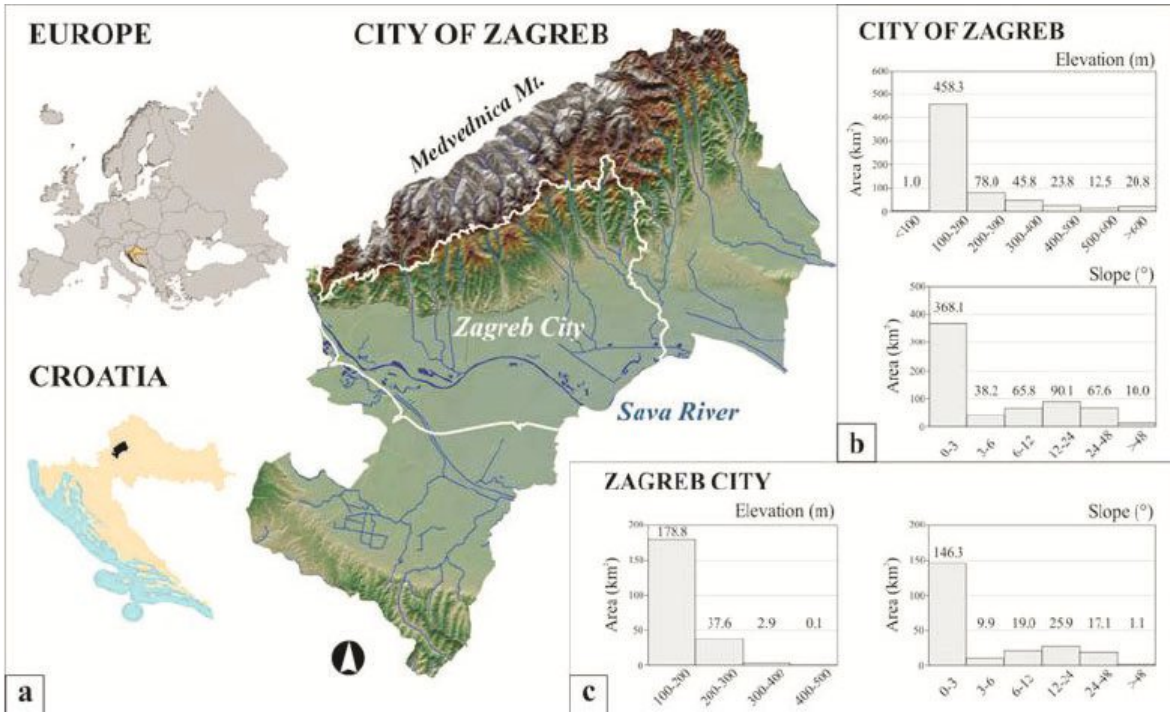


Fig. 3. Zagreb - Administrative units (a) Geographic position; (b) Histograms showing the elevation and slope angle computed from DEM of the City of Zagreb; (c) Histograms showing the elevation and slope angle computed from DEM of the Zagreb City.

Geography and demographics of Zagreb

Zagreb, the capital of Republic of Croatia, is located in the Northwest of the country, beneath the southern slopes of the Medvednica mountain and only around 10 kilometers east of the border with Republic of Slovenia. The river Sava flows through the city and splits it into Zagreb (north of Sava) and Novi Zagreb (New Zagreb, south of the river). Population wise, the city of Zagreb is with 820,000 inhabitants by far the most populated city in Croatia, with the highest GDP per capita in the country[1]. It is the seat of the central government, administrative bodies, and almost all government ministries.[2] Zagreb has special status as a Croatian administrative division and is a consolidated city-county which is administratively subdivided into 17 city districts.[3]

1 www1.zagreb.hr/zgstat/osnovni_stat_podaci.html
2 stav.cenzura.hr/republika-grad-zagreb/
3 www.zgportal.com/o-zagrebu/

History of Zagreb

What is today considered the historical centre of Zagreb used to be two separate settlements, Gradec and Kaptol, which developed independently on two neighbouring hills, separated with Medveščak creek. Gradec was the city of common people and Kaptol of the clergy. The first recorded mention of the name Zagreb was in the 1094., when Ladislaus I of Hungary founded the Zagreb diocese.

During the Ottoman raid, between 14th and 18th century, Zagreb was an important border. It was fortified with massive defensive walls, many of which still stand. In the 17th and 18th century Zagreb went through Baroque renewal. Churches and monasteries took place of what once were wooden houses.

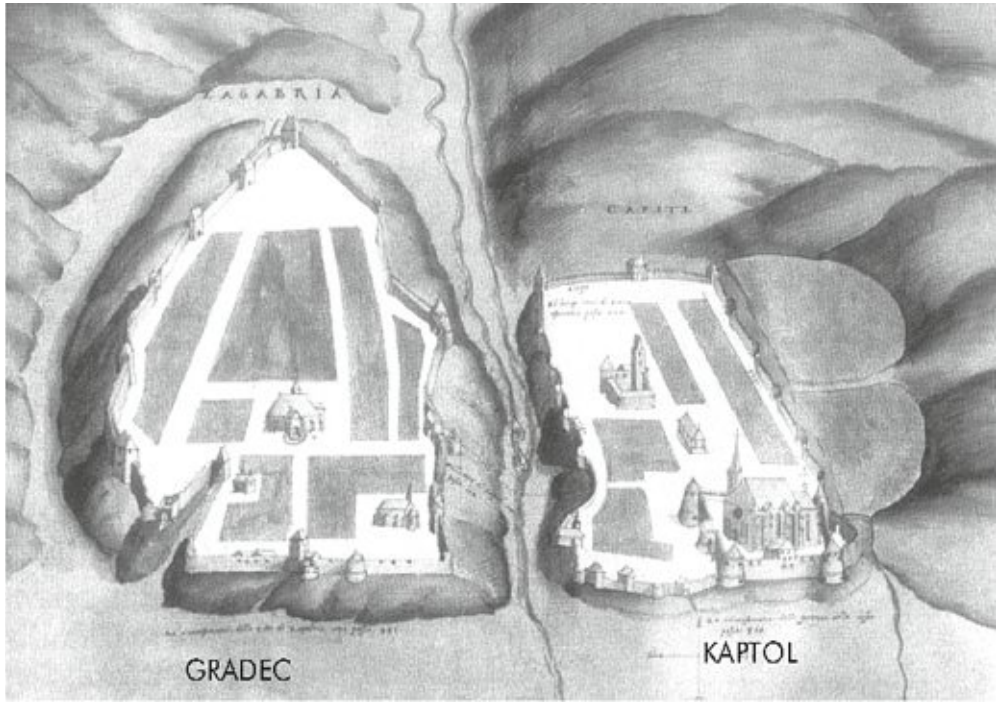


Fig. 4. Gradec and Kaptol

Fig. 5. Zagreb area in 1822

The city gains wealth rapidly and many noblemen, king's officials and wealthy merchants from Austro-Hungarian Empire, as well as from the other parts of Europe came to Zagreb and it goes through cultural rebirth.

The population was multiplied tenfold in the 19th century. In 1880. the earthquake destroyed huge area of the city, which were then carefully planned and rebuilt with representative residential and public buildings, public spaces and transport. At the turn of the century industry and commerce were an important part of the development of the city.

20th century brought a lot of changes for the city, with almost every decade bringing something different to the table – politically, economically and culturally. Industry thrived and became essential. The city expanded and finally crossed the Sava river.[4]

4 Infozagreb.hr

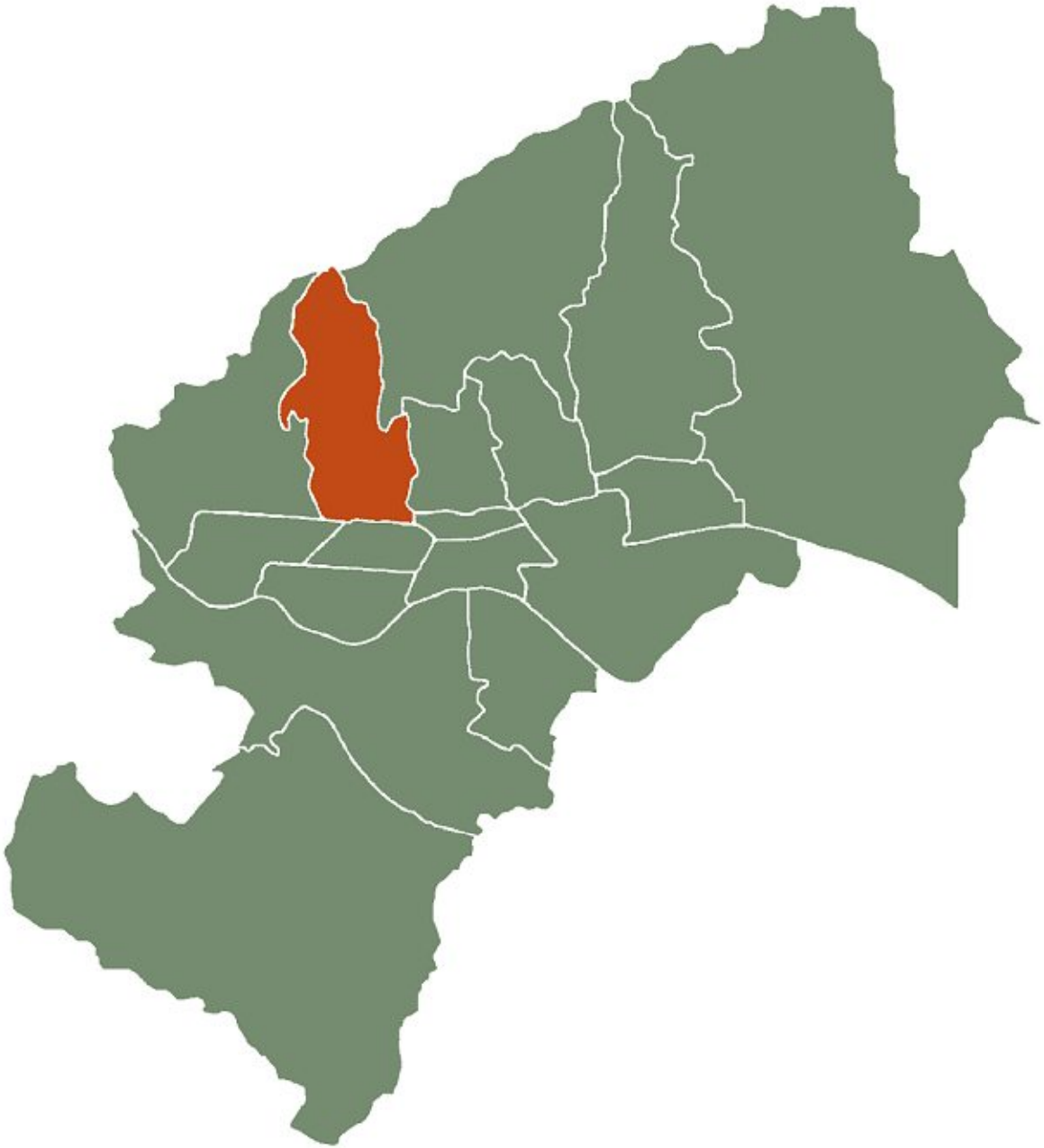


Fig. 6. Zagreb - Črnomerec district

Črnomerec

Area
24,33 km2

Population
38,546 (2011.)

Population density
1593,4/ km2

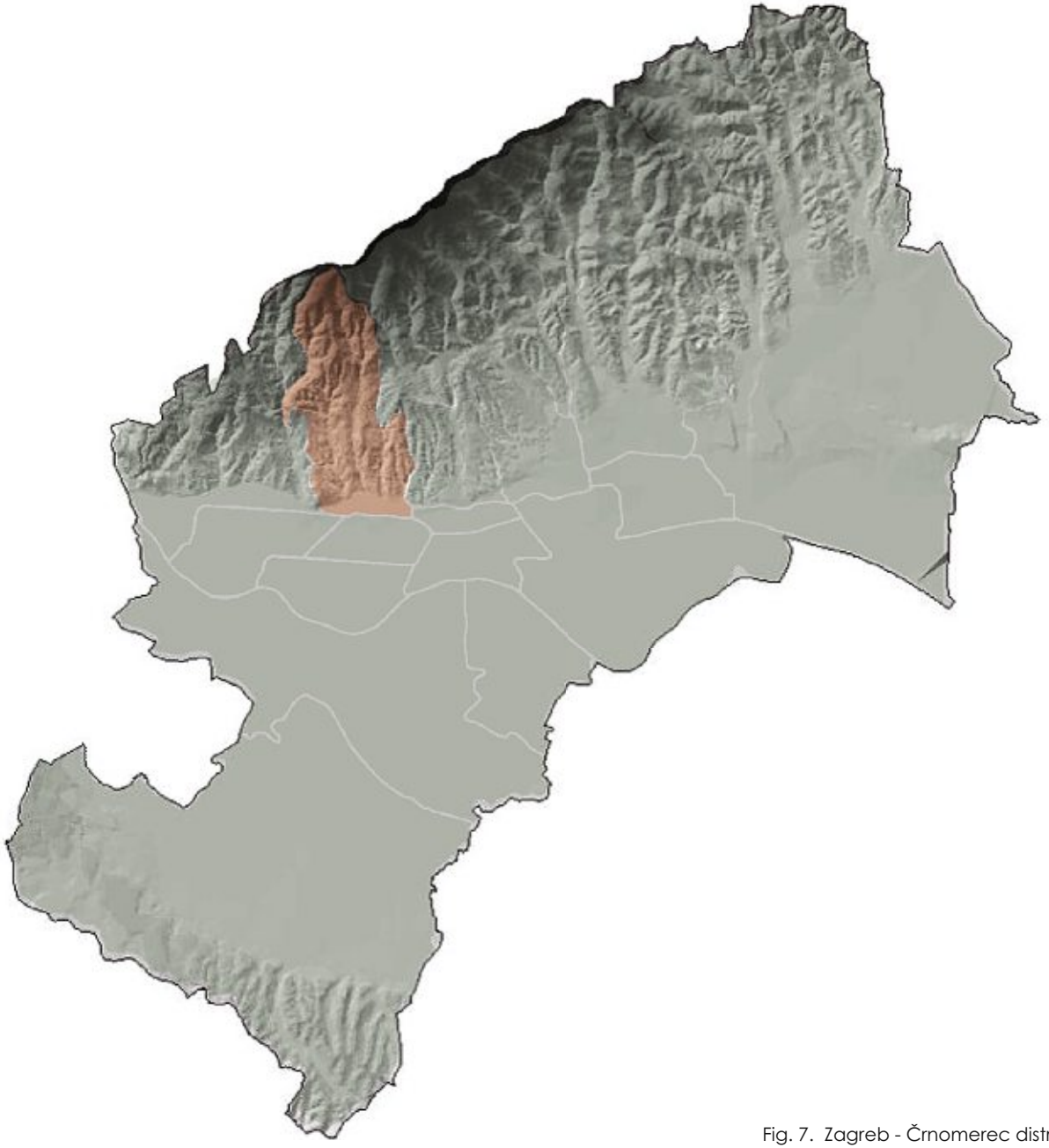


Fig. 7. Zagreb - Črnomerec district - topographic map

Geography and Infrastructure of Črnomerec

City district Črnomerec is located in the north-western part of Zagreb and consists of 17 neighbourhoods. It is partially located on the hills of the Medvednica mountain and partially on a plain. The streams Črnomerec, Kustošak, Kuniščak and Jelenovac flow through it. [5]

It is the largest and most important public transport hub in the west of Zagreb. It is a crucial place for the daily migration of the citizens as the Črnomerec terminal is the last stop of three tramway lines (2, 6, 11), 20 city buses and many other buses[6] that connect the suburbs with Zagreb as well as a few taxi spots. Ilica, the main street of Zagreb, goes through the district and connects it to the city centre to the east and highway to the west.

5 en.wikipedia.org/wiki/%C4%8Crnomerec#cite_note-4

6 www.zet.hr/tramvajski-prijevoz/dnevne-linije/249

History of Črnomerec

First archaeological findings on this location are assumed to be 35,000 years old, from the Stone Age. There is also proof of a settlement from the Roman times, as there used to be a road there that the Romans made which connected the Medvednica mountain with the Sava river.[7] In the Middle Ages the settlement was tightly connected to the Medvedgrad fortress which is located on one of the hills of Medvednica. Črnomerec was first mentioned as "Village Černomerci near Chapel of Holy Spirit" in the 14th century as one of the settlements of the Gradec' serfs.[8] In the southwest of Črnomerec is Grmoščica, a muddy hill, which even during those times was mentioned to be the place where bricks were made. Črnomerec stream, which flows through Črnomerec, used to be the western border of Zagreb city area, and according to urban regulation plans from 1865, 1887 and 1919 Črnomerec municipality was meant to serve as industrial and army part of the city. Therefore, number of factories and army barracks were built there, together with substandard suburban housing.[9] Črnomerec became one of the districts of city of Zagreb in 1967 and in 1974 it joined with a few other neighbourhoods which then made the borders of today's Črnomerec.

7 www.zagreb.hr/iz-povijesti/13618

8 Branimir Špoljarić: Zagreb od vugla do vugla, http://www.vjesnik.hr/pdf/1999%5C08%5C26%5C13A13.PDF

9 Knežević, Snješka (1997). "Povijest područja bivše Rudolfove vojarne i Trga Francuske republike u Zagrebu". Godišnjak zaštite spomenika kulture Hrvatske 22/1996 - 23/1997 (in Croatian). Zagreb: 61. ISSN 0350-2589

Črnomerec' identity – Industry and Military

As aforementioned, Črnomerec has been considered a worker's district for centuries. In the second half of the 19th century, the construction of the first railway station (today West Railway Station) in Zagreb begins and with it the economy, specifically industry, is booming. One of the first factories were producing something what has been produced there for centuries – bricks.

Before the end of the 19th century there were two brickworks, in Ilica street 157 (1870.) and 288 (1885.). Shortly after, other companies chose Črnomerec as a location for their factories. Textile, chemical, paper, wood and metal processing plants, but also tobacco and food processing industry all established their facilities in Črnomerec. Some of them are still running today, e.g. Pliva (pharmaceuticals), Franck (coffee, tea and snacks factory), Zagreb Brewery (alcoholic beverages) however, most of the others have shut their doors for good.

Fig. 8. (top left) Franck factory
Fig. 9. (top right) Pliva - research and development facility
Fig. 10. (left) Zagreb brewery

What further helped to develop the district was establishment of the hospitals and military facilities. Rudolph's barracks, named after Rudolf, Crown Prince of Austria (who even came to Zagreb to start the construction works)[10] was a military complex made up of 16 buildings. Most have been demolished in 1978 and 4 of them repurposed, now holding Ministry of Croatian Ministry of Environmental Protection, Physical Planning and Construction, Tourism institute, Zagreb city planning department and Črnomerec district council.[11]

Industry and military have certainly left a huge mark on Črnomerec. It influenced its identity, the people living there and of course, architecture. The Rudolph's barracks are now considered to be the monument of architecture and as such are under protection of the City. Unfortunately, industrial facilities haven't caught the attention of the conservators yet and are either demolished or in ruins, with just a few having their potential recognised enough to be repurposed.

Adolf Müller was born in Zagreb in 1857. to a poor Jewish

10 www.vjesnik.hr/pdf/2003/06/10/20A20.PDF
11 www.vecernji.hr/zagreb/rudolfova-vojarna-opisana-je-i-u-zastavama-1095891

Fig. 11. (top) Rudolph's barracks at the start of the 20th century
Fig. 12. (bottom) Rudolph's barracks - one of the preserved buildings

Fig. 13. Adolf Müller

The Müller Family

family with many children.[12] Although ambitious and hardworking he couldn't attend the university due to the unstable financial situation of his family. So, after elementary school he enrolled in a craft school where he received education in carpentry and coopery (barrel-making). After he got married in 1882. to Fanika Müllhofer he opened a grocery store and a restaurant in Josipdol, which was so successful, that in only a year they earned enough money to return to Zagreb, where the young entrepreneur bought the store "Zlatni zvon" in Ilica street 112. Here he and his wife had two sons, Alfred (1888.) and Leo (1894.). The store was extremely profitable which only motivated him to further invest into new businesses. Adolf soon started to trade with coal and bricks, even opened a few mines and brick factories, the most famous and well-known being the one in Črnomerec (under the name of the family – "Müller").

12 Snješka Knežević, Aleksander Laslo (2011). Židovski Zagreb. Zagreb: AGM, Židovska općina Zagreb (p. 54)

Being so successful and earning a huge wealth enabled him to become one of the most renowned philanthropists and benefactors of culture in Zagreb. He had built a school, multiple residential blocks and cinemas in the centre of the city, one of which was the cinema Balkan (today Kino Europa), at the time the most luxurious cinema in the Balkans[13] and had plans to build a Jewish hospital, but passed away before achieving that goal.[14]

Adolf died in 1932. as one of the richest and most respectable businessmen in Zagreb, thousands of people attended his funeral. He left his business to his two sons – the older son Alfred inherited the cinema Balkan together with the residential block surrounding it, and the younger son Leo inherited the brick factory in Črnomerec and another residential block where the family lived. It has been said for the two brothers that "they owned the whole city".[15]

Alfred Müller finished College of Technology in Vienna (Technische Hochschule Wien, today Vienna University of Technology) and dedicated himself to the cinema. Leo Müller invested in the industrial orcharding on the hill above the brick factory, which until this day carries the name of the family (Müllerov brijeg – Müller's hill). The factory itself was the most successful brick producer in the whole Balkans and one of the most successful ones in general.

13 www.kinoeuropa.hr/index.php?page=b0&lang=hr
14 http://www.zoz.hr/files/08_Milerovi_Traganja%20za%20pro-slim.pdf
15 Lazanin, B.: Povijest obitelji Müller, Jutarnji list 20. 4. 2008 (http://www.jutarnji.hr/m-llerovi---povijest-jedne-zagrebacke-obitelji/188361/)

Unfortunately, the family's prosperity only lasted for two generations. Even though in 1938. the family converted to Catholicism and changed their name to Miler, because of their Jewish heritage they were captured by the fascists and killed in concentration camps. Alfred was captured by Gestapo in the south of France (Vichy), taken to Dachau and died there in 1945. Leo and his family moved to London, but when he came back to Croatia to pick up his son, he was captured by Ustaše and brought to Jasenovac where he died in November of 1941.[16] [17]Their wives and children survived. Most of them left never to return to Zagreb, but the ones that did upon the end of the war found out that all of their properties were seized by the Communist Party of SFR

16 Dušan Miljuš https://www.jutarnji.hr/vijesti/zagreb/duga-povijest-muellerova-brijega-od-vocnjaka-i-ciglane-do-projekta-luksuznih-vila-15052635

17 http://www.zoz.hr/files/08_Milerovi_Traganja%20za%20proslim.pdf

The factory's influence and fate

Yugoslavia (and by the Ustaše before them). They sought after the seized properties which Alfred's son regained in 1991 and Leo's wife never managed to reclaim.

The factory was founded in 1885. and it produced industrial brick of the normal format. After he inherited it from his father Adolf, Leo Müller led the factory in a way that could be explained as "capitalism with a human face".[18] He was popular among his workers as he took care of them and their wellbeing, expanded the facilities, built a kitchen where workers of three shifts had multiple hot meals a day, organised evening schools and extracurricular activities like orchestra. Although Jewish himself, Leo organised catholic church masses for the workers of the factory, ordered a chapel to be built and even helped to build a church nearby.

The downfall started in 1938. due to the anti-Semitic climate in the country caused by the Nazis, although the production continued even after the World War II and the Croatian War of Independence in the 1990s. During SFR Yugoslavia the factory wasn't as successful as before the War and many of the facilities of the complex were demolished or modified, with plans to urbanize it together with the Müller's hill above it (which never came to be). [19]

18 Lazanin, B.: Povijest obitelji Müller, Jutarnji list 20. 4. 2008 (http://www.jutarnji.hr/m-llerovi---povijest-jedne-zagrebacke-obitelji/188361/)

19 http://www.zoz.hr/files/08_Milerovi_Traganja%20za%20pro-slim.pdf

The bricks were being produced there until the privatisation in Croatia (1990s) brought it to standstill, when it was bought by the entrepreneur Ivica Todorić who promised to repurpose the whole area. Not long after, the property changed many hands, many promises for the repurpose were made (the last one was an architectural – urbanistic competition in 2010.) but to this day it remains abandoned and used only as a storage and a small gym.

Fig. 14. (top) Brick factory Crnomerec in the 1970'
Fig. 15. (bottom) Brrick factory Crnomerec and tram and bus terminal

Areal view over the years

1968

2009

2012

2018

Fig. 16-19. Area of the Crnomerec factory throught the years

3. BROWNFIELD LOCATION

Greenfield vs Brownfield location

According to Laidler's (et al., 2002) definition, Greenfield locations are areas previously undeveloped and therefore undisturbed with a predominantly consistent subsurface.[20] They are locations which when compared to Brownfield locations are generally more preferred sites when it comes to investment interest.

There is no consensus on a precise definition of the Brownfield location, but the most common definitions are:[21]

- Sites which have been affected by the former uses of the site and surrounding land; are derelict or underused; have real or perceived contamination problems; are located mainly or partly in developed urban areas; and require intervention to bring them back to beneficial use, also known as the CABERNET definition[22]
- Abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination[23]
- Abandoned or underutilised property where expansion or redevelopment is complicated by either real or perceived

20 Laidler, Douglas W., Andrew J. Bryce and Philip Wilbourn, 2002, Brownfields – Managing the Development of Previously Developed Land – A Client's Guide, London: CIRIA.

21 Đokić I.,Sumpor M., Brownfield Redevelopment Issues in Croatia, Privredna kretanja i ekonomska politika 123 / 2010.

22 Land Quality Management Group, 2007, "CABERNET Report, 2007", Nottingham: University of Nottingham

23 United States Environmental Protection Agency, 2001, "Final Report", Washington DC: US EPA

environmental contamination. This description applies to a wide variety of sites including, but not limited to, industrial properties, old gas stations, vacant warehouses, former dry cleaning establishments, abandoned residential buildings which potentially could contain lead paint or asbestos and sites that contain petroleum products as well as mine scarred land.[24]

Although definitions of what constitutes a Brownfield site vary, policy approaches to bring them back into beneficial use are being developed and implemented across Europe. EU and national policy are shifting to promoting regeneration of derelict and underused sites.[25] The social and economic impacts of land being abandoned in an unusable condition, whether with or without environmental degradation, is being felt throughout the EU. While Greenfields offer the luxuries of a "tabula rasa", a clean slate, where the monetary investments before the begin of construction are frequently significantly lower than with the Brownfields, they shouldn't be thought of as the only options for urban development. Especially if they are not in abundance in a certain locality or are in the periphery of the area. It ought to be of interest of the local authorities as well as of the general public to keep the Greenfield areas intact or with the minimal construction influence, as they are often poorly connected with the public transport (if on the outskirts) or are one of the rare green areas of the city.

24 United States Conference of Mayors, 2008, National Report on Brownfields Redevelopment, Volume VII, Recycling America's Land, Washington, DC: United States Conference of Mayors & US EPA

25 www.eugris.info/FurtherDescription.asp?e=93&Ca=1&Cy=9&T=Brownfields

Brownfield locations in Zagreb

As aforementioned, after the economic transition period and the war in the 1990's, many of the factories and large plant have been shut down. Blame for that can be put on many factors, among others the economy, but probably the most important one being the poor management.

Brownfield locations today stand unused, deteriorating more each day and polluting both the environment and visual impact of the city, especially considering that many of them are situated in the inner and most frequented parts of the city, covering enormous surfaces. Occupied by squatters, heavy drug users and others doing various illegal activities, they are considered as dangerous places which are to be avoided by the passersby. This leads to another issue – it is hindering the further development of that urban region, as no one wants to live next to a dangerous and potentially hazardous area, despite having excellent public transportation and being relatively close to the centre. Investors, whether the Government, the City or private, instead of repurposing and using these locations for uses such as housing, offices, shopping centres, public spaces, etc., they are left untouched and instead new buildings are being built on the edges of the city, where there is no public transport, pushing the city limits further but leaving these "holes" empty.

Fig. 20. Brownfield locations in Zagreb

Decades have passed and close to nothing has changed. Abandoned factories are only talked about in the election period, often being the "main selling point" by the politicians, who promise to revitalise them, but shortly afterwards never mentioned again until it is time for the next elections. Many historians and architects judge this behavior of purposefully neglecting Brownfield locations, many of which fall under the category of protected architectural monuments.

Luckily, there have been sings of improvement. After joining the EU in 2013, Croatia has the access to the EU funds for exactly this purpose – reviving the Brownfield locations. The urban agglomeration of the City of Zagreb covers 11 cities, 19 municipalities and two counties. In December 2017, the City Office for Strategic Planning and Development of the City of Zagreb drafted the Strategy for the Development of the Urban Agglomeration of Zagreb until 2020. The document lists 37 brownfield site revitalization projects throughout the agglomeration. Encouraged by this, new investors are getting interested in these areas, even the City is opening some competitions (e.g. Paromlin, which is to become a new library and culture centre).

Fig. 21. (top left) Paromlin
Fig. 22. (bottom left) Badel
Fig. 23. (top right) University hospital
Fig. 24. (bottom right) Gredelj

Examples of successfully repurposed Brownfield areas and their impact

Positive effects of repurposing Brownfield locations can be seen everywhere in the world. One of the best examples is Bilbao, Spain. The revival of Bilbao's decrepit port area de facto made the city one of the biggest tourist destinations in the country. Building the Guggenheim Museum, designed by the renowned architect Frank Gehry, and adjoined parks and buildings have completely transformed not just that area, but the whole city, bringing the revenue of hundreds million euros from tourism in just the first few years.[26]

26 Crawford, Leslie. "Guggenheim, Bilbao, and the 'hot banana'" Archived2013-05-18 at the Wayback Machine, Financial Times, September 4, 2001.

Fig. 25. Bilbao port before

Fig. 26. Bilbao port now

There are more than a few good examples from Central Europe, where the Brownfield site hasn't been completely torn down and rebuilt, but rather repurposed. Manufaktura in Łódź, Poland, used to be a textile factory complex, taking up the colossal area of 27 hectares. After a total of nine years of planning and construction, Manufaktura opened its doors to the public in 2006. The complex comprises of multiple buildings, including the spinning mill, which is the trademark of the complex, and a public square (largest in Łódź) and its repurpose was designed by collaborating offices in London, Virgile & Stone, and Lyon, Sud Architectes, which opted for a concept of incorporating the new into the old, keeping the textile factory's typical red brick where possible as well as building the new structures lower than the existing ones, so that it wouldn't obstruct the view from the outside on the historical site.[27]

27 https://en.manufaktura.com/site/520/history/revitalization

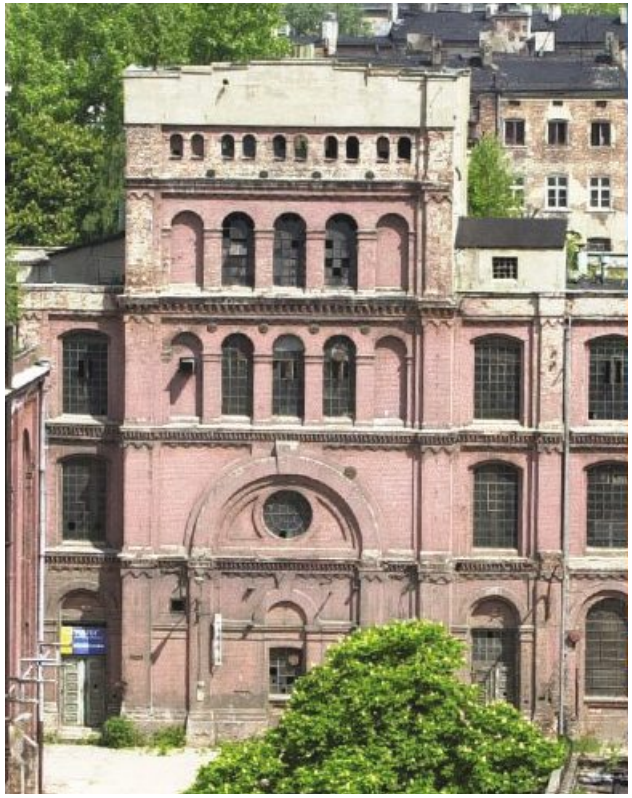


Fig. 27. (above) Public square, Manufaktura
Fig. 28. (top middle) One of the buildings in Manufaktura before repurpose
Fig. 29. (top right) One of the buildings in Manufaktura after repurpose
Fig. 30. (bottom middle) One of the buildings in Manufaktura before repurpose
Fig. 31. (bottom right) One of the buildings in Manufaktura after repurpose

Gusswerk, an old bell foundry in Salzburg was transformed in 2006 (planning started in 2004) by a collaboration of LP Architektur, Hobby A, CS-Architektur and Strobl Architekten into a multi-functional space with restaurants, offices, showrooms (etc.). The area which originally consisted of multiple warehouses and production buildings was carefully assessed, the structures which were deemed inadequate demolished and new ones erected in their place, leaving an appropriate distance between the volumes to create the feeling of open communication and spaciousness. The remaining old structures were repurposed and refurbished, keeping the feel of the time when they were built, like the typical industrial structure and brickwork, and integrating it with contemporary architectural concepts, creating the loft spaces inside and the openness. The new additions are easily distinguished from the existing and even amongst each other, as each brings a different architectural quality to the complex. Perhaps the most distinguishable of them are the "Building 8" – an 8-floor tall structure that towers over the rest of the complex, and "Building 10", which stands out especially when the sun sets, with its "from within" illuminated façade. All the volumes are now practically marked with large numbers to help with the easier orientation on the site.[28]

28 https://www.gusswerk.net/de/das-gusswerk/architektur

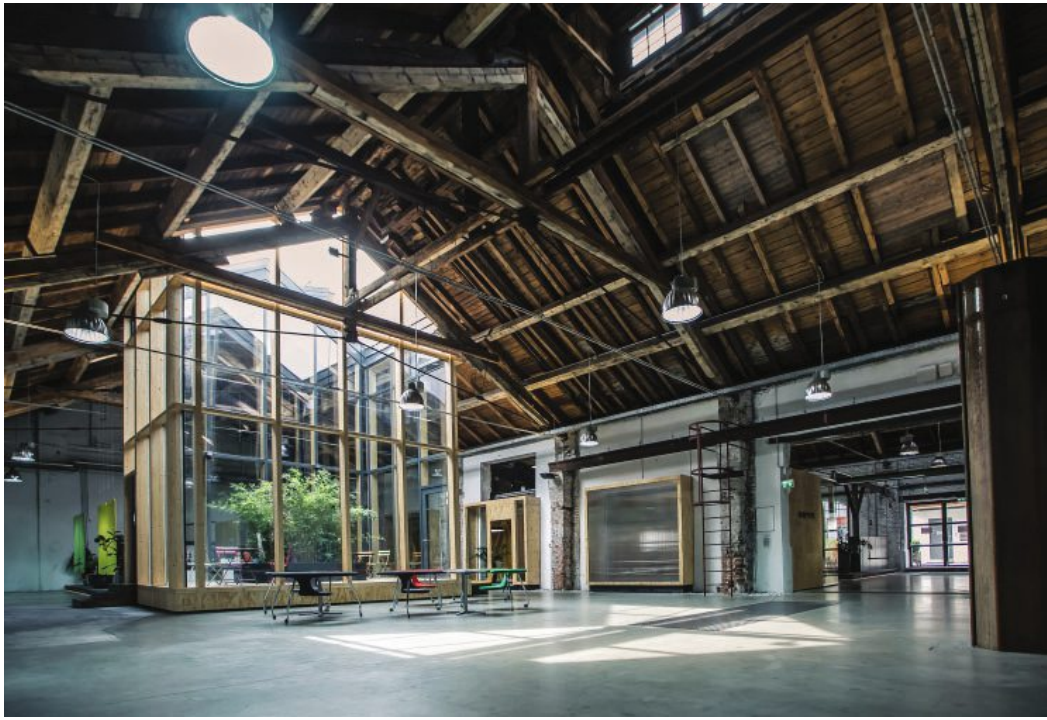
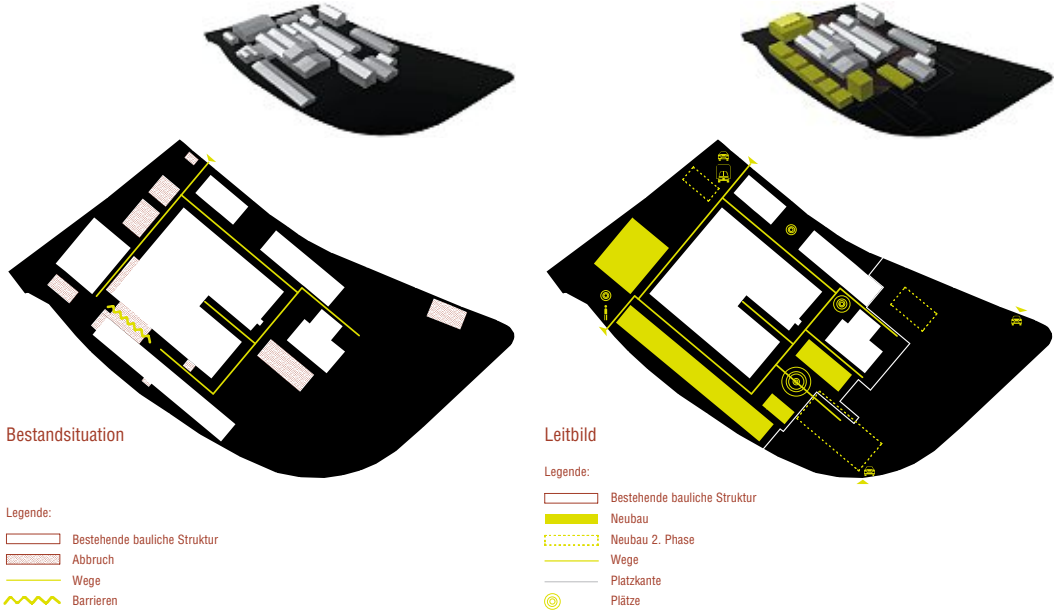


Fig. 32.. Repurpose of one of the buildings

Fig. 33. Existing and new situation plan



Another great example from Salzburg done by the same group of architects is the Panzerhalle, which is located on the grounds of the former Struber barracks. This basilica-like building was built in 1939, extended in 1952 and served as a workshop for tanks and other vehicles. The planning for the latest renovation began in 2012 and the works have finished in 2015. The mentioned team of architects converted this large complex into a mixed used area, with a market hall, restaurants, offices, exhibition and commercial space, a medical centre and apartments, where creative and commercial companies work together. This dynamic character can also be observed from the architectural standpoint. The exterior appearance of the existing buildings is kept as close to the original as possible, while the interior is where most of the changes took place. The industrial character is still very much present, but with a contemporary spin on it. The volume is filled with loft spaces and the paths that connect them, which creates an effect of "room inside the room", as if the external walls act as a shell protecting the inner space. Adding to that, the roof with its skylight glazing creates exciting light atmosphere, as well as the roof cut-outs which form interesting spaces in the interior, has a role of the "fifth façade".[29]

29 zement + beton 2_16 | Beton auf dem Weg zur Ikone; 2015; p 35-37 (vergl.)

Fig. 33. (above) Panzerhalle interior before repurpose
Fig. 34. (top right) Panzerhalle interior after repurpose
Fig. 35. (bottom right) Panzerhalle exterior after repurpose

What we could conclude from these revivals is that they potentially have an enormous positive effect on the Brownfield locations, creating new identity of the area which doesn't just visually impact the area but also in economic and social aspects - by attracting more people, more companies and investors which can ultimately lead to new workplaces and generally more comfortable as well as more enjoyable place of residing.

4. SITE AND BUILDING ANALYSIS

Site Analysis

Current site plan configuration

The entire site lies on an enormous area of 97471 m2 and, according to the official cadastar plan, is owned by multiple corporations and people. It is currently tragically underused considering its size, location and infrastructure.
The main building (1) is located in the western part, surrounded by the other structures on the site.

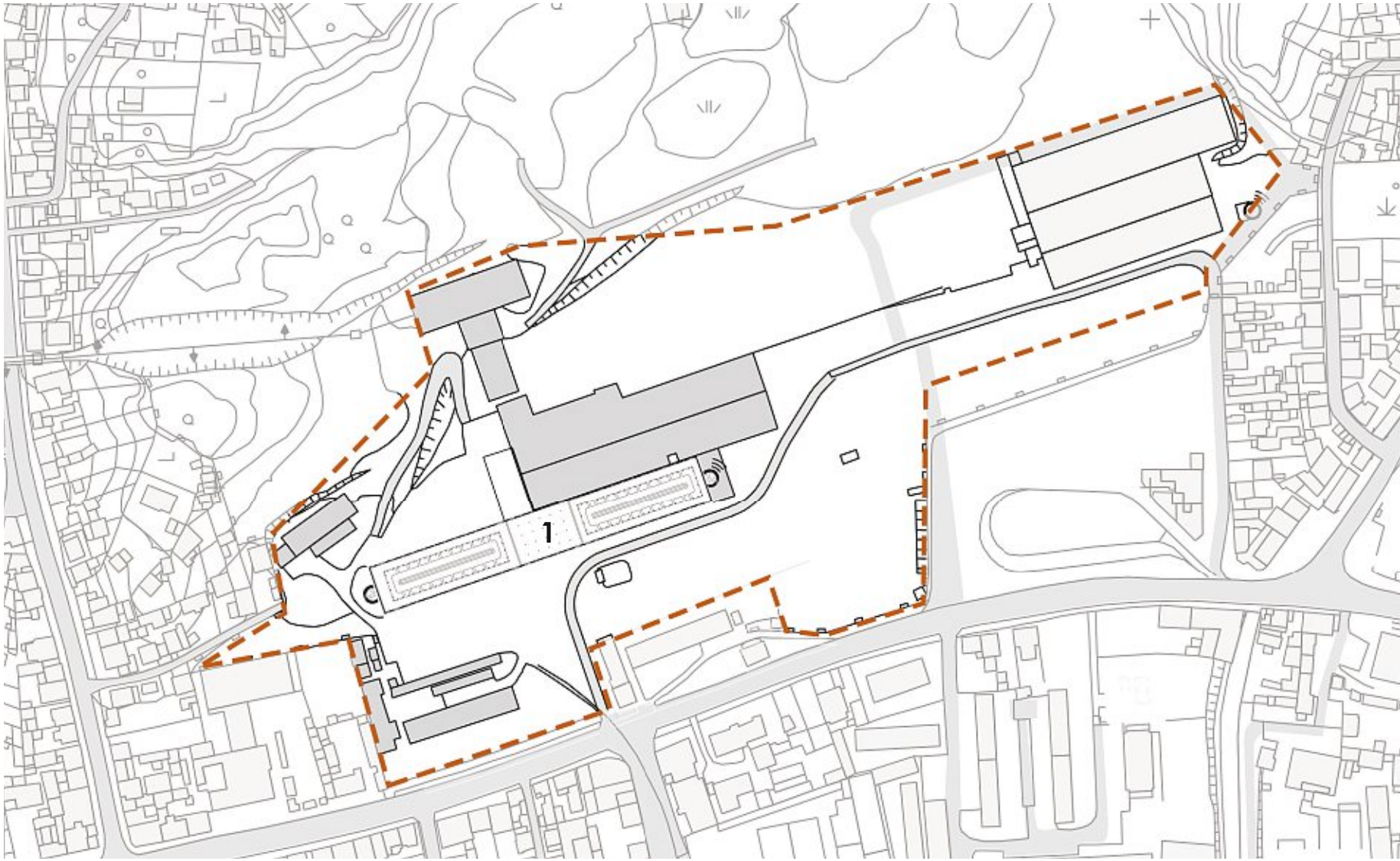


Fig. 36. Current area of the site 1:5000

What is nearby

1 Market
2 Supermarket
3 Faculty of Textile Technology, University of Zagreb
4 Military academy
5 Fire department

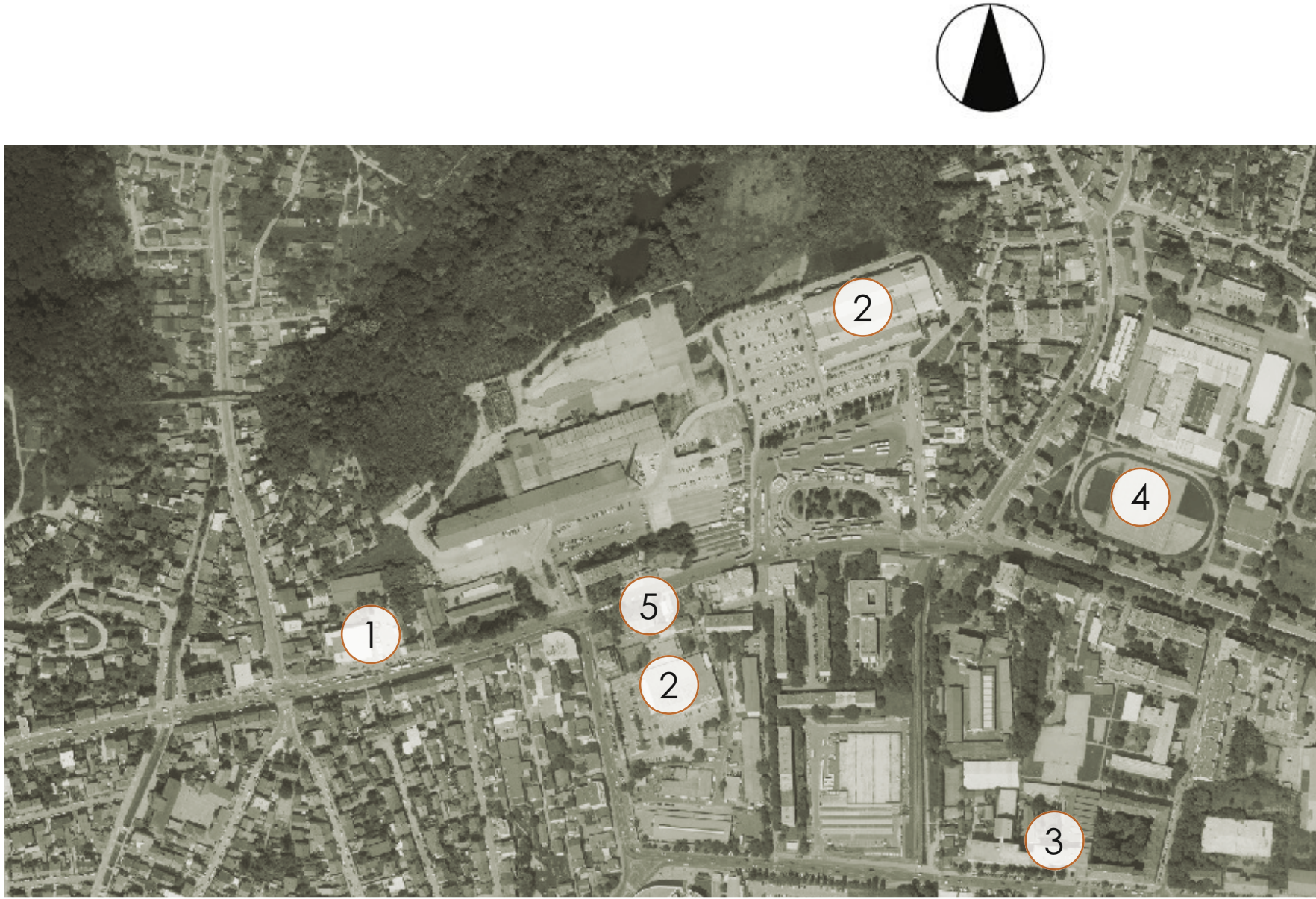
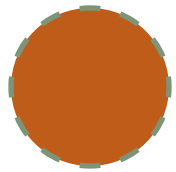


Fig. 37. Institutions and amenities nearby

Public transport



Črnomerec city and intercity bus and tram terminal

City bus stop

Tram line

Legend

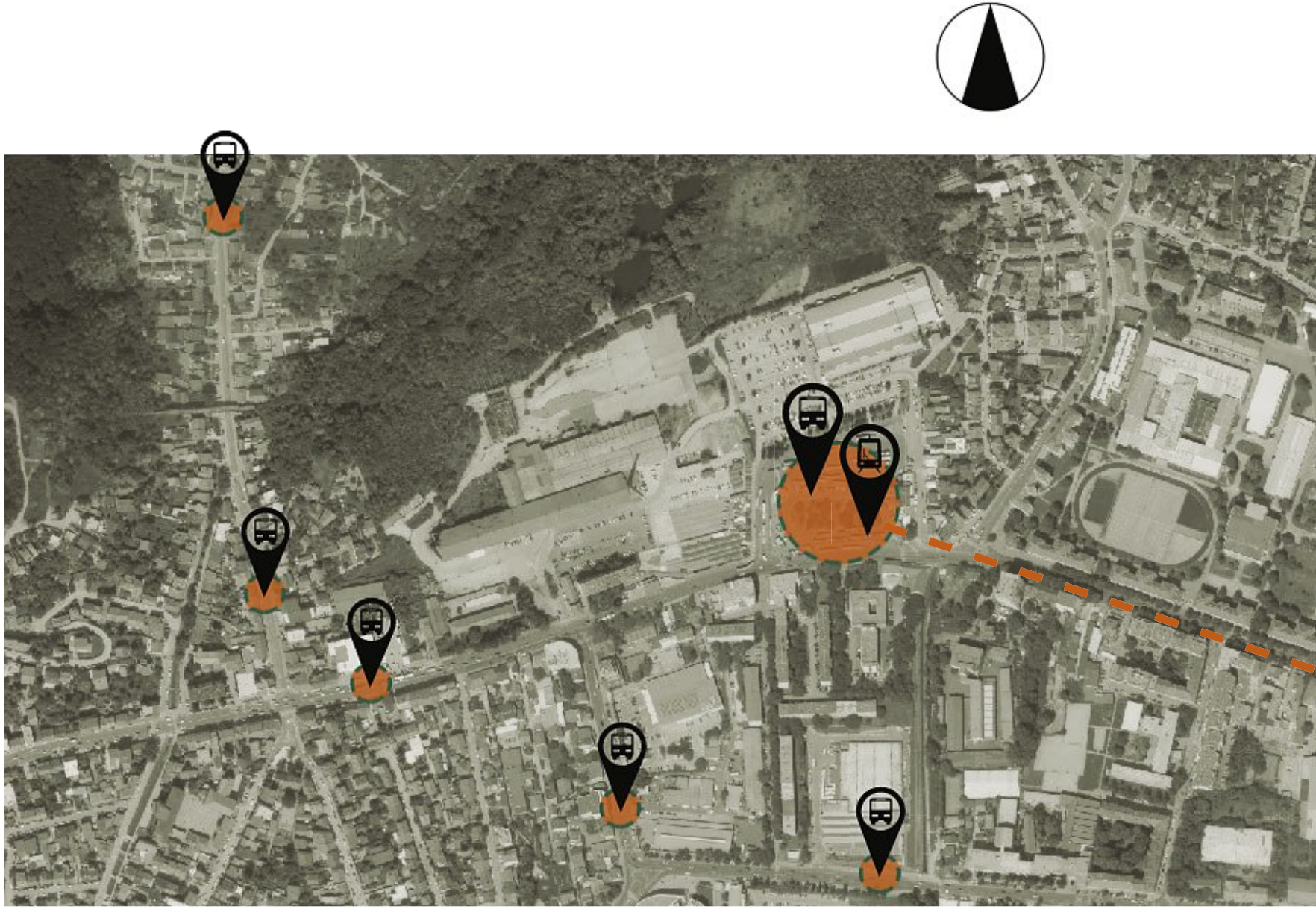
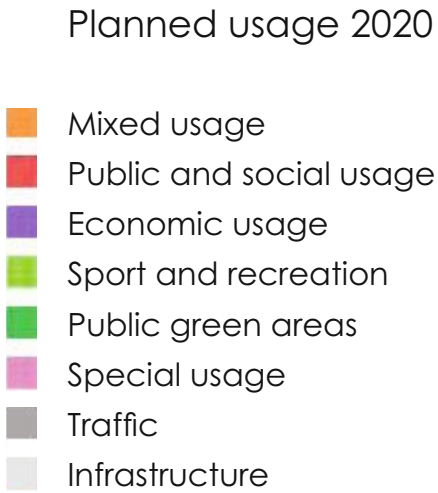


Fig. 38. Public transport situation

Urban usage scheme



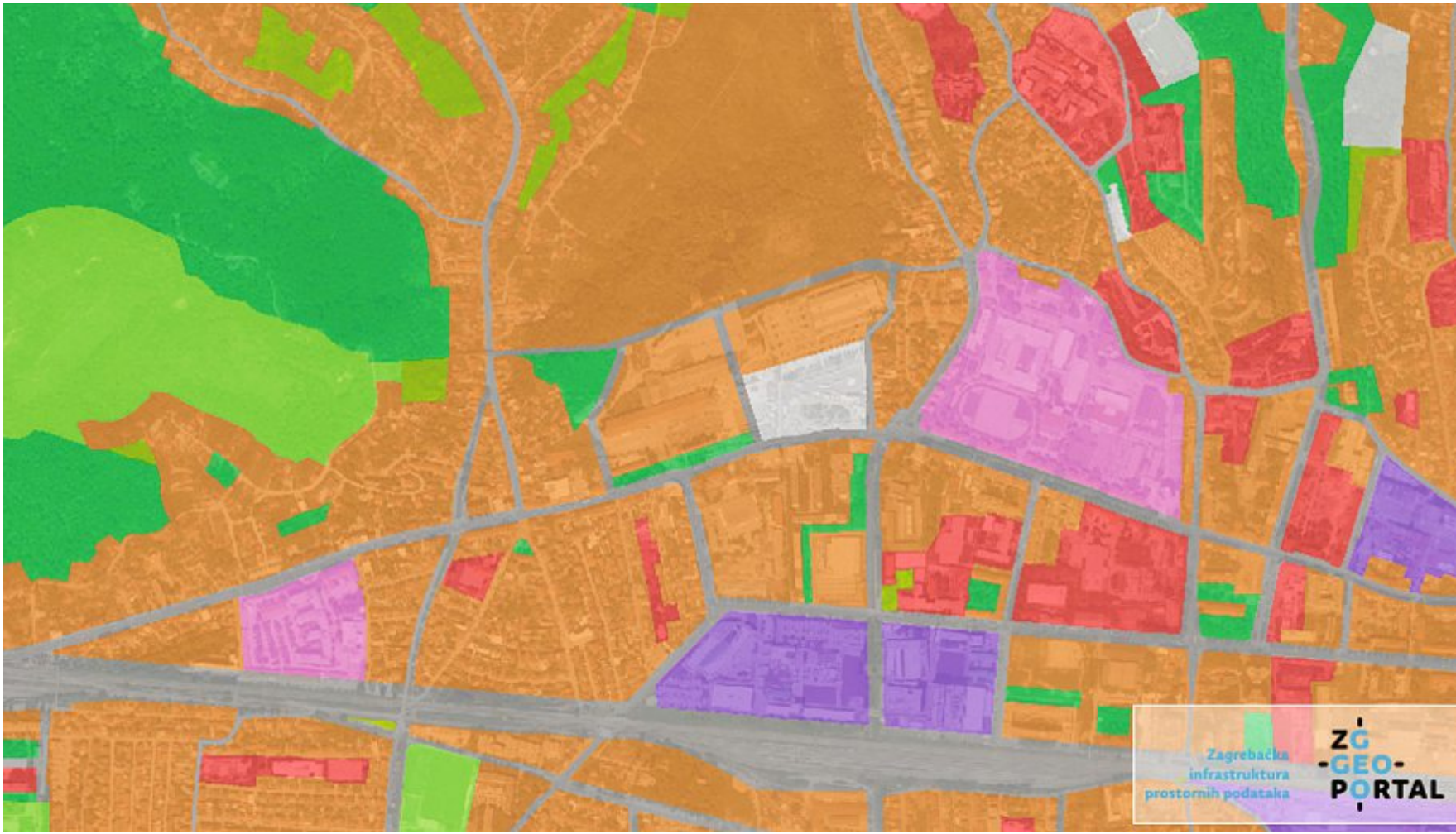


Fig. 39. Planned usage 2020

Traffic frequency

08:00h

12:00h

Monday

Fig. 40a. Traffic frequency Monday 8:00h
Fig. 40b. Traffic frequency Monday 8:00h

Fig. 41a. Traffic frequency Monday noon
Fig. 41b. Traffic frequency Monday noon

Sunday

16:00h

Fig. 42a. Traffic frequency Monday 16:00h
Fig. 42b. Traffic frequency Monday 16:00h

20:00h

Fig. 43a. Traffic frequency Monday 20:00h
Fig. 43b. Traffic frequency Monday 20:00h

The main road that passes by the site is the main road of the city of Zagreb and therefore one of the most frequented roads. During morning and afternoon rush hour the road is extremely busy and loud due to the traffic, but settles down over weekends.

Traffic noise level

Legend

Noise scale [dB]	Colour
50-54	
55-59	
60-64	
65-69	
70-74	
>75	

Day

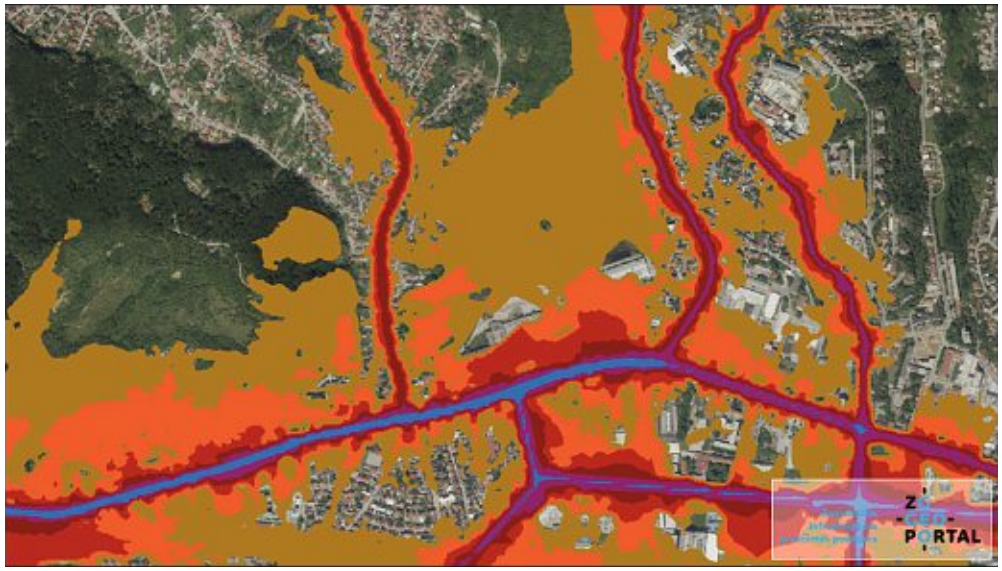


Fig. 44a. Traffic noise level - day

Evening

Fig. 44b. Traffic noise level - evening

Night

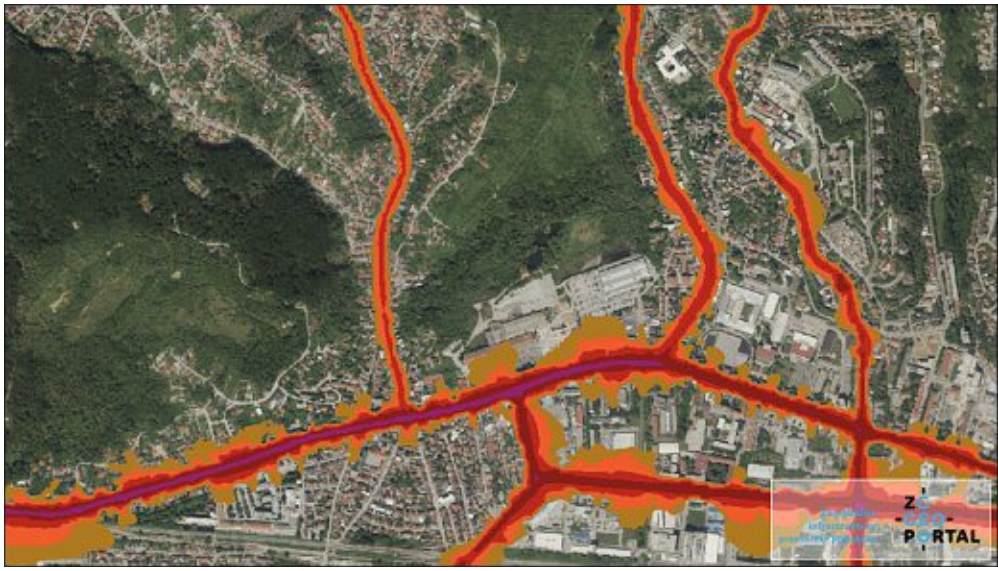


Fig. 44c. Traffic noise level - night

Current use and proposed changes for the site

The only constantly utilized part of the site that has an impact is the narrower, eastern part, that is being used as a supermarket.

According to the urban plan, due to the constant traffic overload of the roads in the vicinity, new roads are planned. They will connect Kustošijanska street in the West with street Črnomerec in the East, as well as two other ones perpendicular to it. Through this connection of the new roads with Ilica street, it will take over a large amount of traffic from the Ilica, but also create a ring around the perimeter of the Brick factory, creating a "natural" border of the new site.

Due to the positioning of the planned roads, all but two structures ought to be demolished. Most of them are additions that factory has built over the years, such as the massive storage structure, adjacent to the brick factory (1), but some were there from the beginnings, e.g. clay processing building (2) and what once was a canteen for the workers (3).

Area used by "Konzum" supermarket

New roads (planned)

Demolish (proposition)

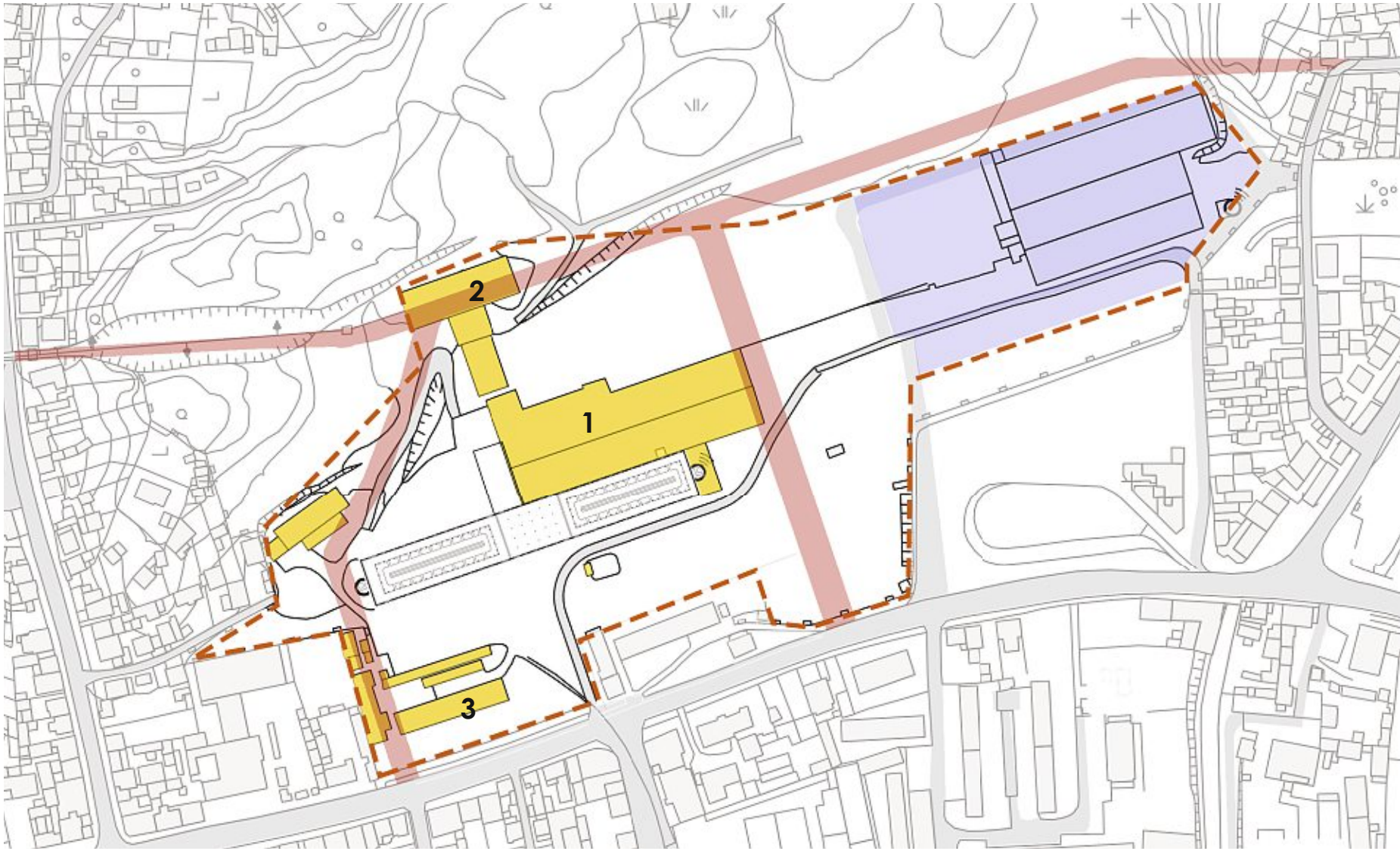


Fig. 45. Proposed changes 1:5000

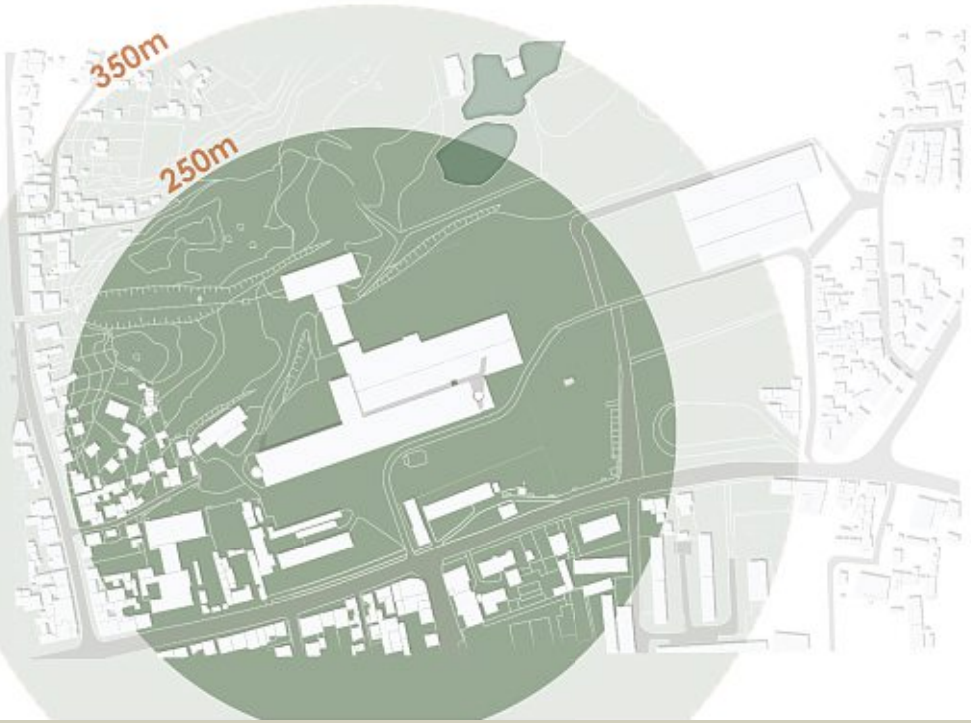
Fig. 46. Storage building adjacent to the brick factory

Fig. 47. Interior of the storage building, pictured rescue practice

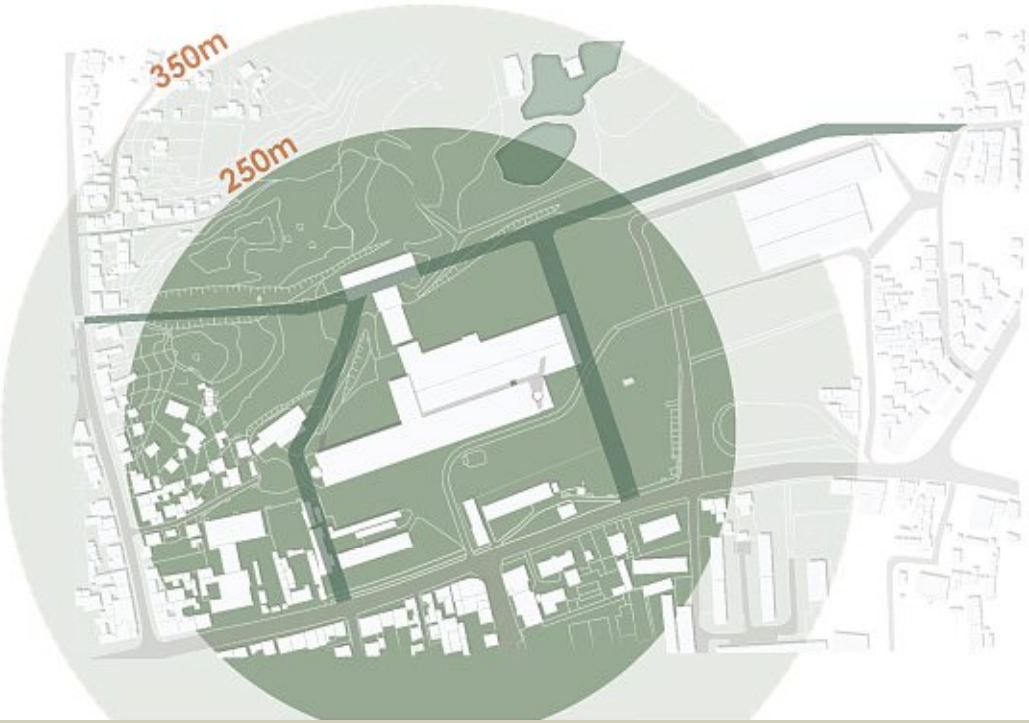
Fig. 48. Clay processing building

Fig. 49. View on the northern part of the site

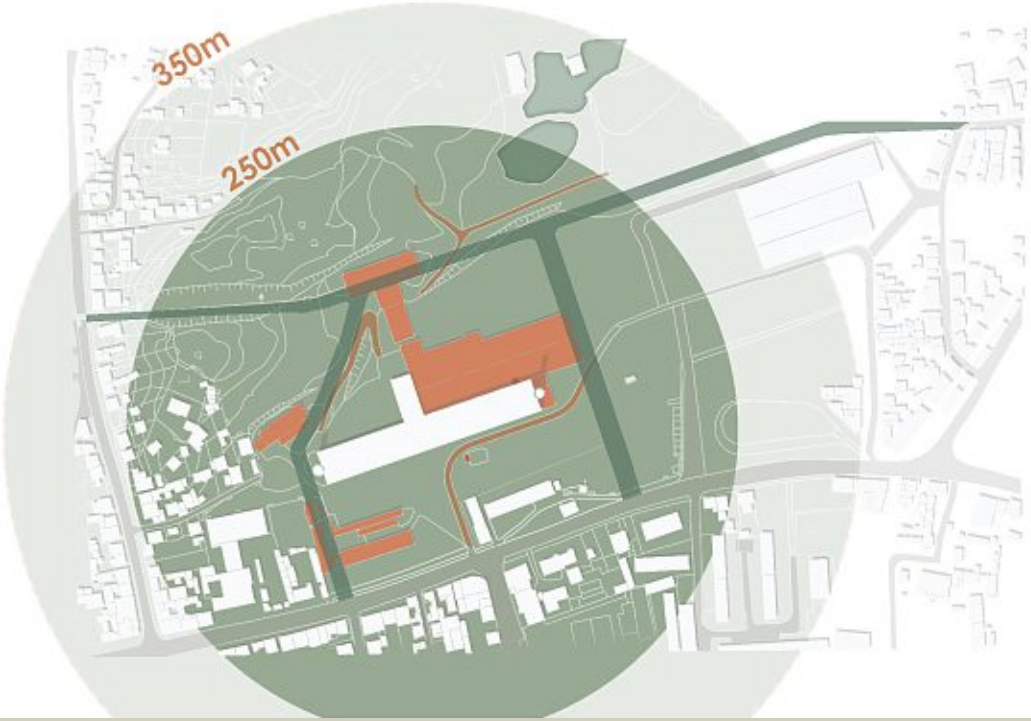
Fig. 49c. View on the northern part of the site



1. Existing



2. Planned roads



1. Existing situation

2. Planned roads - according to the latest urban plan, three new roads will be added, one north of and parallel to the brick factory and two perpendicular to it (one on the east and one on the west side)

3. Structures to be demolished - It is inevitable that many buildings on the site have to be demolished, some because the new roads will go through them or because of their poor condition due to neglect or fire

3. Structures to be demolished

Fig. 50. (left) Current situation
Fig. 51. (middle) Planned roads
Fig. 52. (right) Structures to demolish

Fig. 53. Planned site situation 1:5000

Figure ground plan

Fig. 54. Figure ground plan

Building Analysis

The brick factory was built in 1885 and at the time was the most modern industrial facility in this part of Europe. Despite it being a significant part of industrial heritage, it has never officially been listed as a monument of industrial architecture.
Made completely out of bricks, as it was common at that time, this building spans slightly over 185m in length (Southwest - Northeast orientation) with a width of approximately 26m. The main building can be split into three areas, the “wings” and the central space, whereas the western wing is slightly longer. Inside of each wing there is a brick

Fig. 55. Frontal view from the main street

Fig. 56. View from the Northwest

Fig. 57. View from the Northeast

Fig. 58. Destroyed roof

Fig. 59. View on the western facade

Fig. 60. (left) View on the West entrance
Fig. 61. (bottom left) Close-up on the facade
Fig. 62. (down) View on the eastern wing
Fig. 63. (top right) View on the northern facade - west wing
Fig. 64. (bottom left) View on the smaller appendix
Fig. 65. (far right top) View on the northern facade - west wing
Fig. 66. (far right bellow) View on the northern facade - west wing

Fig. 67. View on the slanted support beams

oven with the measurements of 63,5m in length and 17m in width.
The three levels differ in height (3,80, 2,80, 3,70 and 5,80m until the roof ridge). The structure is quite elaborate, mixing multiple materials (brick, timber, steel, concrete), which also shows the adaptations that have happened throughout the decades. Besides the ovens, one of the biggest standout features are the enormous slanted support beams.
On the northern facade there is another structure attached to it, much

Fig. 68. View on the slanted support beams

Fig. 69. (top left) View on the structural situation - 1st floor construction
Fig. 70. (top right) View on the structural situation - oven and 1st floor construction
Fig. 71. (bottom right) View on the structural situation - oven and 1st floor construction

smaller in size, with measurements of approximately 36x17m. What sets it apart and makes it interesting is its concave roof with its highest point slightly above the roof eave of the main building.

After years (decades) of neglect, the building deteriorated. It has caught on fire multiple times which resulted in its severe damage, especially to the roof.

Sections and plans of the current situation

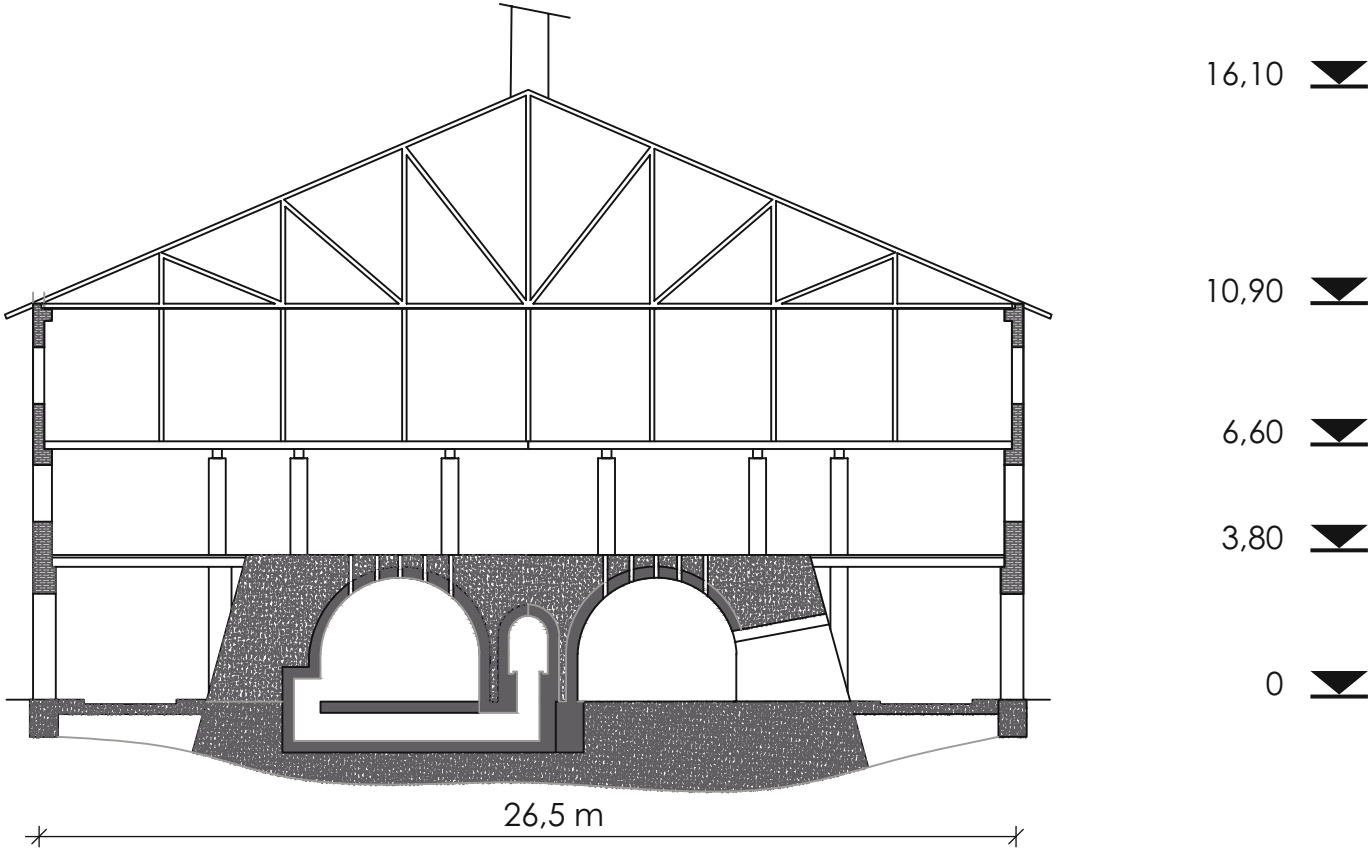


Fig. 72. . Section oven

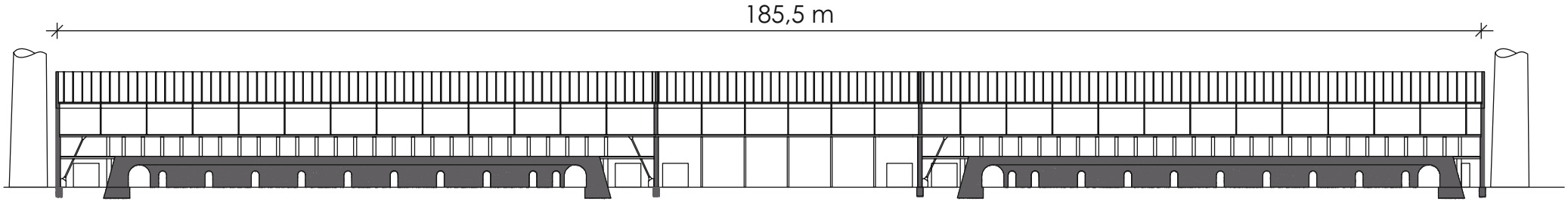


Fig. 73. . Section length

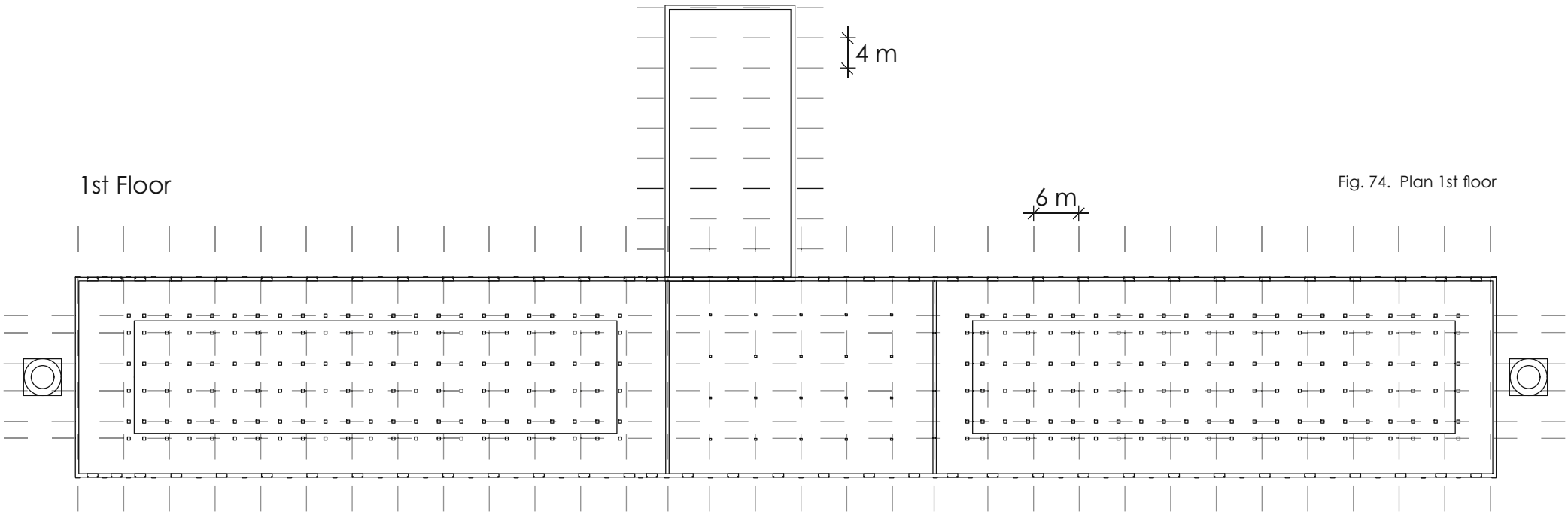


Fig. 74. Plan 1st floor

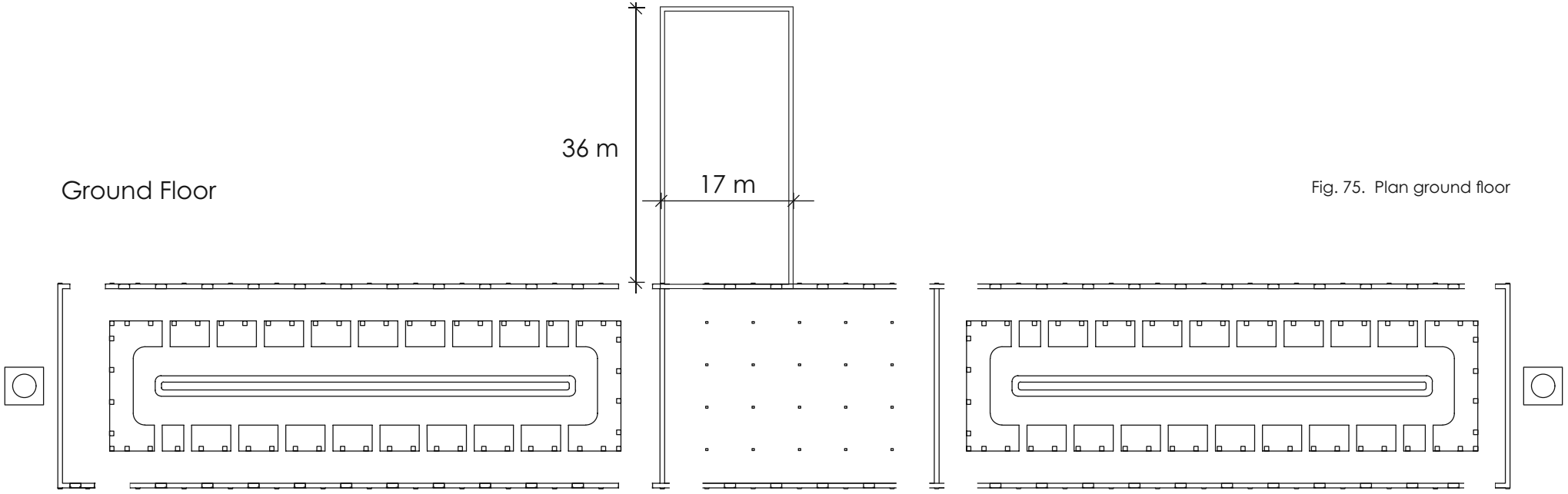


Fig. 75. Plan ground floor

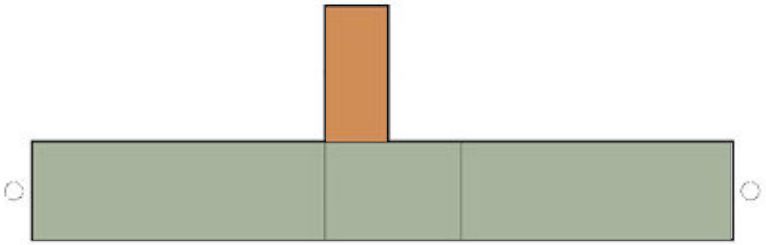
5. PROJECT

What next?

With the first chapter of this book I wanted to put an emphasis on how Zagreb, especially Črnomerec district has a rich history in manufacturing and production, on being a workers district. More than a few textile factories have been thriving in Zagreb for a long time, but unfortunately not many are still producing. It is an industry which is slowly dying out. The finger of blame can be pointed of course toward many different reasons - fast fashion is in high demand, production is being shifted overseas, people are no longer interested in working hard physical work, etc. But what could also be one of the reasons, specifically for the textiles, is that the quality aspect is lacking - not as in the manufacturing quality, but the ideas, resources and innovation.

For the students that do decide to study the field, there is not much variety of choice, as the Faculty of Textile Technology (University of Zagreb) is the only higher education institution not only in the city, but in whole Croatia which focuses on textiles and fashion. What is needed is a place where students can research up-to-date technologies, have their own space to work not only during their studies but after as well, a place which motivates them and where they can showcase their own work in a grand way. Maybe then people would feel the sense of value that lies in the real quality of textiles and fashion.

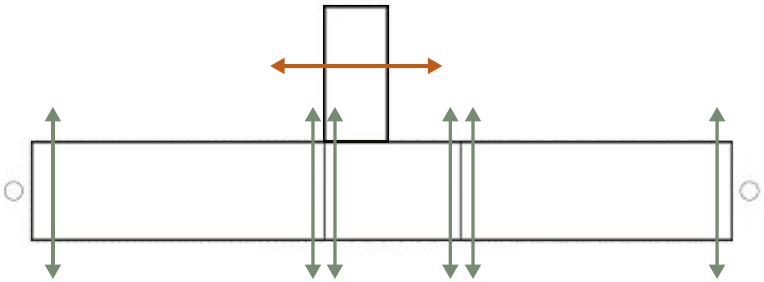
Concept



Building A

Building B

Fig.76. Volumes



Existing entrances

New entrances

Fig. 77. Entrances

Volumes

The structure is comprised of two volumes - building A which is the main, larger building and building B, a smaller volume which connects from the northern side to the main one, slightly off-center.

Entrances

Building A has six existing entrances which are symmetrical to each other and perpendicular to the building A. They provide a direct connection between the plaza on the South side and outside area in the North. Considering the building B has no substantial existing entrances, it was necessary to create them for it to be independent from the building A.

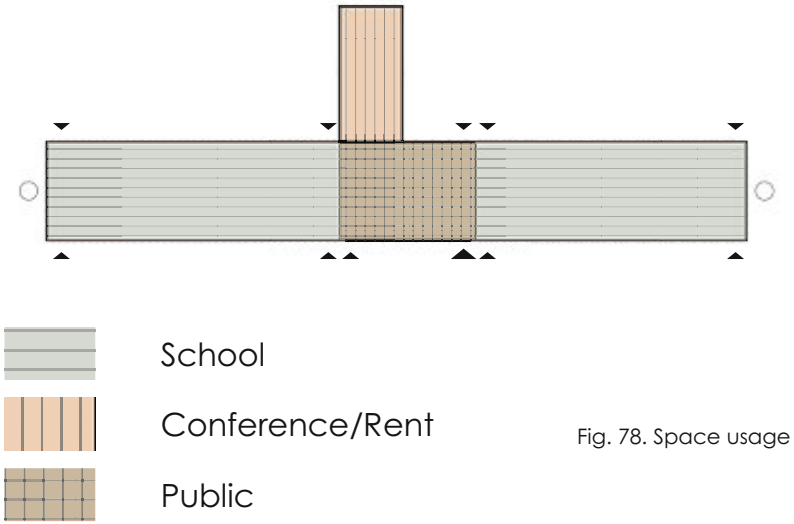


Fig. 78. Space usage

Fig. 79 Extensions

Space usage

The central part is intended for public use, where people could meet and socialize, as well as an area where fashion events take place.

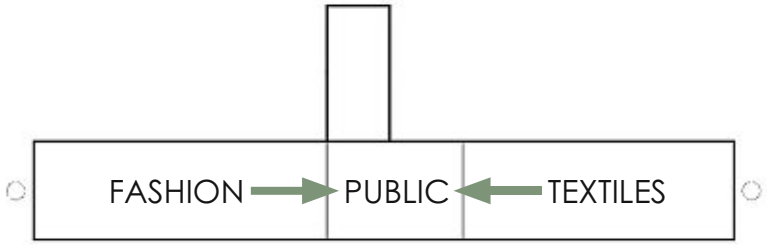
The school is placed in the "wings" of the building A considering they are the largest areas and offer a sufficient amount of space for the school needs, also dividing it from the more public area.

The building B is planned as a conference area, as it could be easily separated from the building A.

Extensions

Considering that existing structure of the building is relatively rigid and inflexible, integrating vertical connections and sanitary facilities inside of the building would require extensive alterations, so they are pushed outside as a secondary space also to leave more space for the main school facilities.

The Catwalk



Bringing student designs to the public

Bond between fashion and textiles

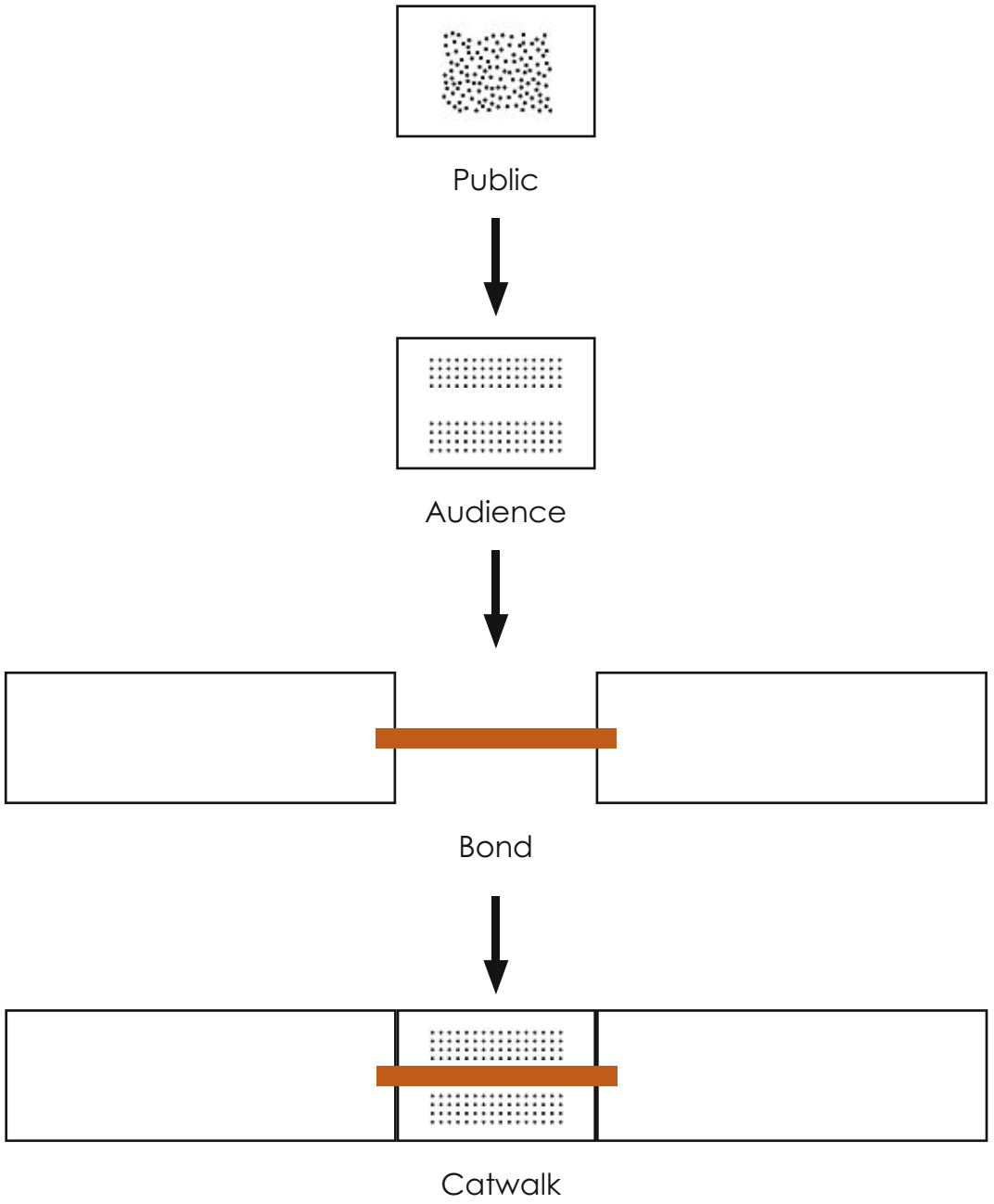


Fig. 80. Catwalk concept

Inspiration and references

Visual identity

Fig. 81. Exterior

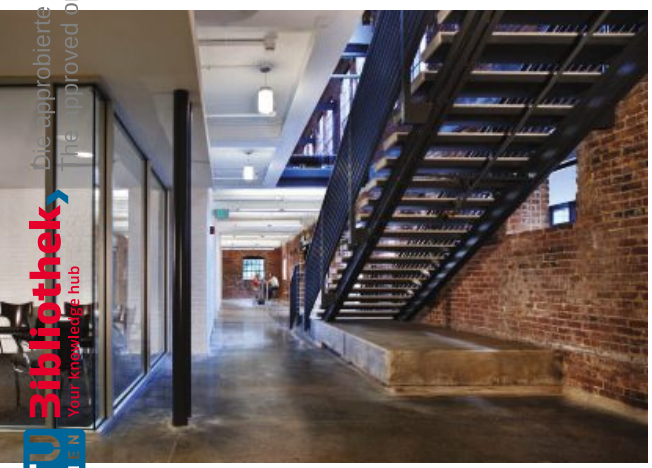


Fig. 82. Interior ground floor

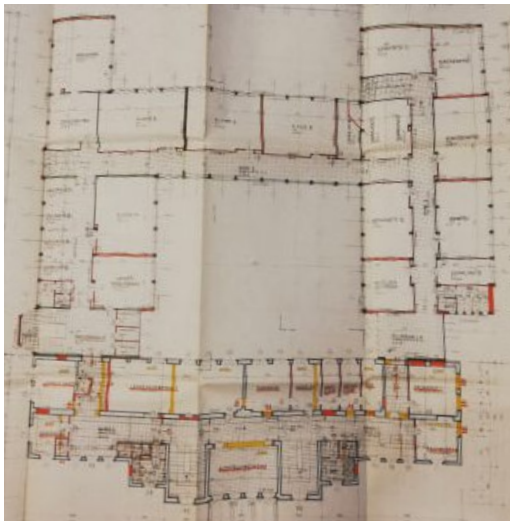
Park Shops Adaptive Reusen, USA by Pearce Brinkley Cease + Lee

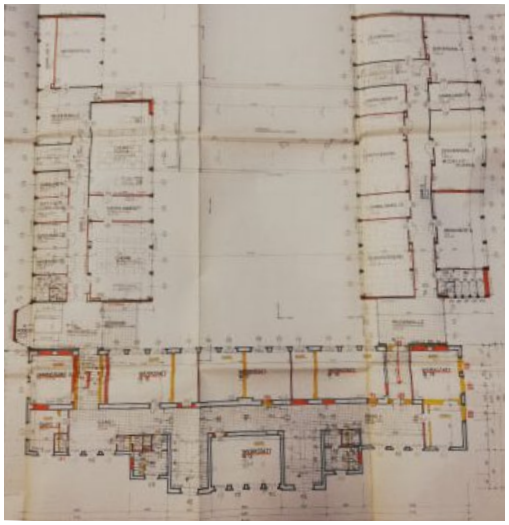
A 1914 masonry, three-story, 4650 square-metersclassroom and research building at North Carolina State University, with lecture halls, laboratories, advising offices, a television production studio, video editing suites, and an internet café.

The architects gutted the structure, removing gypsum board walls and sandblasting the brick beneath. Contrasting old materials with new, the architects left narrow gaps between the brickwork and some of the ceiling edges, so that thin strips of light wash over the bricks and reveal their texture.[30]

30 https://www.archdaily.com/189882/park-shops-adaptive-re-use-pearce-brinkley-cease-lee

Fig. 83. Interior first floor





Room programme

KunstModeDesign Herbststrasse, Vienna by Michael Rosenauer (1923-27), modified by Ilse Koci (1980-1986)
This is a building that has more than 140 years of artistic and textile tradition. During the reconstruction according to the plans of architect Ilse Koci[31], the usable area has doubled. In the last few years, for example, new project rooms and classrooms, a library for research and for working in groups, expanded metal workshops, multi-purpose classrooms, new printing workshops and fashion workshops have been created.[32]

31 https://de.wikipedia.org/wiki/KunstModeDesign_Herbststrasse
32 https://www.herbststrasse.at/about/herbsttraeume/

Fig. 84. (top left) KunstModeDesign school
Fig. 85. (bottom left) First floor according to plans by Ilse Koci
Fig. 86. (bottom right) Second floor according to plans by Ilse Koci

Facade

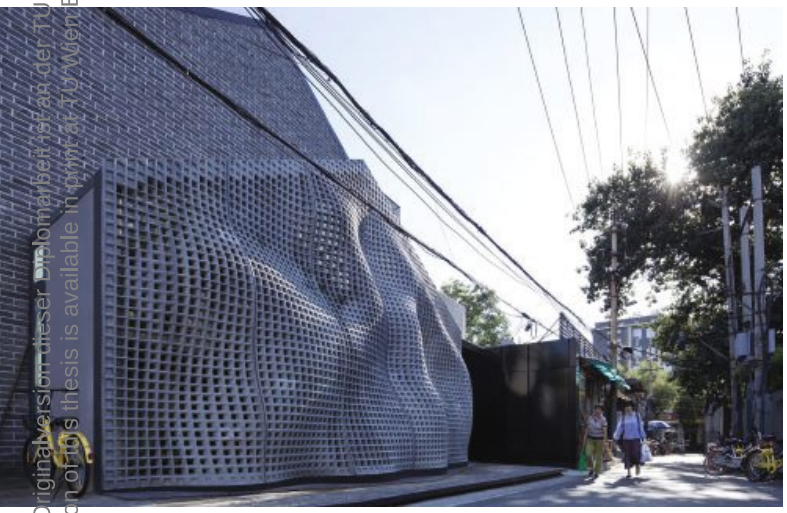


Fig. 87. Facade of the MaoHouse

The MaoHause, Beijing, China by AntiStatics Architecture

What seems to be a fluttering curtain in the wind is in fact a concrete facade. Each of the six panels of 7cm thick Ultra-High Performance Concrete was cast as a single piece from large CNC milled moulds.[33] The small, skewed openings in the facade allow the light to go in during the day, but are illuminated by night by the light from the interior. From the structural point of view, these openings make the otherwise heavy material much lighter with barely any support necessary to carry it.

33 https://www.yellowtrace.com.au/maohaus-beijing-antistatics-architecture/

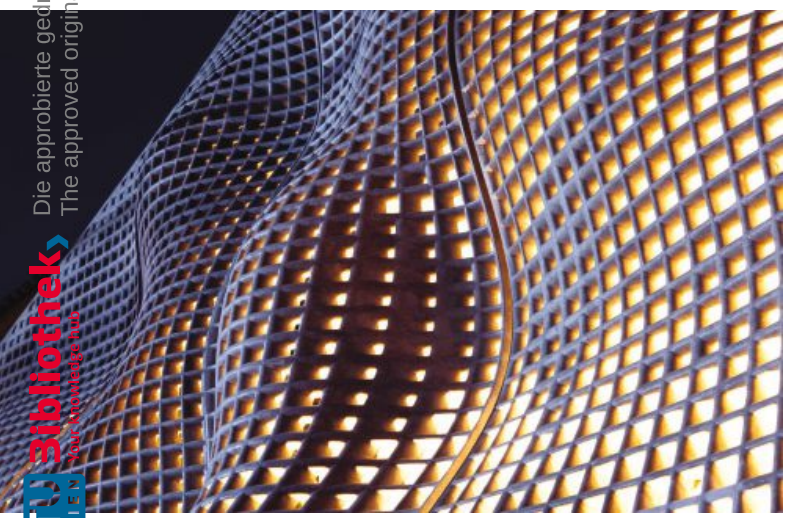


Fig. 88. Facade of the MaoHouse by night

Fig. 89. Facade of the MaoHouse - production process

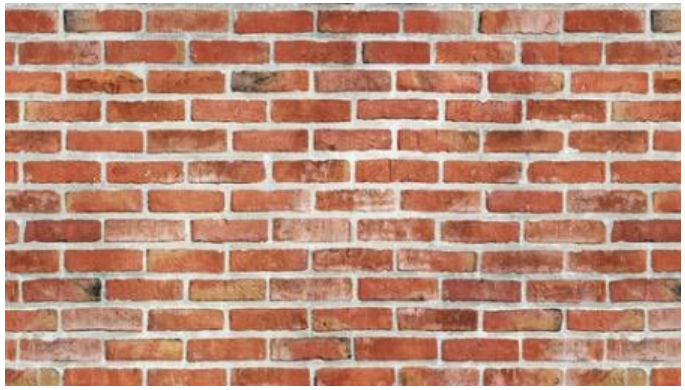


Fig. 90. Brickwork

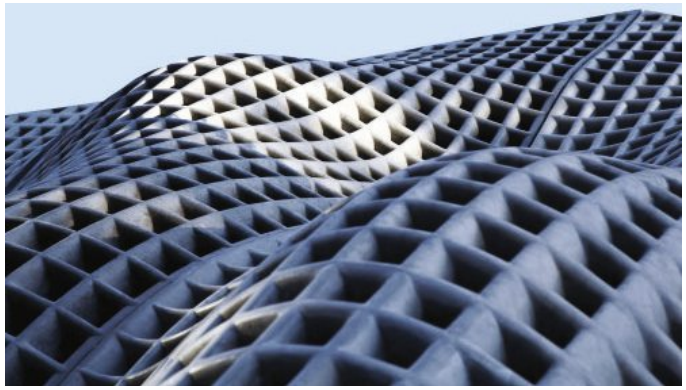


Fig. 92. Ultra-HIgh Performance Concrete (UHPC)

Fig. 91. Corten steel

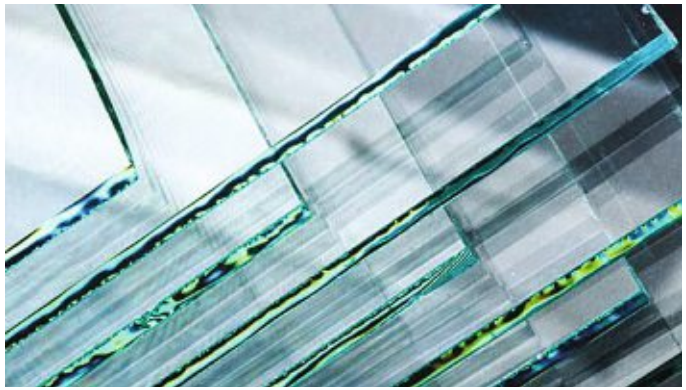


Fig. 93. Glass

Plans, Sections, Elevations

Site Plan

Fig. 93. New site plan 1:5000

Site Plan - Plaza

Fig. 94. Site plan - plaza

1:1000

Site Plan - Landscape

Pavilions are strategically located in the northernmost part of the site as they are surrounded and protected there by greenery and water features to offer the most silent and tranquil space to its users.

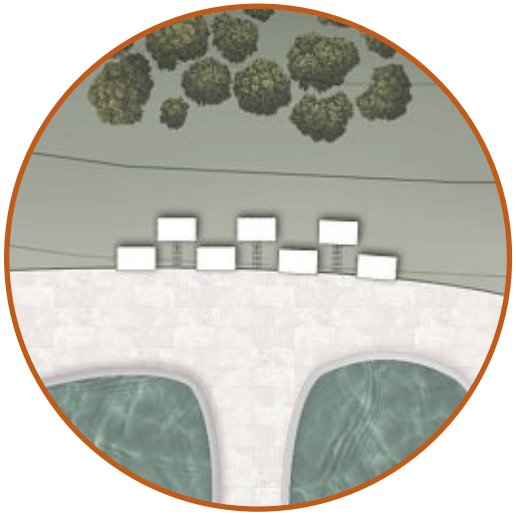


Fig. 96. Pavilions

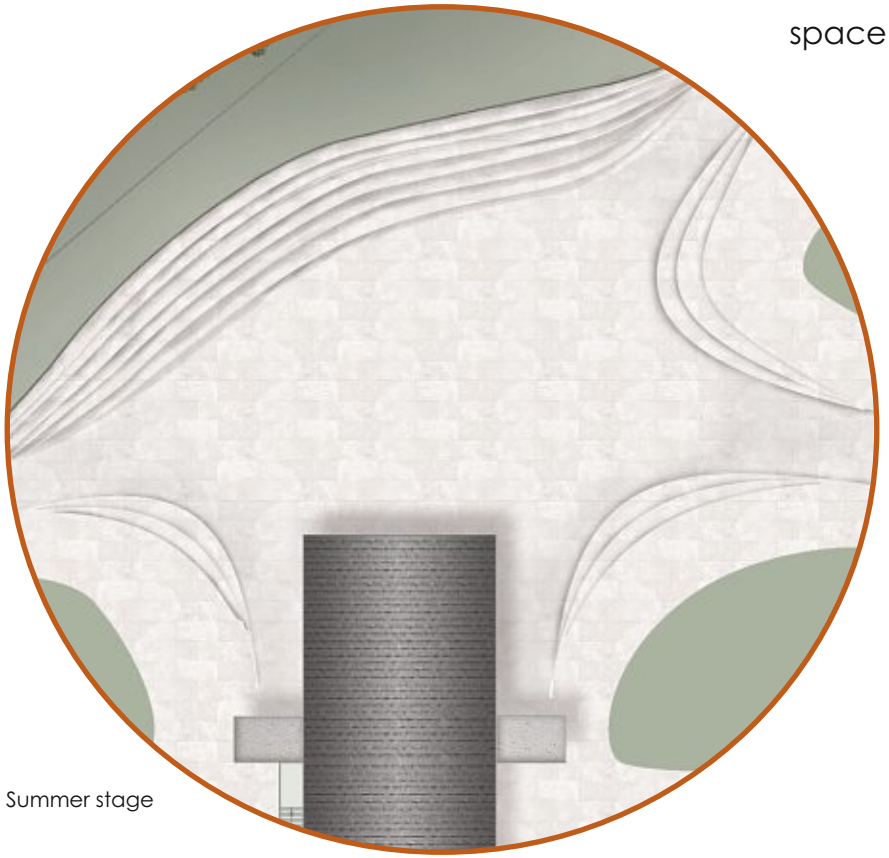
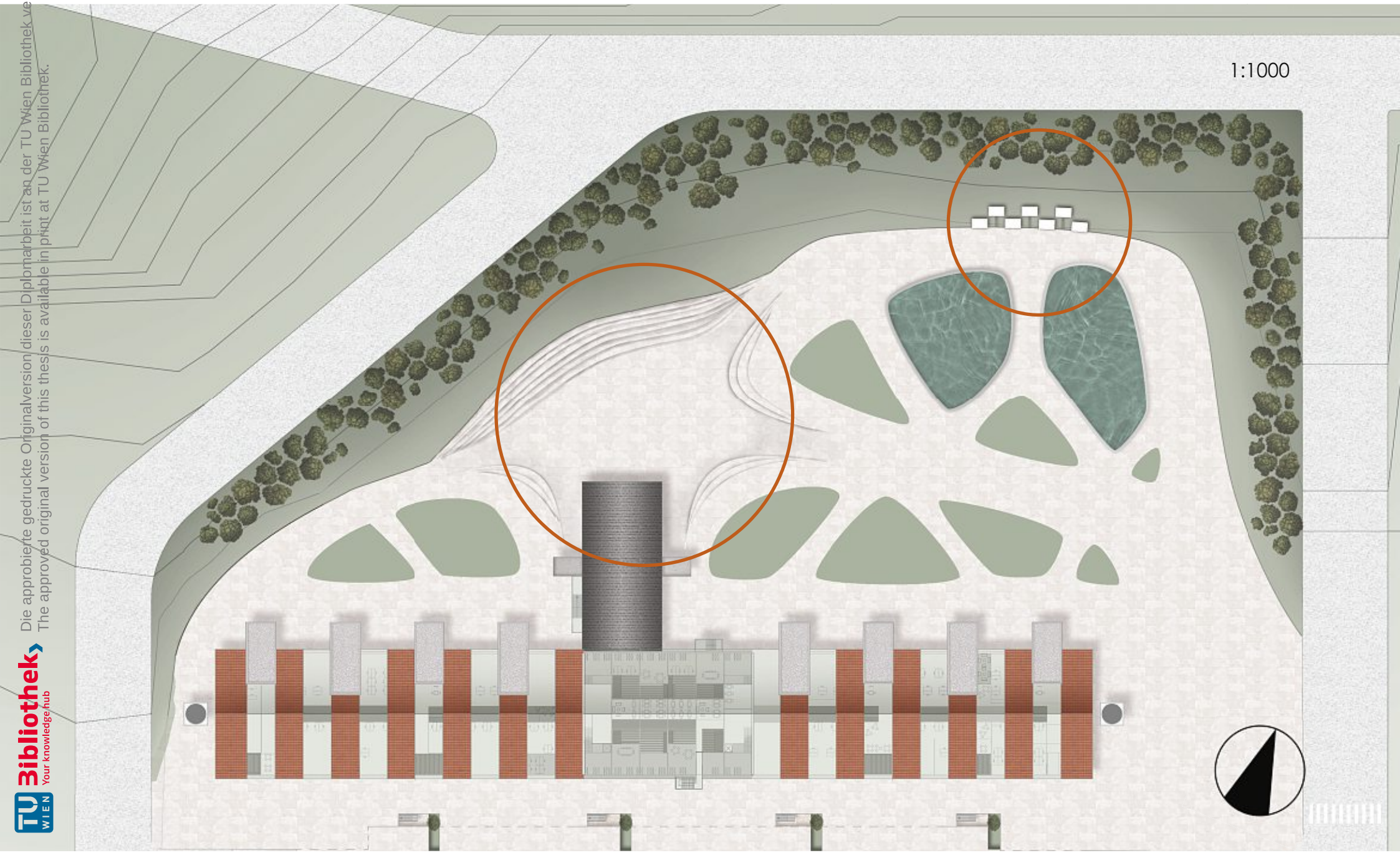


Fig. 95. Summer stage

Summer Stage, lowered by three steps from the ground floor with seating steps on the North-Western side, is a multipurpose area which can be used for various events, such as shows and plays (fashion, theatrical), summer cinema (where the videos can be projected onto the building wall) as well as a gathering spot

Fig. 97. (right) Site plan - landscape

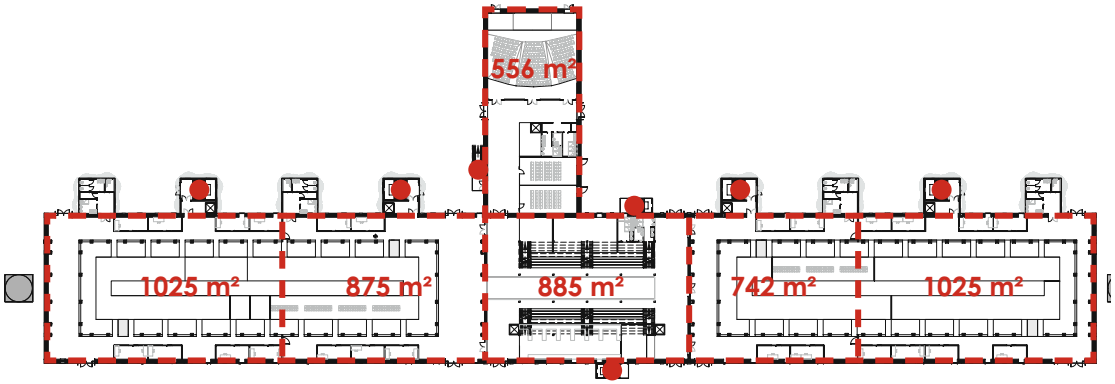


Vertical communication

Stairs

Elevator

Fire safety



Fire sections

Emergency exit

Fig. 99. Fire safety - fire sections and emergency exits

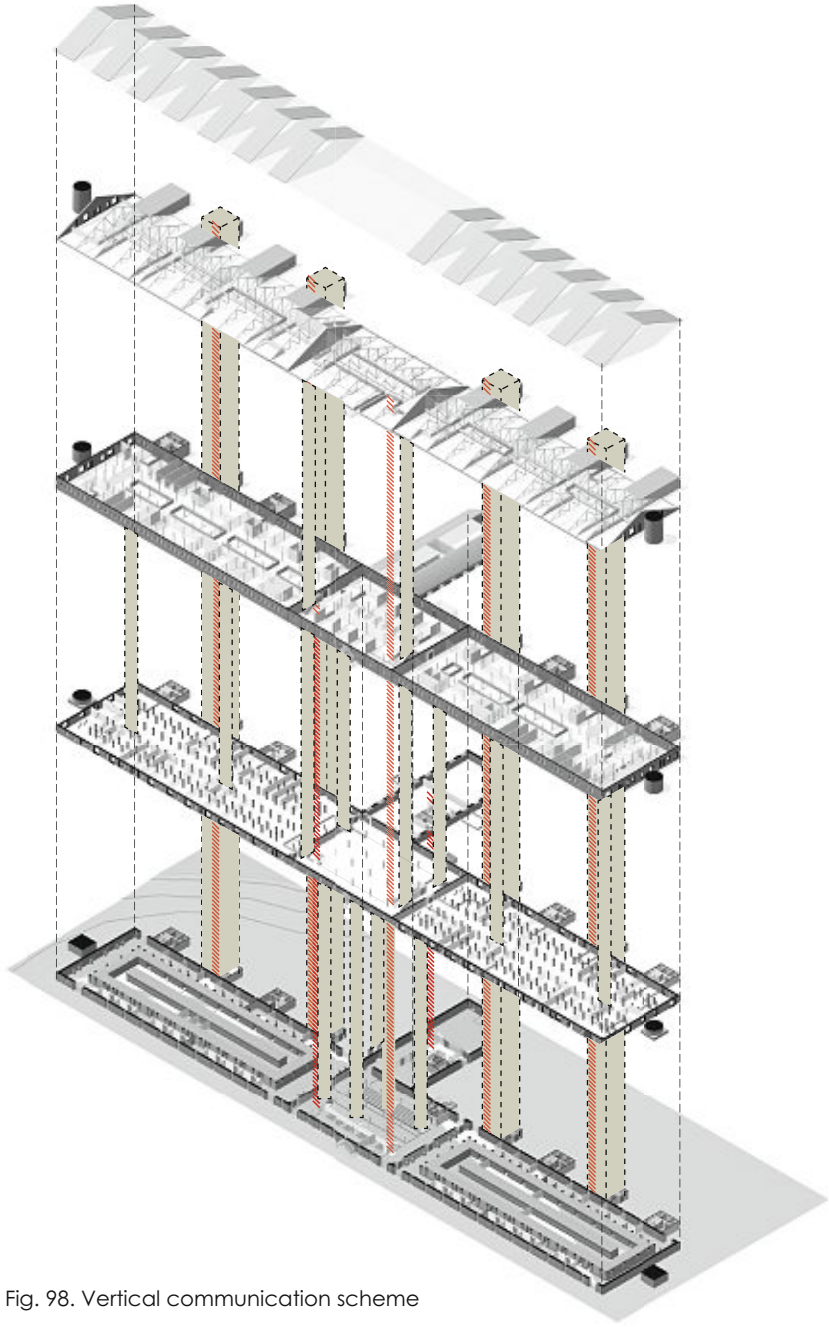


Fig. 98. Vertical communication scheme

Room programme

- Public area
- Shop
- School
- Event room/theatre
- Technical room
- Gastronomy
- Library
- Administration
- Rent offices
- Archive and storage
- Wardrobe
- Exhibition
- Server room
- Toilets
- Stairs
- Elevator

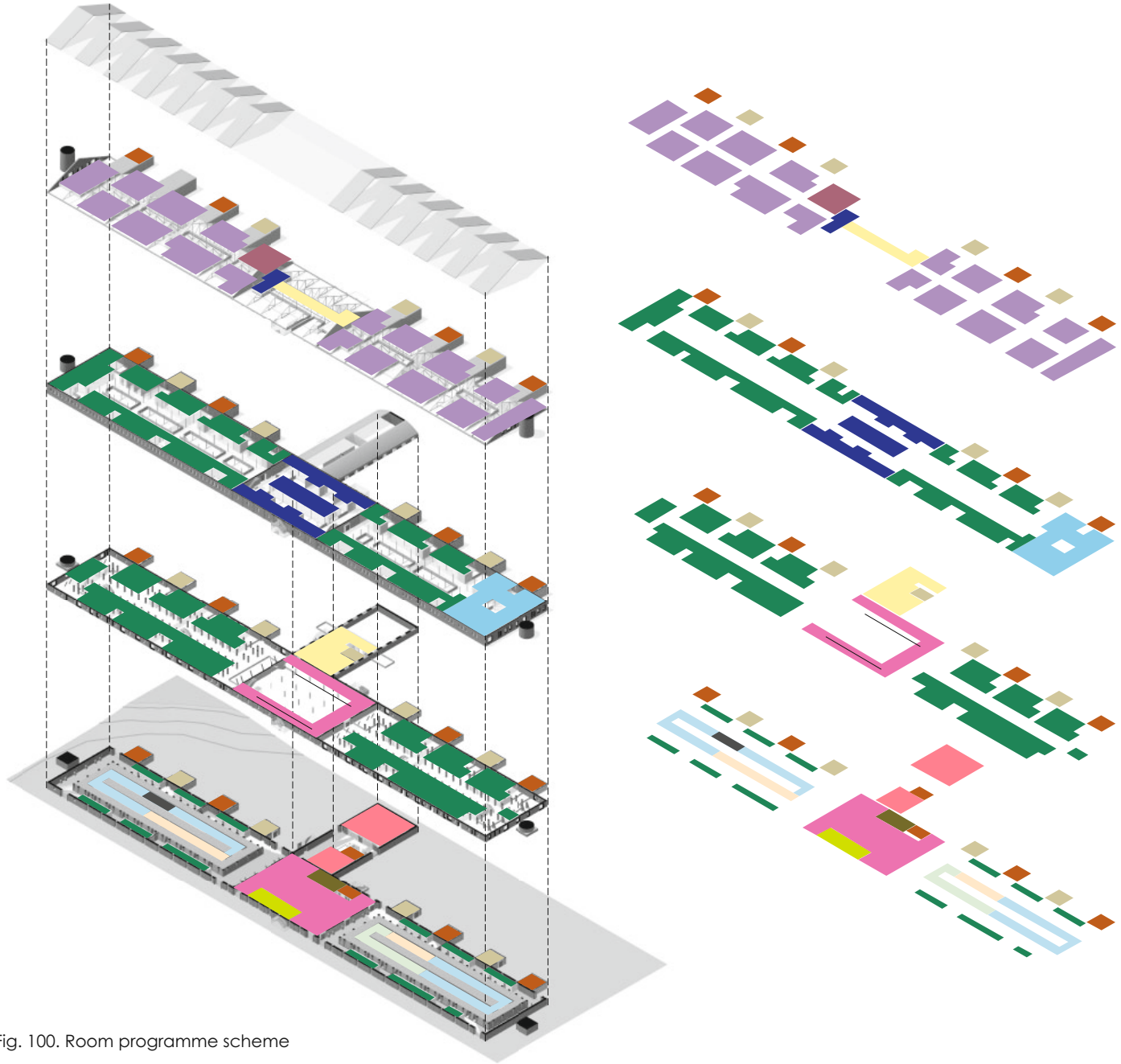


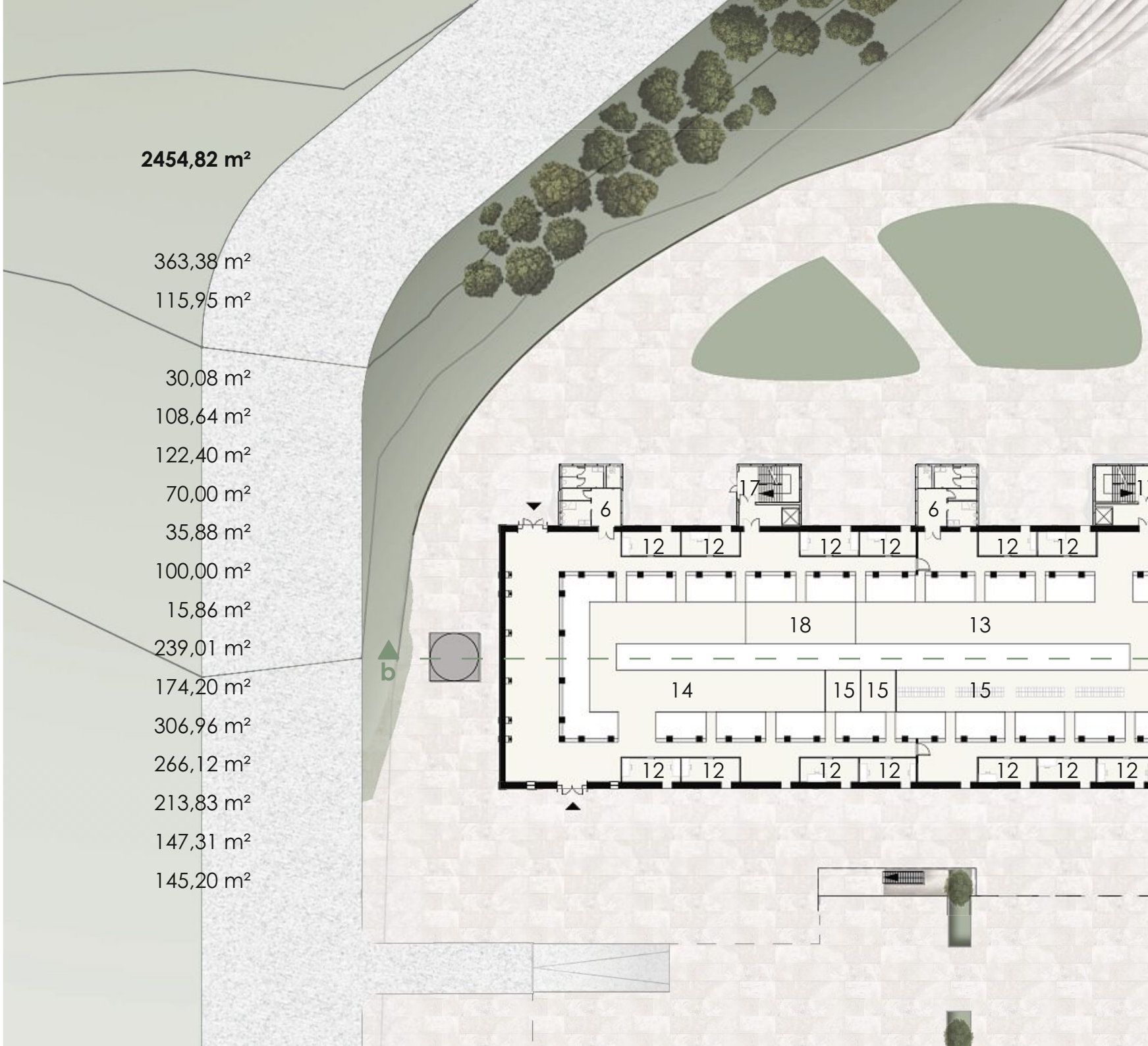
Fig. 100. Room programme scheme

Ground Floor

2454,82 m²

Room programme

1 Lobby	363,38 m²
2 Catwalk	115,95 m²
3 Seating	
4 Security/Post	30,08 m²
5 Shop	108,64 m²
6 Toilets	122,40 m²
7 Technical room	70,00 m²
8 Copy area	35,88 m²
9 Seminar room	100,00 m²
10 Wardrobe	15,86 m²
11 Theater	239,01 m²
12 Student studios	174,20 m²
13 Archive	306,96 m²
14 Storage	266,12 m²
15 Locker room	213,83 m²
16 Exibition	147,31 m²
17 Staircase/Lift	145,20 m²



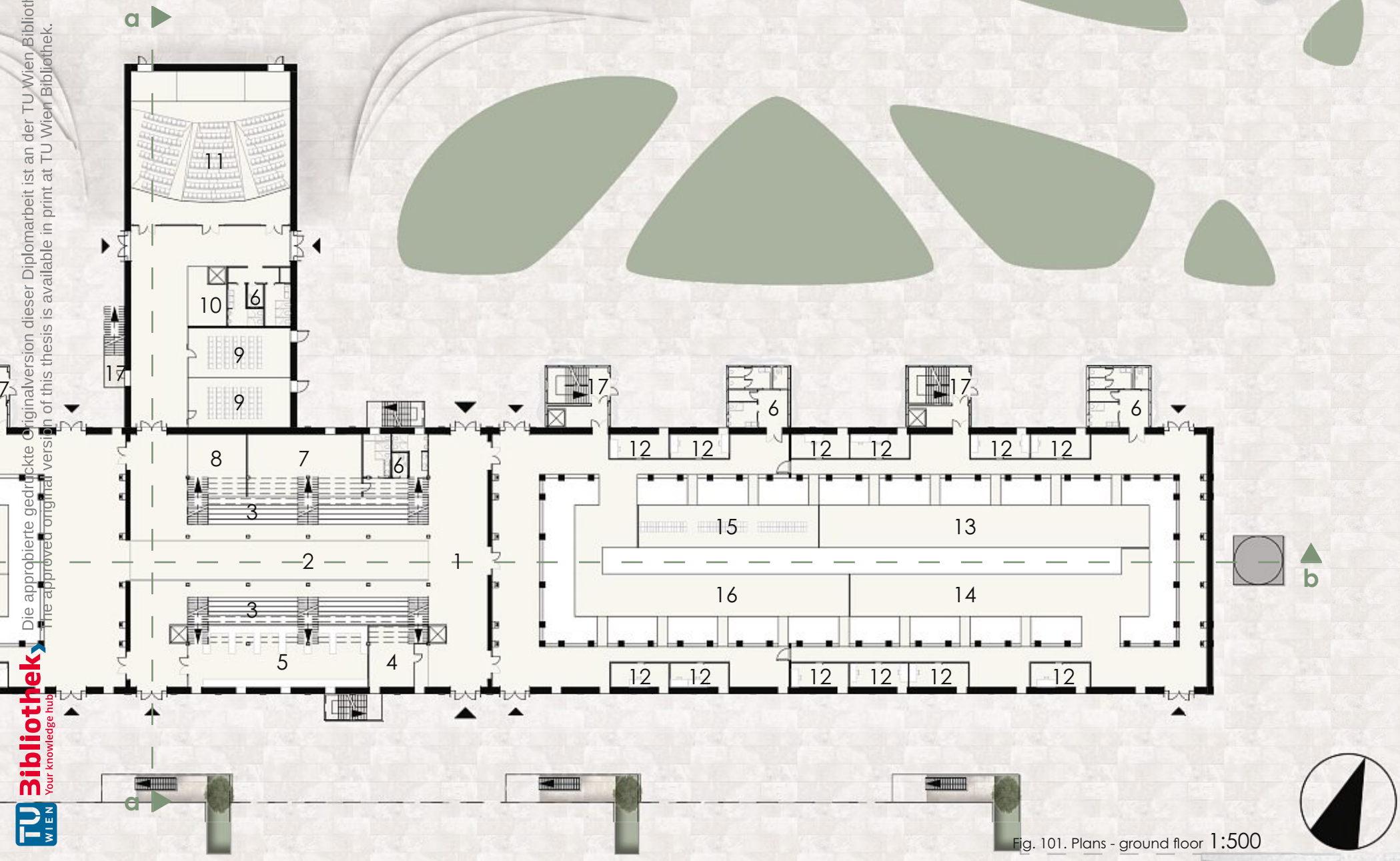
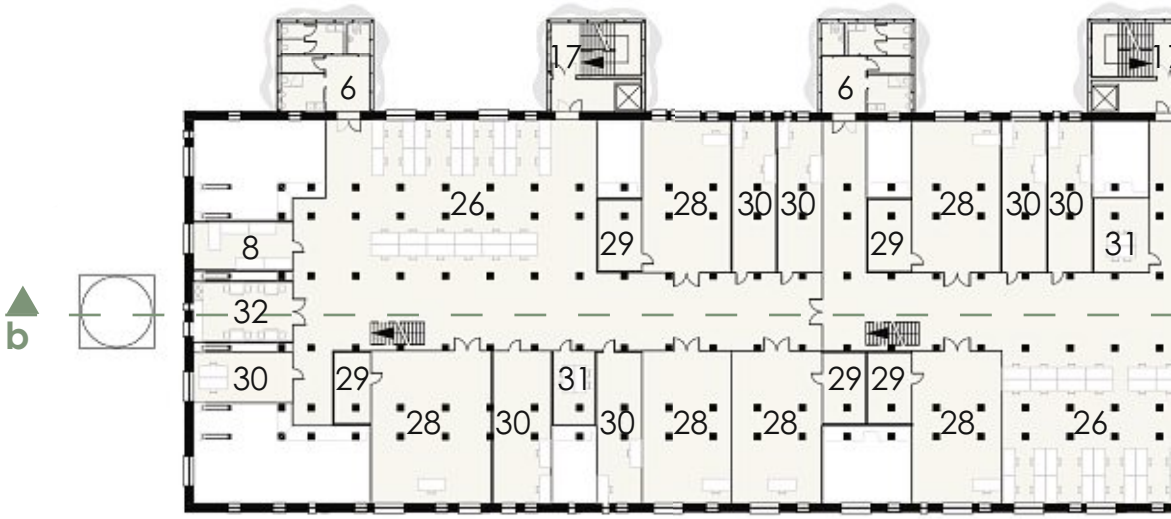


Fig. 101. Plans - ground floor 1:500

First Floor 2801,77 m²

Room programme

6 Toilets	96,90 m²
8 Copy area	37,15 m²
17 Staircase/Lift	145,20 m²
18 Cafeteria	208,65 m²
19 Buffet	18,40 m²
20 Kitchen	26,54 m²
21 Kitchen storage	10,02 m²
22 Freezer	5,72 m²
23 Cash register	10,88 m²
24 Gallery	388,45 m²
25 Audio/Lights technician	10,47 m²
26 Student workspace	525,23 m²
27 Cafeteria backoffice	16,89 m²
28 Classroom	622,68 m²
29 Classroom storage	112,12 m²
30 Office	376,18 m²
31 Meeting room	59,90 m²
32 Tea kitchen	40,39 m²
43 Computer room	89,28 m²



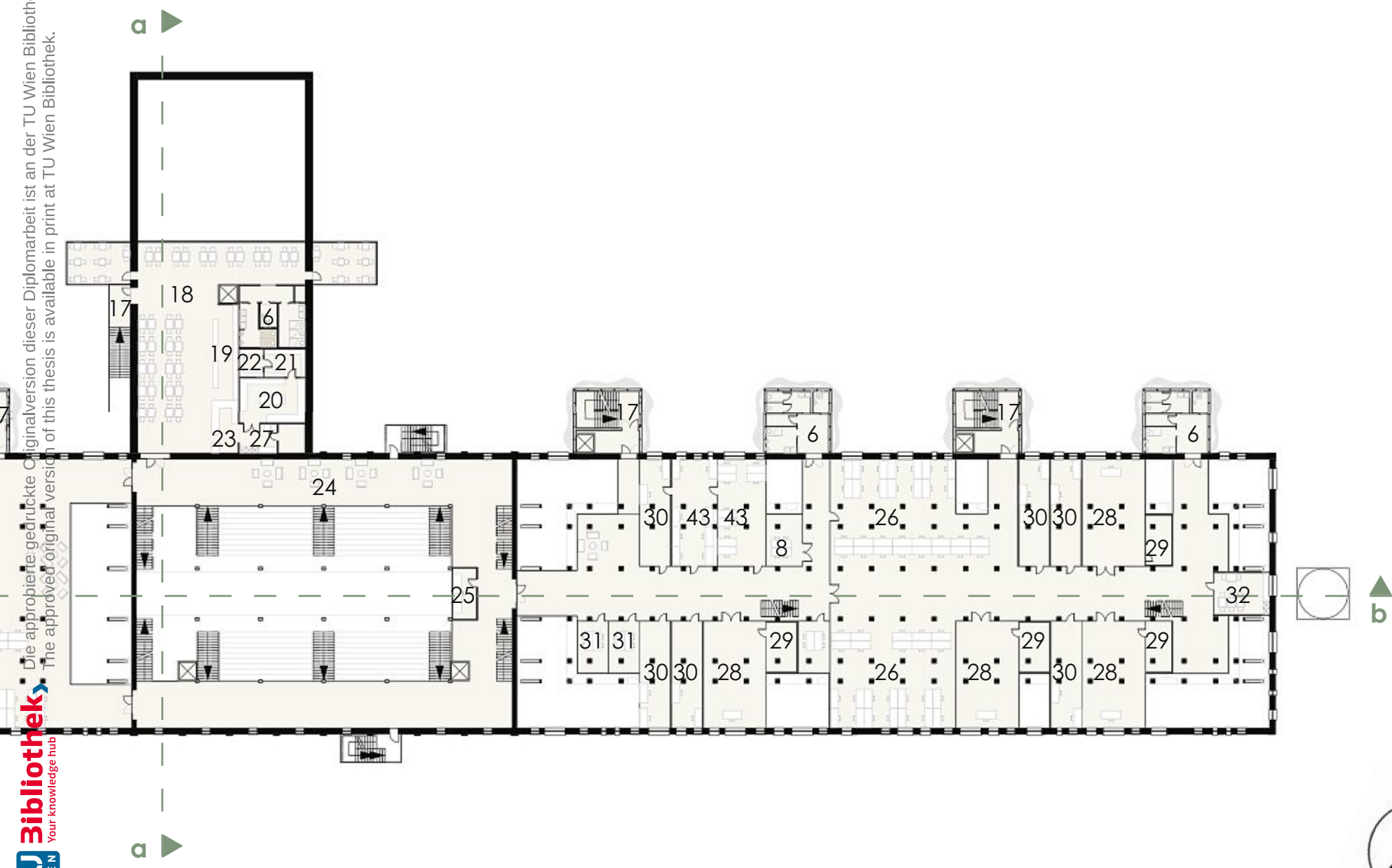
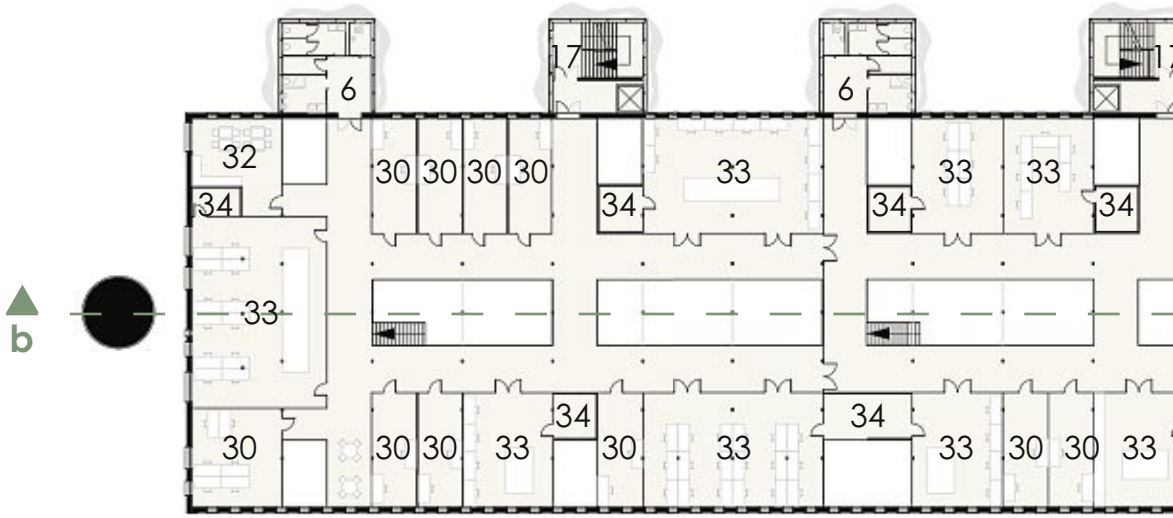


Fig. 102. Plans - first floor 1:500

Second Floor 2325,47 m²

Room programme

6 Toilets	79,68 m²
17 Staircase/Lift	145,20 m²
30 Office	70,00 m²
31 Meeting room	50,00 m²
32 Tea kitchen	44,64 m²
33 Workshop	1056,27 m²
34 Workshop storage	135,57 m²
35 Student's office	61,57 m²
36 Administration	164,13 m²
37 Library	518,41 m²



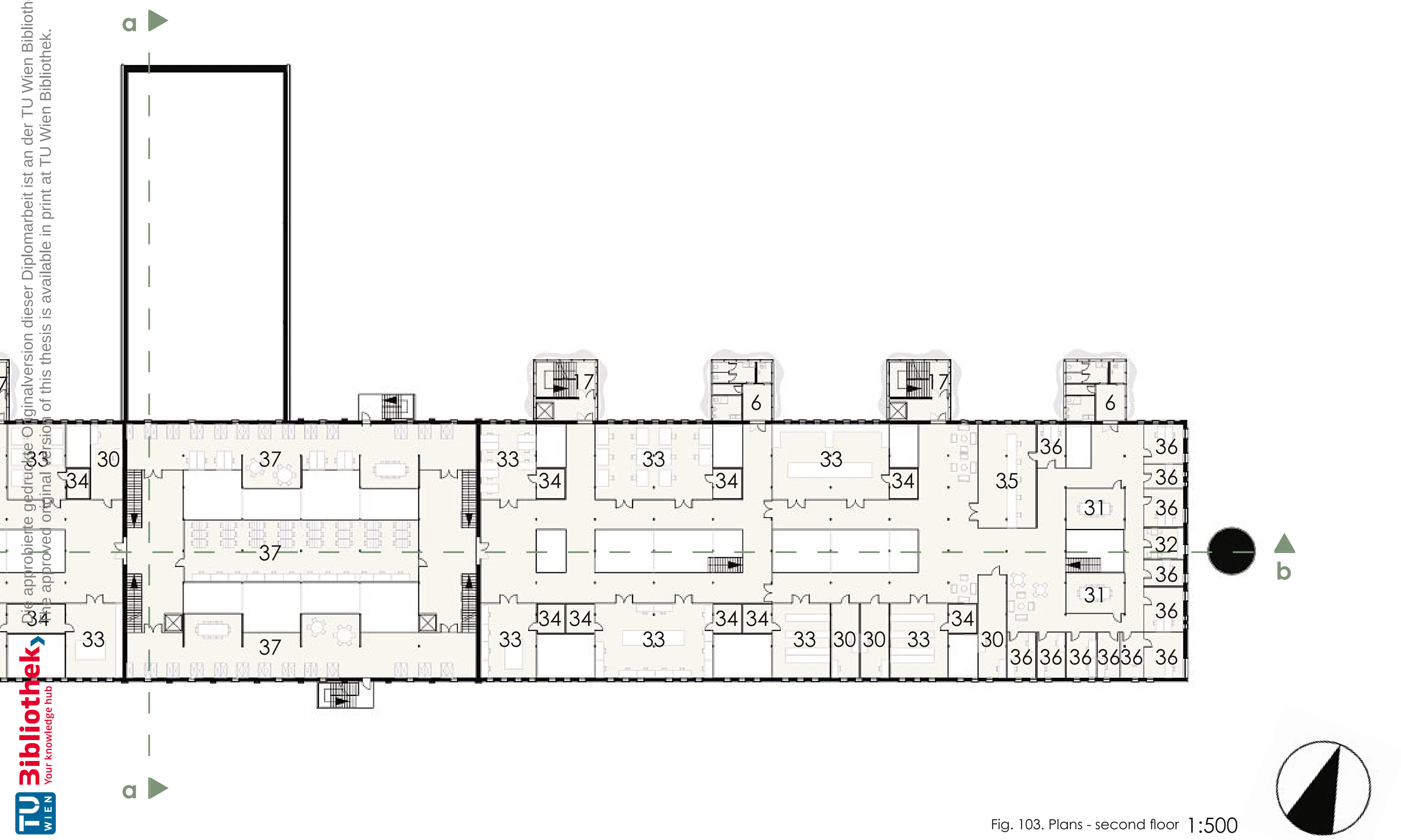
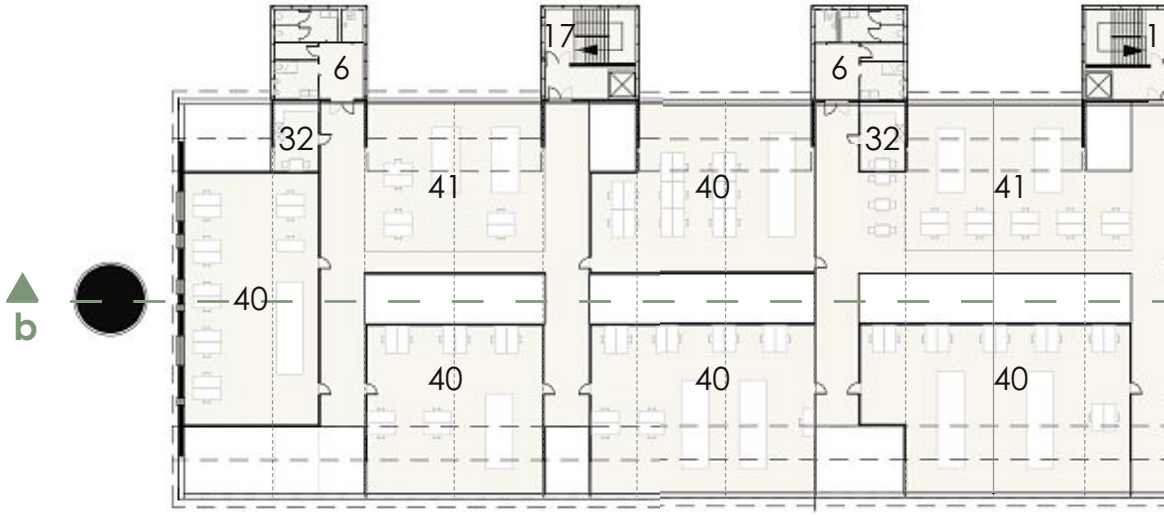


Fig. 103. Plans - second floor 1:500

Third Floor 2801,22 m²

Room programme

6 Toilets	79,68 m²
17 Staircase/Lift	145,20 m²
32 Tea kitchen	54,00 m²
38 Cafe	117,05 m²
39 Librarian	67,68 m²
40 Rentable office	1762,69 m²
41 Rentable open office	447,46 m²
42 Photo studio	127,46 m²



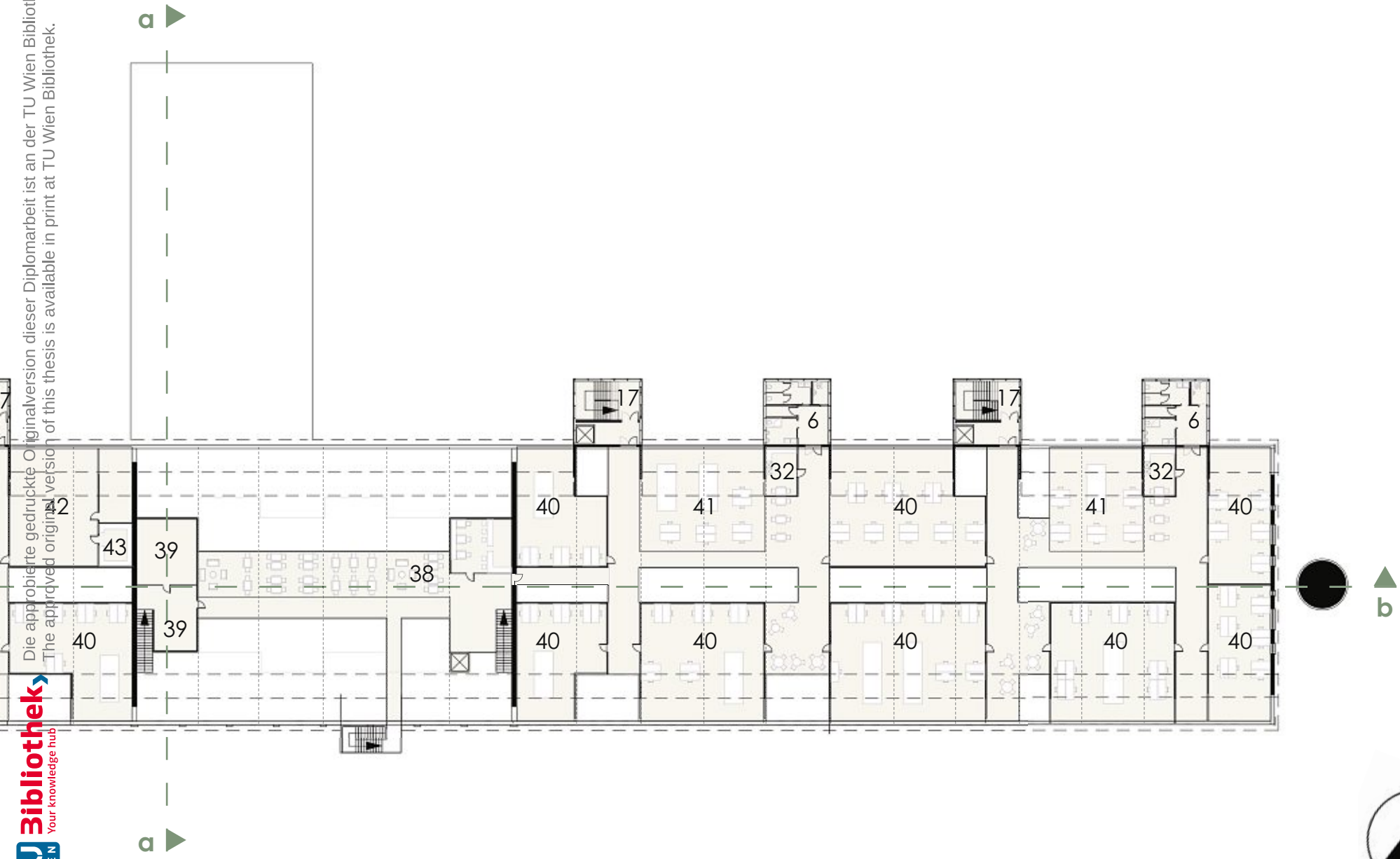
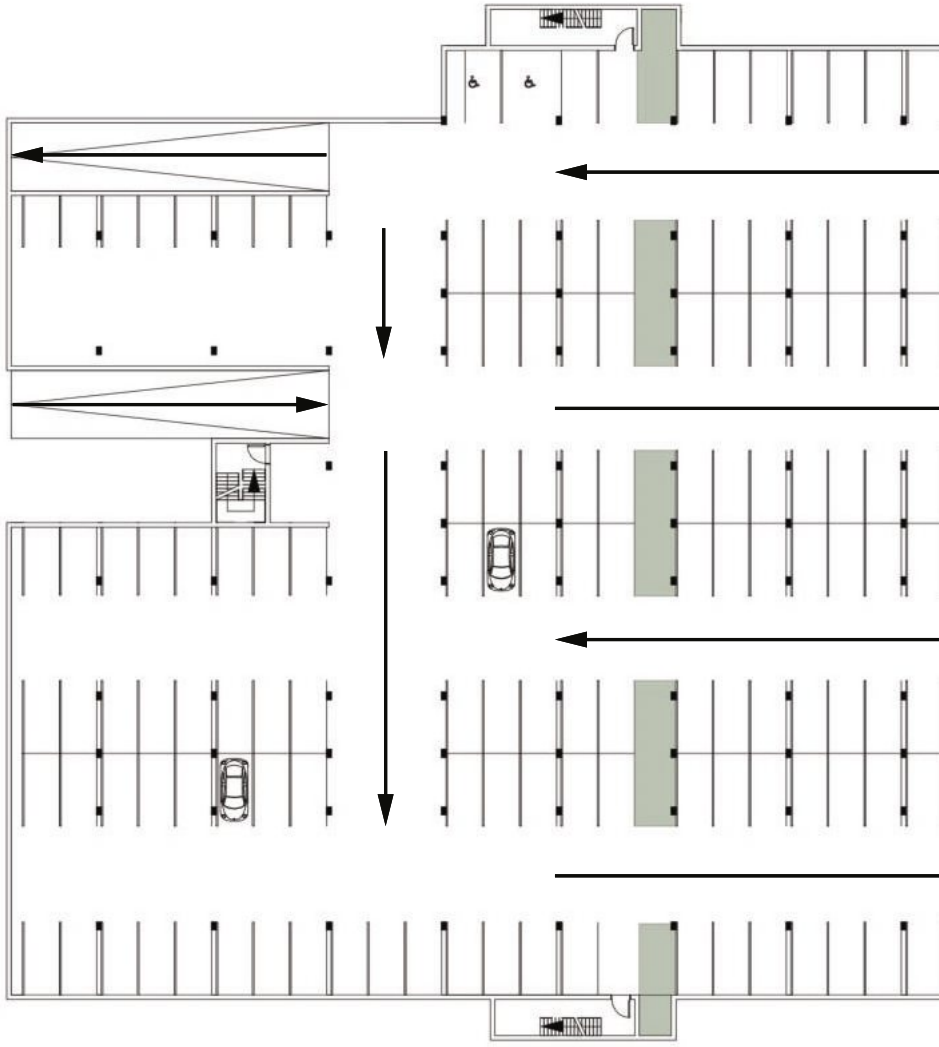


Fig. 104. Plans - third floor 1:500

Underground garage



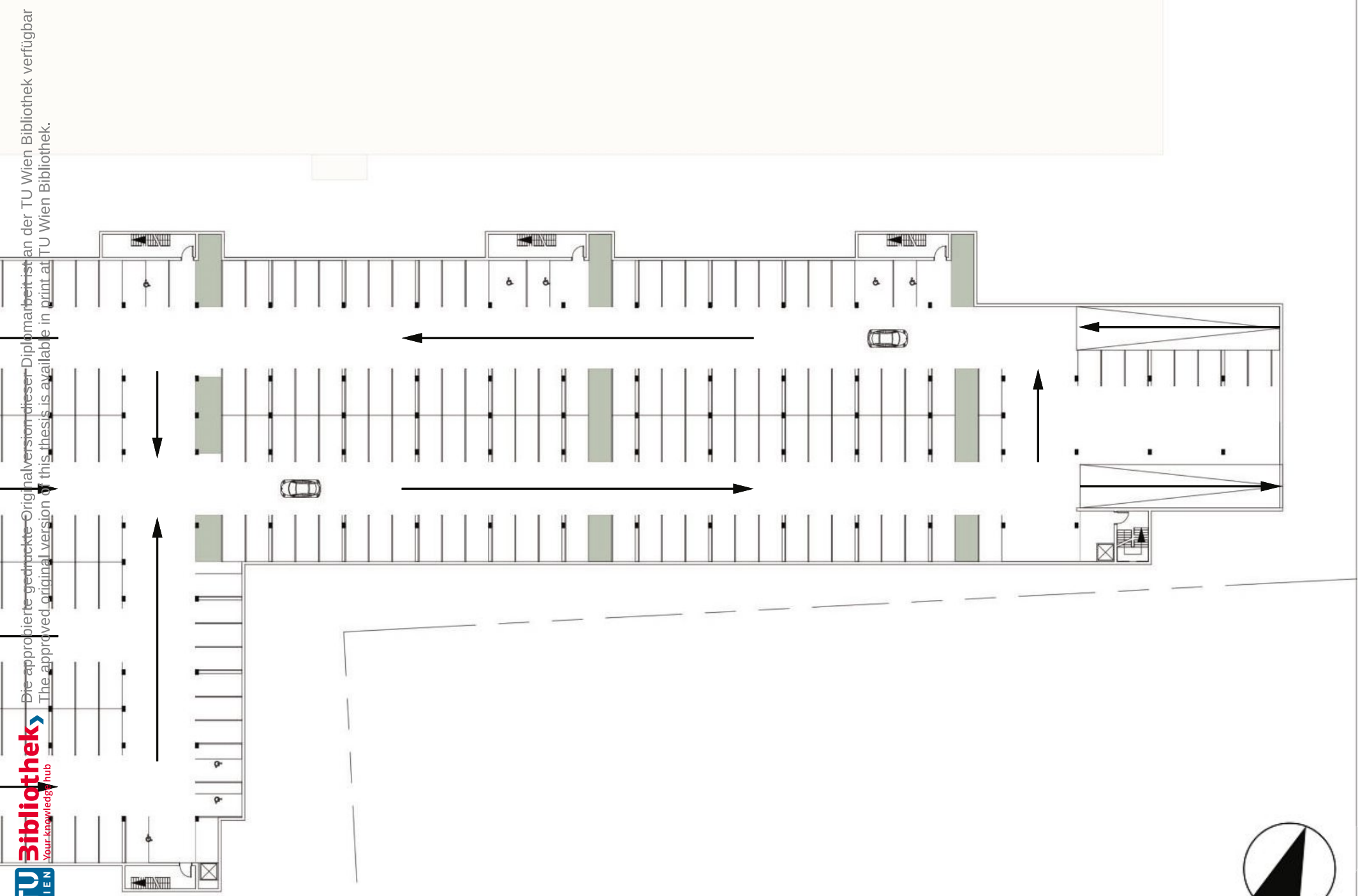


Fig. 105. Plans - Underground garage 1:500

Section A-A

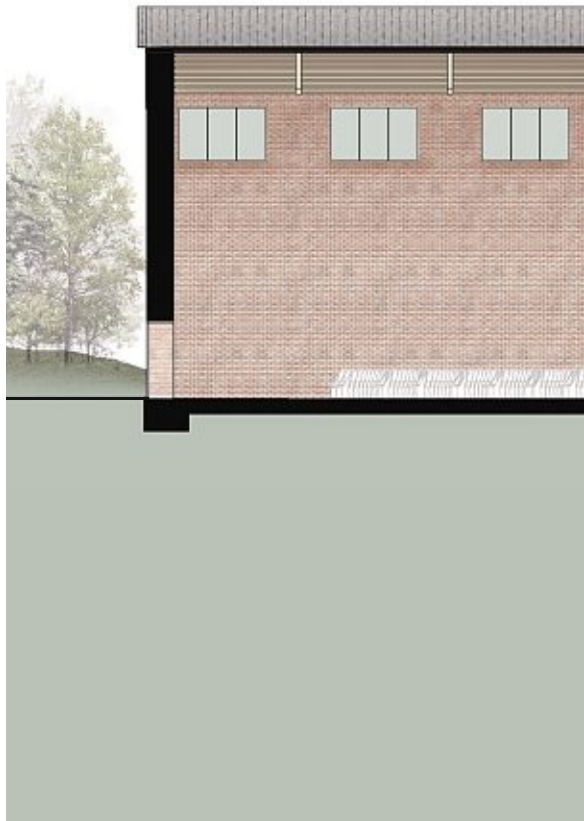
16,10

10,90

6,60

3,80

0



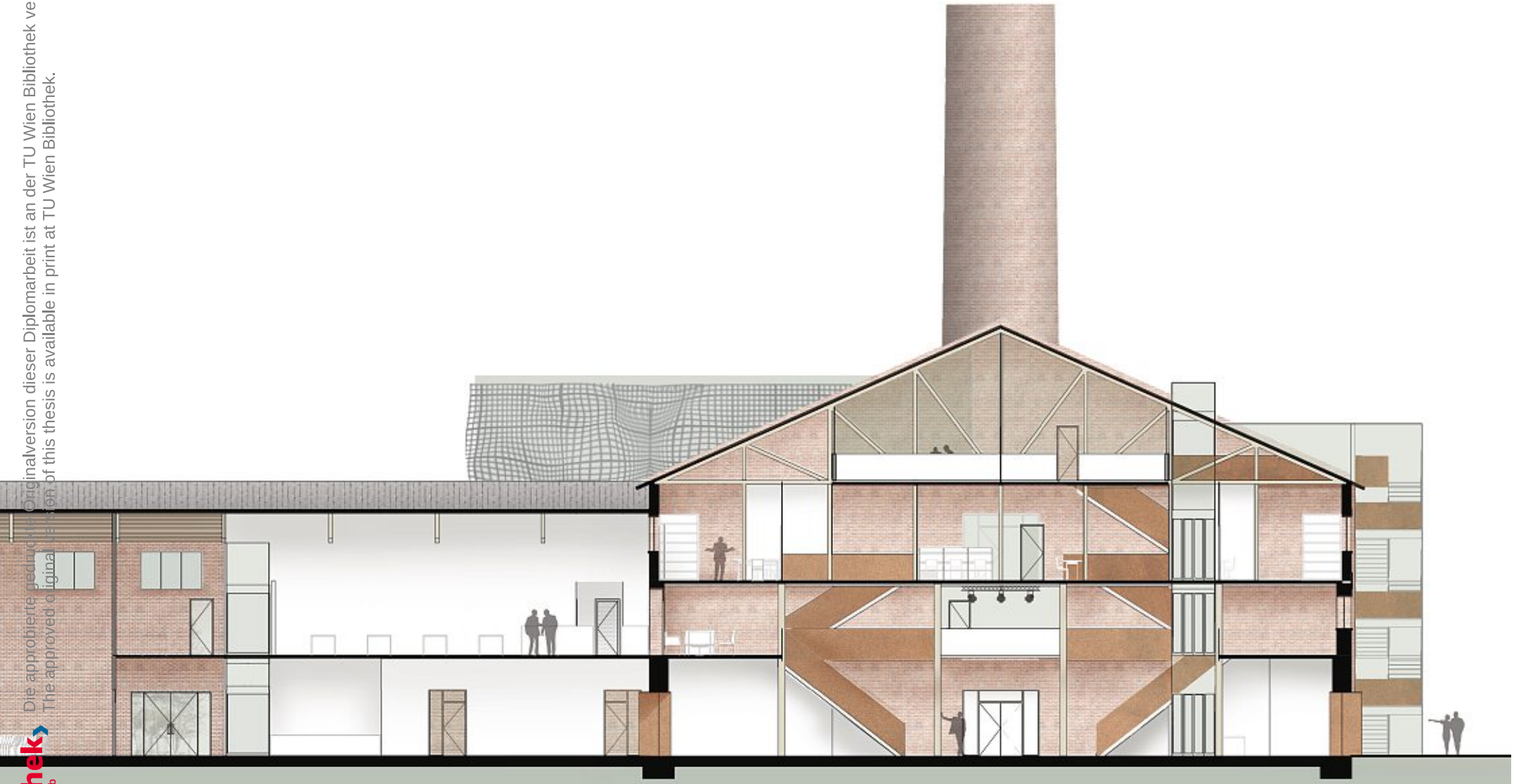


Fig. 106. Sections - aa 1:200

Section B-B

Fig. 107. Sections - bb 1:500

Elevation South

Fig. 108. Elevation - South 1:500

Elevation West

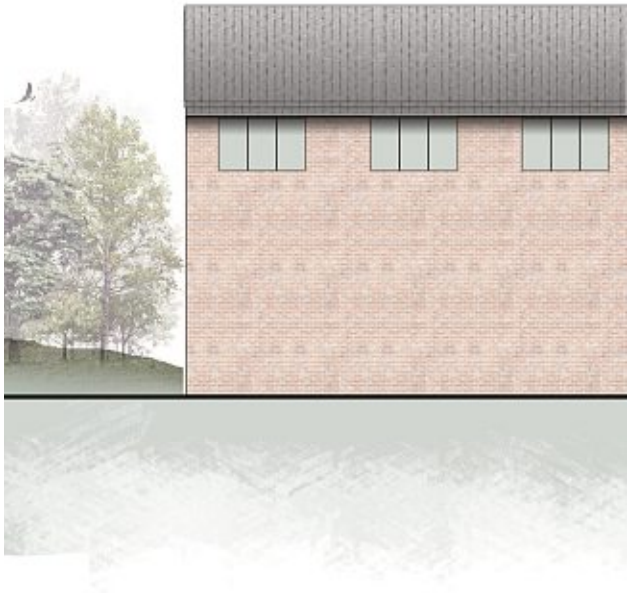
16,10

10,90

6,60

3,80

0



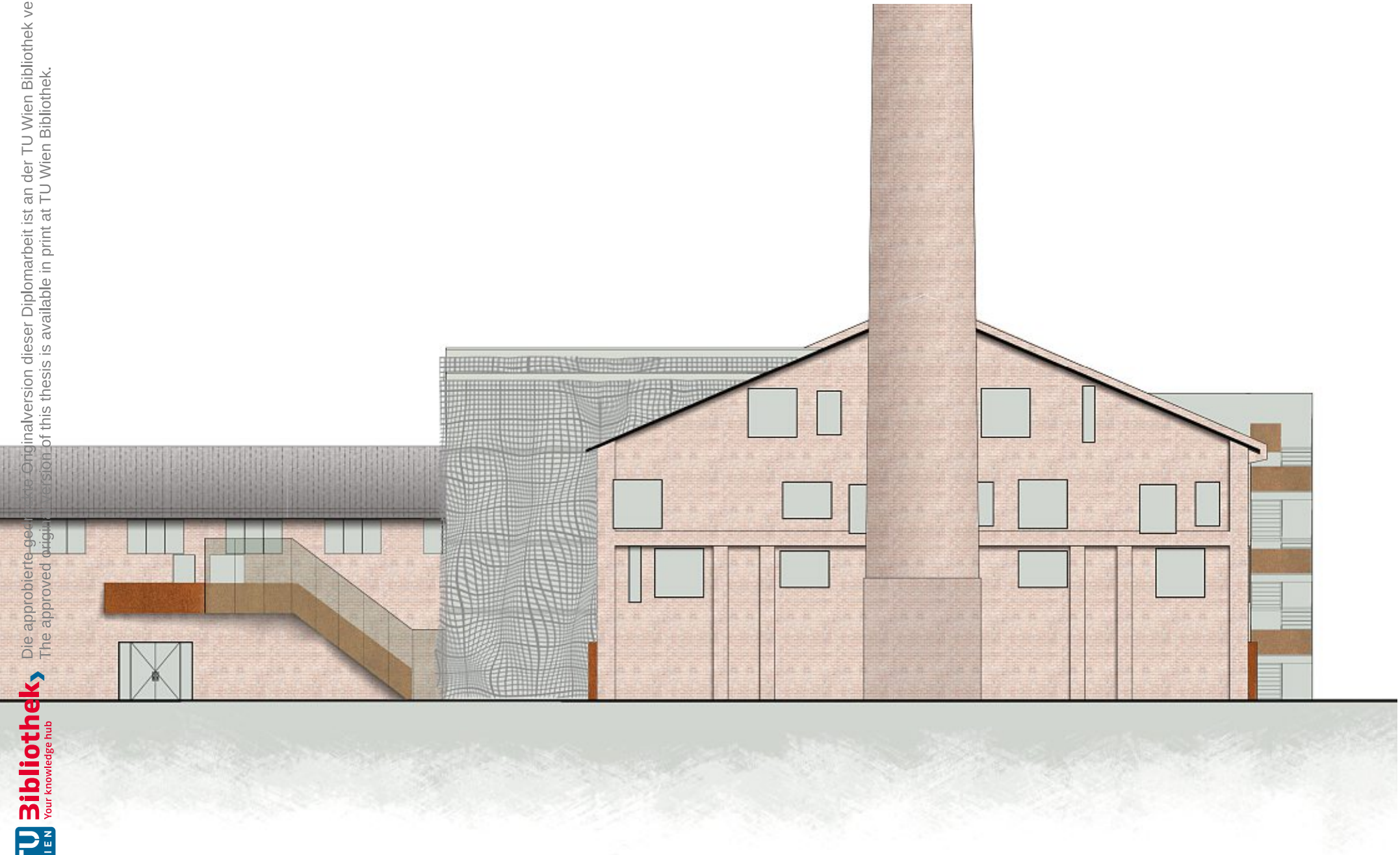


Fig. 109. Elevation - West 1:200

Elevation North

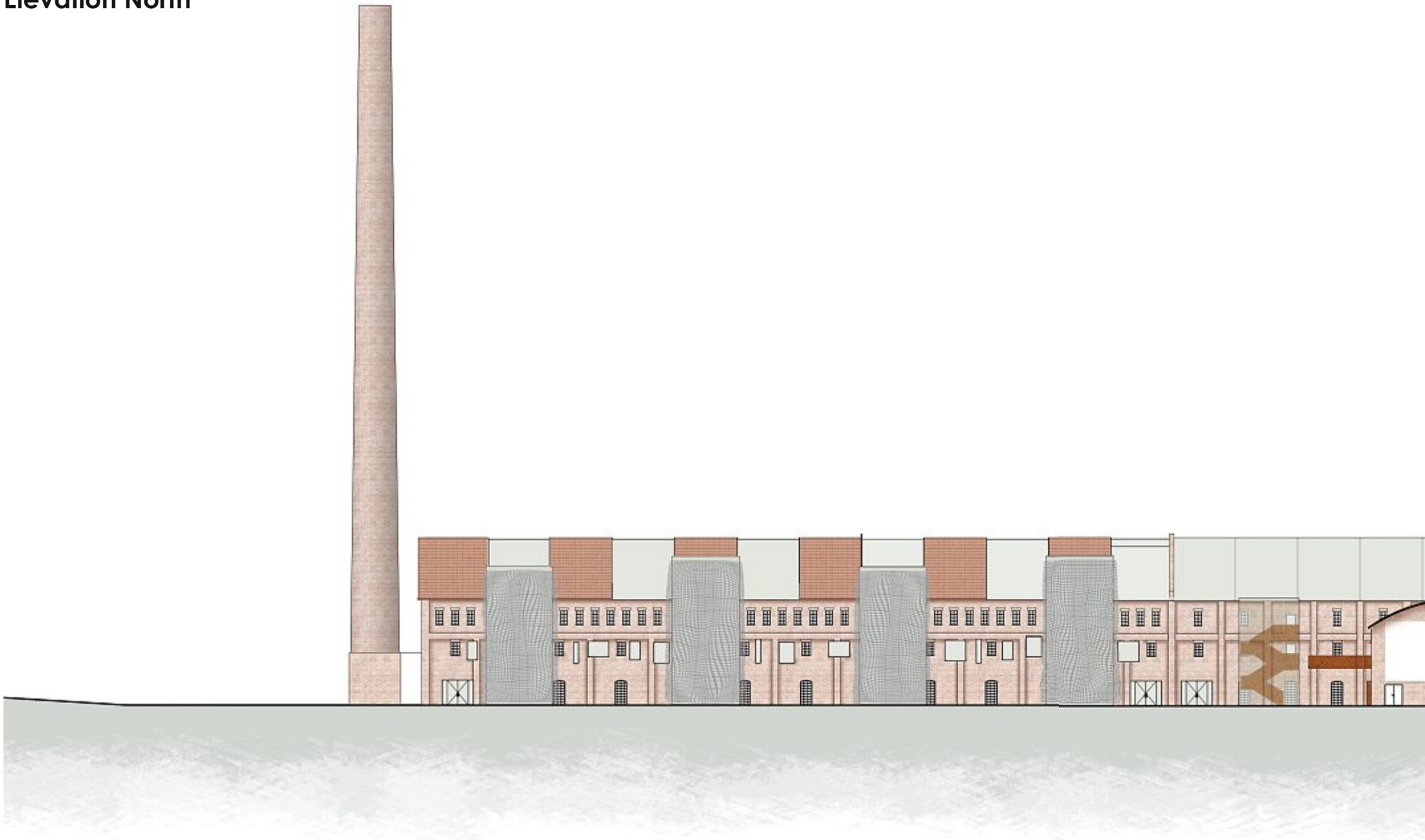
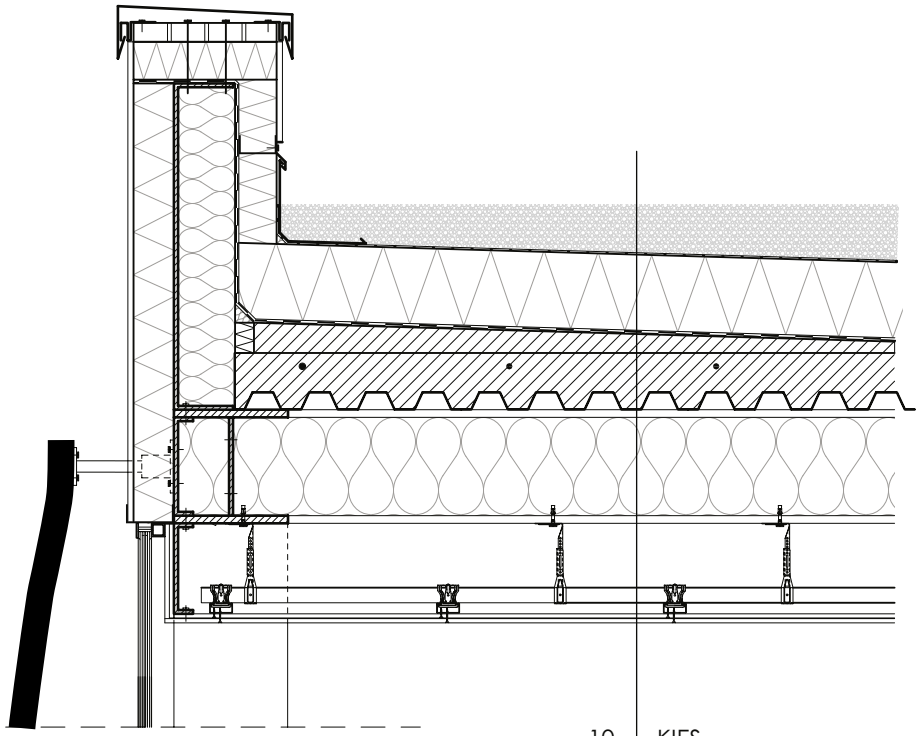


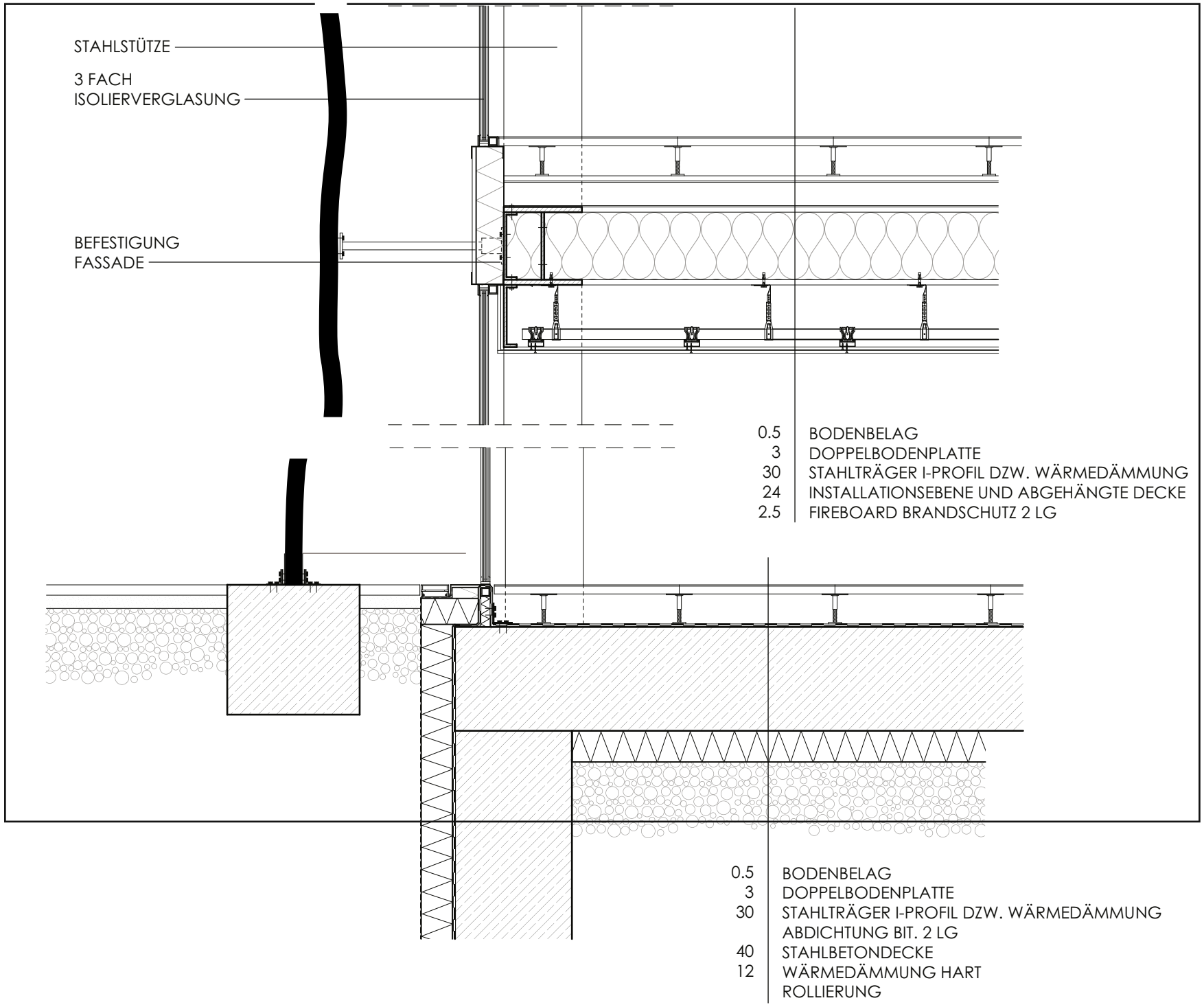
Fig. 110. Elevation - North 1:500

Details



10	KIES
	FILTERVLIES
20	WÄRMEDÄMMUNG XPS
	ABDICHTUNG BIT. 2 LG
	DAMPFDRUCKAUSGLEICHSSCHICHT
	VORANSTRICH
	GEFÄLLEBETON (2%)
15	TRAPEZBLECH UND AUFBETON
30	STAHLTRÄGER I-PROFIL DZW. WÄRMEDÄMMUNG
24	INSTALLATIONSEBENE UND ABGEHÄNGTE DECKE
2.5	FIREBOARD BRANDSCHUTZ 2 LG

Fig. 111. Detail section of the new structure 1:20



Renderings

Fig. 112. Renderings - Lobby - regular day

Fig. 113. Renderings - Lobby - during show

Fig. 114. Renderings - View from the Nortwest

Fig. 115. Renderings - View on the East facade

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