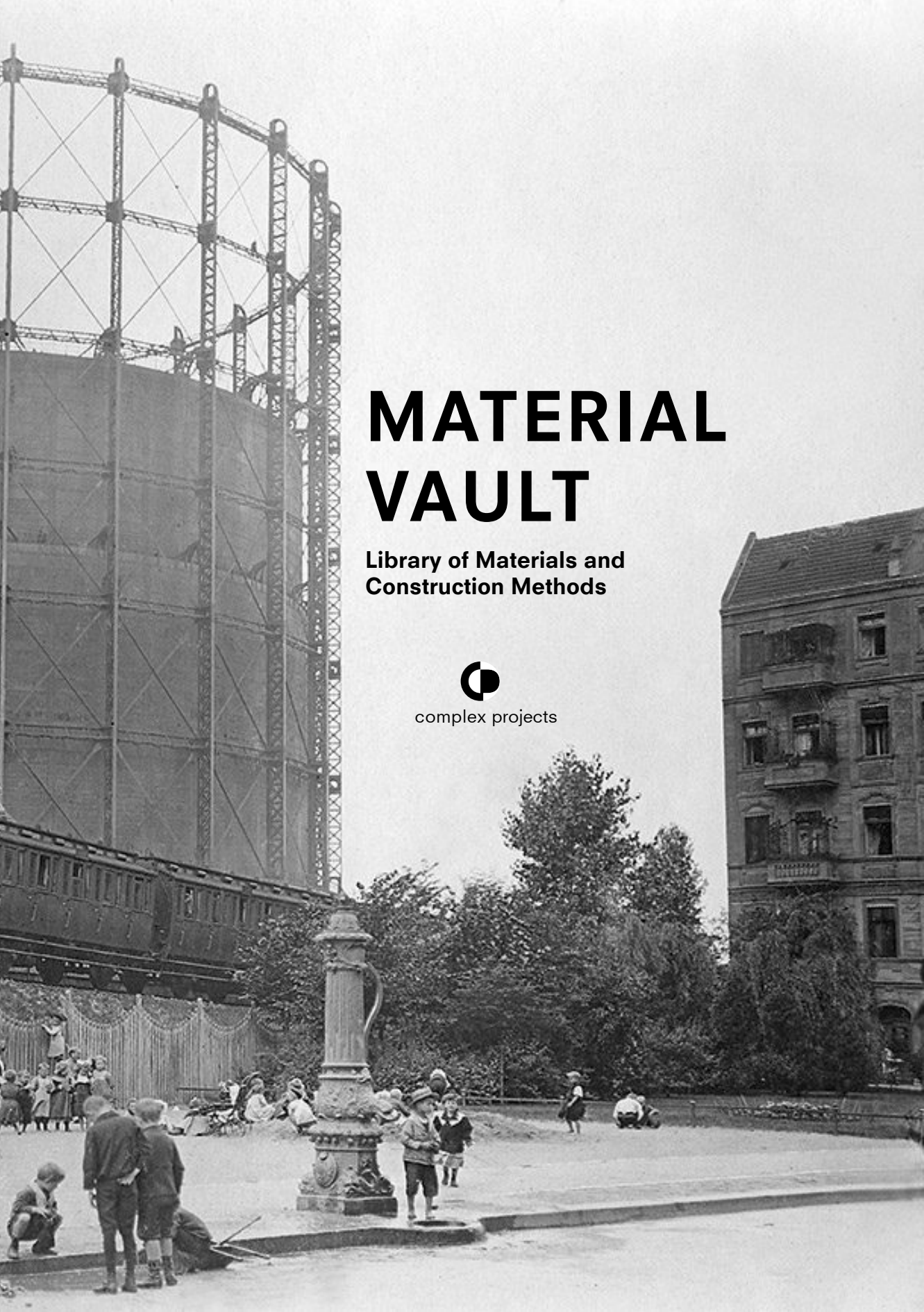

MATERIAL VAULT

Library of Materials and Construction Methods

complex projects

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23/01/2024
Fall Semester

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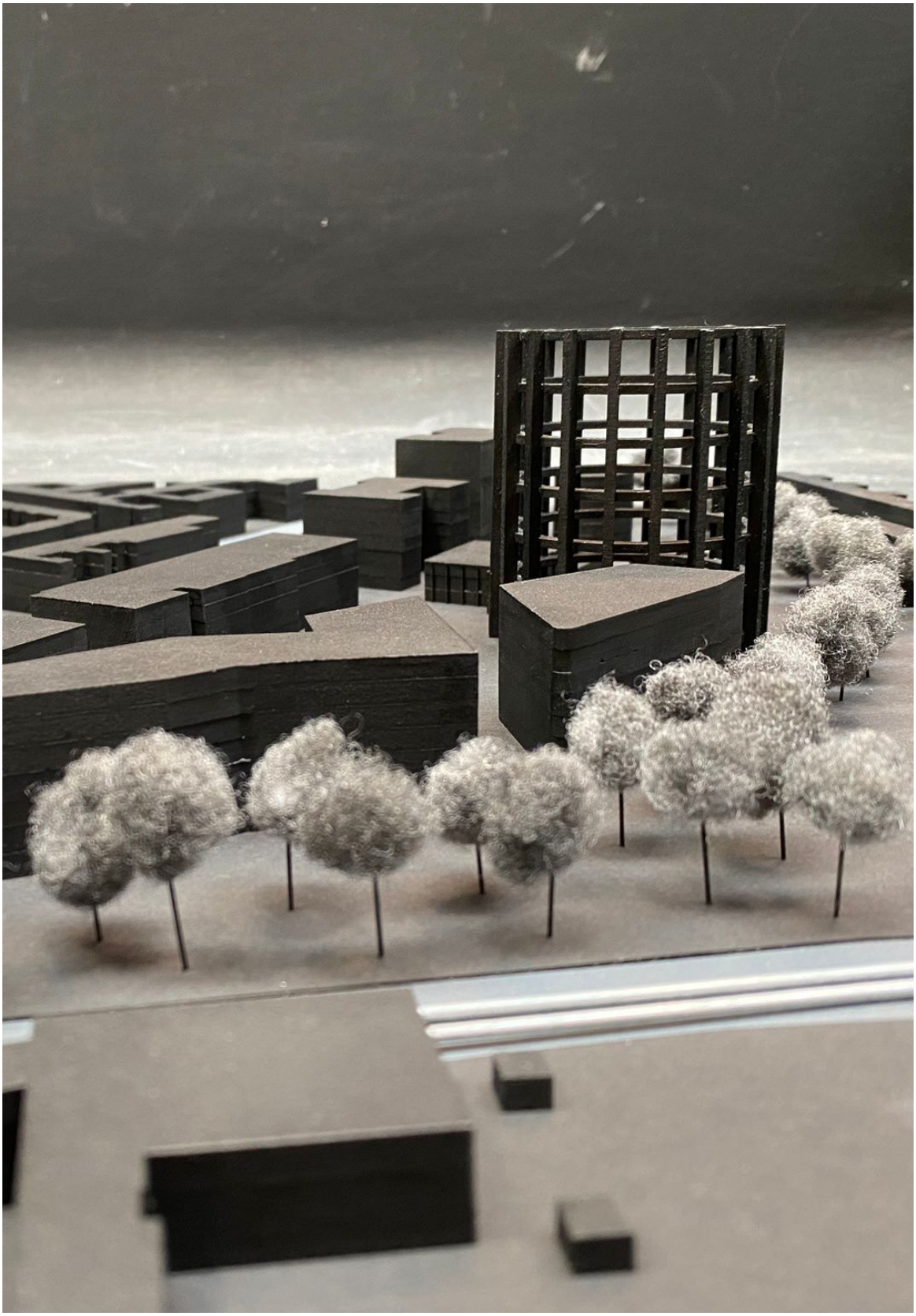


Abstract

The Complex Projects studio provides a collaborative and interdisciplinary platform for design and research, with a focus on overlapping lenses, typologies, and city selection to ensure project specificity and relevance. This approach, coupled with thematic explorations and an office-like structure, enriches the depth of research fields.

In response to the critical challenge facing traditional library typologies in the digital era, the proposed Material Library and Research Center seeks to redefine the purpose of libraries as curated repositories of physical materials and collaborative spaces for knowledge generation. Housed in the Schöneberg gasometer at the EUREF campus in Berlin, this adaptive reuse project aims to revive the library typology while addressing resource scarcity.

The research methodology is structured around two main approaches: a design brief and case studies. The design brief encompasses client analysis, program requirements, and site selection, drawing insights from relevant precedents. Site selection is guided by a value assessment matrix, ensuring a comprehensive examination of historical, cultural, and contextual factors. Clients, including the State Museums of Berlin, the Federal Institute for Materials Research and Testing (BAM), and the EUREF campus Berlin, are analyzed to ensure alignment with project goals. Literature case studies on adaptive reuse, curatorial design, and urban workshop projects provide valuable insights and critical evaluation of existing approaches.

Addressing the challenges of existing building stock through adaptive reuse strategies aligns with responsible resource management principles and contributes to societal change. By reimagining libraries as dynamic hubs of knowledge production and public engagement, the proposed Material Library offers a new perspective on the typology's relevance and impact.

INDEX

INTRODUCTION

01

Figure 1, View of the Pergamonmuseum made by the author.

Future Pasts

The dialectics on architectural preservation stems from the fascination with the past. The built environment that defines our world today is ultimately a product of the past. From the conception of the idea, towards a finished design and to construction and use, a building is already "old news". The built environment allows for the weakening of temporal boundaries between the past and the present. [1] The field of heritage and preservation often deals with "neglected castles, historic mansions and ruinous churches", suggested by Marieke Kuipers. [2] She insinuates that the historic value of younger buildings (not older than 50 years) is not sufficiently evaluated.

The discourse between timeless and modern draws a harsh line between what is considered a monument and what gets left to decay. Louis Kahn defines monumentality "as a quality, a spiritual quality inherent in a structure which conveys the feeling of its eternity, that it cannot be added to or changed". [3] In his manifesto, Sert Leger Giedion states that "monuments are, therefore, only possible in periods in which a unifying consciousness and unifying culture exists." [4] The heritage that is selected to be preserved ultimately carries certain values from the past towards the present. The way it is narrated can have a lasting effect, as the professor of Human Geography at the University of Ulster Brian Graham "heritage is that part of the past which we select in the present for contemporary purposes, whether they be economic or cultural (including political and social factors)". [5]

The question then is not 'is it important to preserve the past', but 'which past is it important to preserve', and ultimately a question of 'how does one preserve it'.

How does one preserve future knowledge that is yet to be created? Can the future pasts be accommodated through architecture?

In this research plan, two core problematizations will be set forth – the library typology and resource scarcity – that form the main research question to be answered in the continuation of the Master Thesis. Architectural theory will contextualize these problems, and a thematic research through various methodologies will be applied to investigate their applicability in the design process and their relation.

1 Present Pasts: Urban Palimpsests and the Politics of Memory: Cultural Memory in the Present, Andreas Huyssen
2 Designing from Heritage: Strategies for Conservation and Conversion, Marieke Kuipers and Wessel de Jonge
3 Robert Twombly: Louis Kahn: Essential Texts. Paul Zucker's New Architecture and City Planning.' A Symposium.
4 Nine Points on Monumentality, J. L. Sert, F. Léger, S. Giedion, 1943
5 Brian Graham, "Heritage as Knowledge: Capital or Culture?," Urban Studies 39, no. 5-6 (May 2002): 1004.

Library as a dying typology

A typology that is becoming increasingly obsolete are libraries. One of the most prominent examples of collection of material in Western Civilization are the scholars and the aristocrats. Each community gathered precious written works and hosted gatherings to discuss or spread the knowledge acquired through their treasuries. Nonetheless, this cultivation of learning remained beyond the reach of many, as the scholars charged high fees for their classes, and the aristocrats practiced ostentatious gatekeeping. [6] The role of these libraries was two-fold, firstly, to collect knowledge, and more significantly, to actively generate knowledge. According to contemporary definitions of the term library, the main purpose of the building is to "a place in which literary, musical or artistic materials (such as books, manuscripts, recordings, or films) are kept for use" or "a collection of such materials" [7], but also "a room in a person's house where books are kept", with the main synonym being "archive" [8]. The library's original purpose of serving as a space for discussions and teachings has somewhat gained a background role. The modern library is mainly an institution of collecting, preserving, and making accessible written and non-written material – but the buildings itself are fading under the threat of digitalization. The availability of resources online diminishes the need to visit libraries, that in turn try to adapt by providing digital services and online resources. But this doesn't solve the main problem – all books can be scanned to pdfs, all sources can be accessed online at home. Annual visits to such German institutions has decreased after the global pandemic, and has not yet recovered. [9] So how can these houses of knowledge strengthen their place in the future?

6 Staikos K. Cullen T. & Koutras N. The history of the library in western civilization, 2012.
7 Definition of LIBRARY. (n.d.). Www.merriam-Webster.com. https://www.merriam-webster.com/dictionary/library
8 Library Definition & Meaning | Britannica Dictionary. (n.d.). Www.britannica.com. https://www.britannica.com/dictionary/library
9 Public library visits Germany 2022. (n.d.). Statista. https://www.statista.com/statistics/1335836/public-libraries-visits-number-germany/

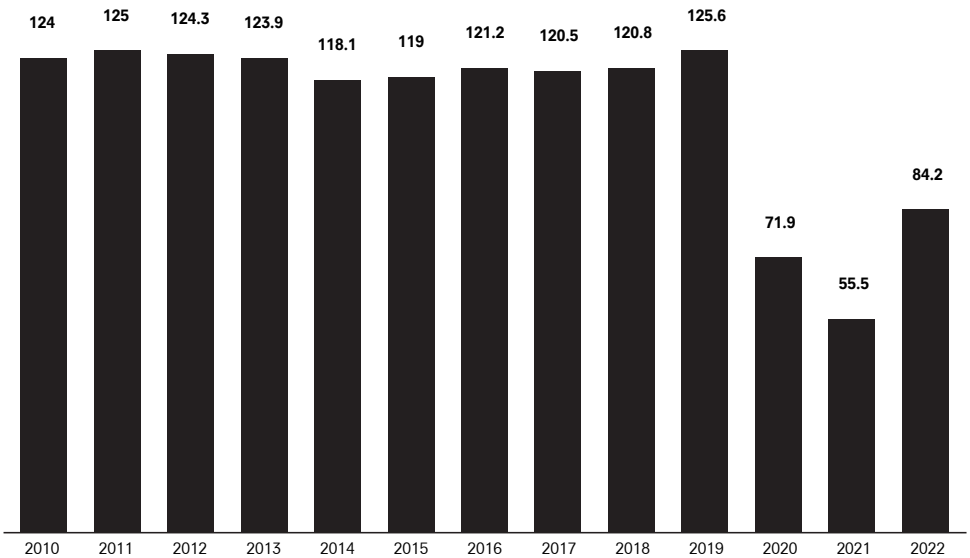


Figure 2, Library visits per year in Germany.

Library

[li·brer·e] noun

1a a place in which literary, musical or artistic materials (such as books, manuscripts, recordings, or films) are kept for use

1b a collection of such materials

2 a room in a person's house where books are kept

3 a collection of publications on the same subject

Figure 3, Definitions of the term 'library'.

Materials

Another holistic issue is the climate emergency. We progressively need new methods of construction and increased awareness of the impact of the building sector on the environment. Builders and designers need a setting where methods like resource conservation, energy efficiency, carbon footprint and adaptability are critically applied and curated. Research from the Global Footprint Network reveals that humanity is currently using 1.7 times the Earth's available resources, indicating an unsustainable demand on our planet's finite resources. [10] Urgent action is needed to address these interconnected issues, promote sustainable construction practices, and develop innovative solutions to mitigate the environmental impact of the building sector.

The scope of the Master thesis will be used for the design of new building of Berlin, one that combines materials and library into a one-off building: Material Vault: Research Library of Material and Construction Methods. The Institute is an establishment, a front-runner in material research, innovation and curation. It sets a benchmark for future-proof construction and manufacture methods, while reimagining the typology of a library with materials as 'stacks', by becoming in essence a scientific library of materials.

Figure 4, 1.7 Earths.

10 Dobosz, J. (n.d.). Billionaire Stocks For An October Market Rebound. Forbes. Retrieved January 16, 2024, from https://www.forbes.com/sites/johndobosz/2023/09/30/billionaire-stocks-for-an-october-market-rebound/

THEORETICAL DICHOTOMIES

02

History - memory

In a city, so temporally layered as Berlin, the past is weighing on the present through material traces. The elements that endure the test of time determine the social consciousness of the city. Fragments of the World War II, the separation of East and West and their subsequent reunification present challenges for the remembrance (or forgetting) of the layers of history. The "tenuous self-identity and visions of the future" can only be sustained "through a continued interrogation of urban memory". [11] History, being objective and universal, and memory, being subjective and personal, must come together to form a livable image of future of the city. The must not be too much focus on either one to avoid the hypertrophy of history or the narcissism of memory.

11 Present Pasts, 6.

Figure 5, View of the Mitte neighborhood, made by the author.

Figure 6, View of the Berliner Dom, made by the author.

"memory discourses are absolutely essential to imagine the future and to regain a strong temporal and spatial grounding of life and the imagination in a media and consumer society that increasingly voids temporality and collapses space" [12]

"… materiality is not simply what is physically present. Buildings, streets and squares may be seen, heard and smelt through memories of what was once there but are no longer – smells, roller-skating, fields, buildings, glamour – so that the sensory experiencing of built environments is not entirely a consequence of the present materiality of those buildings." [13]

12 Present Pasts, 6.
13 Degen, Monica Montserrat and Rose, Gillian (2012). The sensory experiencing of urban design: the role of walking and perceptual memory. Urban Studies, 24.

Figure 7, Neue Nationalgalerie.

Figure 8, Fernsehturm.

Figure 9, Richard-von-Weizsäcker-Platz.

Figure 10, Pergamonmuseum.

Figure 11, Potsdamerplatz.

Figure 12, BRICKS Berlin Schöneberg.

Altbau - Neubau

Diverse influences have left Berlin in a disarray of architecturally eclectic historicism. After the 1990s, the city became one of the largest and most rapidly developing construction sites in Europe. [14] The previously secluded neighborhoods of East Berlin, namely Prenzlauerberg, Friedrichshain, and Mitte, were introduced to the dynamic of private real estate. This marketed a shift in the mentality from functional serialization of the Plattenbau towards renovations of historic appeal, [15] and "suddenly having a past was the new future. Altbau trumped Neubau." [16] Nowadays, the clash between banal imagery of a global future and equally banal global pasts epitomizes the struggle between trivial nostalgia and ultra modernism. [17]

Morris - Le Duc

In the segments by le Duc and Morris in Historical and Philosophical Issues on the Conservation of Cultural Heritage, the conflict between the representatives of opposing movements (Anti- and Restoration) seems prerogative about the progression of culture through the built environment. [18] While discussing the correlation between power, knowledge and heritage in her chapter "Heritage, Power and Ideology", lecturer in anthropology at the Martin-Luther University Prof. Dr. Katharina Schramm deduces that "Preservation effectively becomes transformation into a standardised format - as 'culture' is being patrimonized." [19] William Morris, a prominent figure of the Arts and Crafts movement, believed in traditional craftsmanship, simplicity and functionality, whereas Viollet-le-Duc believed that the right approach is to aim for restoration to the true essence of a building. [20]

14 Berlin contemporary : architecture and politics after 1990
15 Zupagrafika. (2019). Panelki : construct your socialist prefab panel block. Zupagrafika.
16 Concrete Utopia: Everyday Life and Socialism in Berlin-Marzahn, Eli Rubin
17 Present Pasts, 50.
18 Nicholas Stanley Price, M. Kirby Talley Jr. and Alessandra Melucco Vaccaro, ed., Historical and Philosophical Issues on the Conservation of Cultural Heritage (Los Angeles: The Getty Conservation Institute,1996), 308-321.
19 Katharina Schramm, "Heritage, Power and Ideology," in The Palgrave Handbook of Contemporary Heritage Research, ed. Emma Waterton and Steve Watson (Houndmills: Palgrave Macmillan, 2015), 445.
20 Eugène-Emmanuel Viollet-le-Duc, "Restoration," from the Dictionnaire raisonné de l'architecture française du XIe au XVIe siècle (1854-1868). English edition On Restoration (London, 1875), 9-17.

Figure 13, Berliner Dom.

RESEARCH FRAMEWORK

03

Research aim

The two struggles stemming from different fields – the obsolescence of libraries and scarcity of materials – constructed the following research question:

Can libraries become future-proof promoters of sharing and creating knowledge through curatorial design and adaptive reuse?

Sub-question: How does curatorial design look like for exhibiting materials and construction methods?

The proposed library model envisions a space where the public engages in the development and testing of new materials. This transformation aims not only to revive the library typology that primarily houses materials but also to position it as a catalyst for the continual generation of knowledge and advancements in material sciences. The problem statement results in a design proposal for the new Material Library and Research Center housed in the Schöneberg gasometer in the hub of energy transition - EUREF campus in Berlin.

The adaptive reuse project will incorporate a public workshop for material testing – the 'backbone' of the library. Complementing the workshop, the project envisions a material archive, serving as a repository for an extensive collection of materials. This archive not only preserves the richness of traditional resources but also embraces emerging materials, reflecting the ever-evolving landscape of scientific discovery. In essence, the proposed Material Library and Research Center transcend traditional library paradigms, emerging as a dynamic, community-centric hub for knowledge creation, material innovation, and discourse on resource sustainability. Through its adaptive reuse of the Schöneberg gasometer, this initiative stands as a testament to the power of repurposing historic structures to meet the evolving needs of a forward-thinking society.

Figure 14, Visionary collage, made by the author.

Research aim

Urban workshops

Some projects have already tried to reimagine the library from the conventional notion of static archives towards collaborative spaces. Examples include:

Oodi Helsinki library, FI
Dokk1, Aarhus, DK
Turanga Central Library, Christchurch, NZ
The Edge, State Library of Queensland, AU
Halifax Central Library, Halifax, CA
Urban Workshop, Costa Mesa, CA

These buildings share a common focus on creating dynamic, inclusive spaces that go beyond traditional library functions, providing workshops, maker spaces, and collaborative environments for the public. What these spaces lack, however, is the connection between professionals, amateurs and beginners.

Curatorial design

To curate means to "select (the best or most appropriate) especially for presentation, distribution, or publication", often associated with the responsibility of a museum, gallery or other cultural organization. [21] To design is a broad action, often related to the solution of a problem through creative and rational means of organizing certain elements. Therefore, 'curatorial design' is related to the systematization of methods of exhibiting, displaying or collecting material for the purpose of enriching the experience of the user. This includes themes like layout, scale, display methods and technology.
Several case studies were considered that revolve around the idea of curation as a main design principle:

Depot Boijmans van Beuningen, Rotterdam, NL
Bouwcentrum, Rotterdam, NL
Material ConneXion library, Bilbao, ES

Figure 15, Turanga Central Library. retrieved from https://my.christchurchcitylibraries.com/news/turanga-in-running-for-prestigious-award/

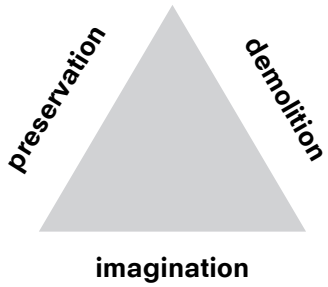


Figure 16, Equality between approaches.

21 Definition of CURATE. (n.d.). Www.merriam-Webster.com. https://www.merriam-webster.com/dictionary/curate

Figure 17, Oodi Helsinki Library. Retrieved from https://www.archdaily.com/907675/oodi-helsinki-central-library-ala-architects?ad_medium=gallery

Figure 18, Dokk1 interior. Retrieved from https://www.dokk1.dk/

Research aim

Adaptive reuse

Adaptive reuse of existing buildings as part of the past that exists in our present – can it also be a part of our future? In 1825, the Imperial Continental Gas Association (ICGA) from London secured a concession to finance, build, and operate gasworks and pipeline networks in Berlin. The first gas lanterns illuminated Unter den Linden in 1826, marking the beginning of a transformative era. By 1847, with the expiration of the ICGA monopoly, the Städtische Gaswerke was founded in Berlin, giving rise to GASAG. This marked the widespread adoption of gas in households, industries, and craft businesses. In 1871, the construction of the Schöneberg Gasworks by the ICGA included a unique telescopic gasometer without a traditional brick casing. Schöneberg became the first suburb of Berlin with its own gas network in 1854.

The gasworks underwent expansion in 1889, featuring the construction of an engine, boiler house, a water tower, and a blacksmith shop. 20 years later Gasometer IV, the largest gas holder at the Schöneberg gasworks, was built, capable of storing up to 160,000 m^3 of gas, making it one of the largest gas holders in Europe.

In 1918, due to the aftermath of World War I, the site was forcibly transferred from the ICGA to Deutsche Gasgesellschaft AG, as the former went into liquidation in 1916. During World War II, large sections of the gas plant were destroyed, but Gasometer IV remained largely intact. The gasworks ceased operations in 1946, with Gasometer IV serving as a gas storage facility until its closure in 1995.

In 1994, significant buildings of the former gasworks were granted monument protection status. This included structures like the controller house, magazine/district office, boiler and machine house with water tower, lock house, low-pressure gas container, forge, and the east wing of the retort house.

The year 2007 marked the beginning of the EUREF campus's development, focusing on energy transition and mobility. The purchase agreement with GASAG was concluded, and EUREF stars illuminated the gasometer from 2008. By 2014, the EUREF campus already met the German government's CO2 climate protection goals for 2050. Deutsche Bahn announced its decision to locate on the EUREF campus. In 2019, the Gasometer became home to a 40-meter-long carbon clock, counting down the time to achieve the 1.5-degree target in the Paris Agreement. The topping-out ceremony for the new GASAG headquarters (House 23-24) and the laying of the foundation stone for NBB House 1-2 signaled a new chapter in the historical site's ongoing transformation.

On August 24, 2021, the EUREF-Campus celebrated the final foundation stone, marking the last phase—the interior of the Gasometer. Drawing from its historical image, the Gasometer's redesign preserves the gray steel scaffolding. The green steel shell transforms into the campus's conference area, while above 16 meters, a 28,000-square-meter office building takes shape with a predominantly glass facade for transparency. The upper floors host presentation spaces, and a public roof terrace at 66 meters offers panoramic views of Berlin. The project for Deutsche Bahn, costing over 200 million euros, is set for completion in 2024. [22]

The main strategies when dealing with adaptive reuse project are demolition, restoration and addition. Four projects and their approaches were analyzed :

Bunker 599, RAAAF + Atelier Lyon, NL
Kolumba Museum, Peter Zumthor, Cologne, DE
Palais de Tokyo, Lacaton & Vassal, Paris, FR
Gashouder Amsterdam, NL

22 Gasometer - starting 2024. (n.d.). EUREF AG. https://euref.de/en/entry/schoeneberg-gasometer/

Figure 19, Bunker 599.

Figure 20, Kolumba Museum.

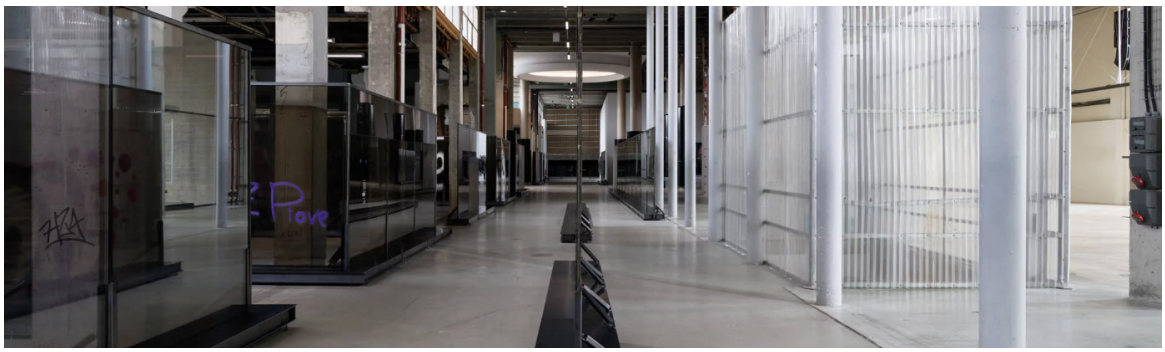


Figure 21, Palais de Tokyo.

Figure 22, Gashouder Amsterdam.

Research methodology

Site

Determining the value of a certain heritage project involves a thorough study that analyses cultural, social, historical and economic factors. One should abstract oneself of looking only through one prism, and establish a comprehensive view of classification of importance. Using a value assessment matrix based on the writings of Marieke Kuipers and Wessel de Jonge in "Designing from Heritage: Strategies for Conservation and Conversion", the significance of different elements of the site will be evaluated. [23] It is a combination of two evaluation models by Brand (y-axis) relating to the and Riegl (x-axis). This ensures the interpretation of all layers of a building cross-examined with historical and cultural values.

BRAND + / RIEGL +	AGE value	HISTORICAL value	INTENTINAL COMMEMORATIVE value	NON INTENDED COMMEMORATIVE value	USE value	NEW-NESS value	(relative) ART value	RARITY value [+]	OTHER relevant values [+]
SURROUNDINGS / SETTING [+]									
SITE									
SKIN (exterior)									
STRUCTURE									
SPACE PLAN									
SURFACES (Interior) [+]									
SERVICES									
STUFF									
SPIRIT of PLACE [+]									

Figure 23, Value Assessment matrix.

Program

Analysis of libraries and renovation projects in Berlin and abroad will help set a standard for the size and dimensions of prominent spaces. For instance, the program benchmarking will be conducted on the following projects: Oodi Helsinki Central Library, The Royal Library of Copenhagen, Institute for Sound and Vision, and the Staatsbibliothek Unter den Linden. Assessing these precedents will determine the functional requirements of rooms, priority of flows and distribution of public vs private.

Client

The tension between preservation and innovation persists through the selection of the clients: Staatliche Museen zu Berlin [State Museums of Berlin], EUREF campus and Die Bundesanstalt für Materialforschung und -prüfung (BAM) [The Federal Institute for Materials Research and Testing].

Museum
Europäischer Kulturen
Staatliche Museen zu Berlin

Figure 24, Staatliche Museen zu Berlin .

BAM

Figure 25, BAM.

EUREF Campus
Berlin

Figure 26, EUREF campus Berlin.

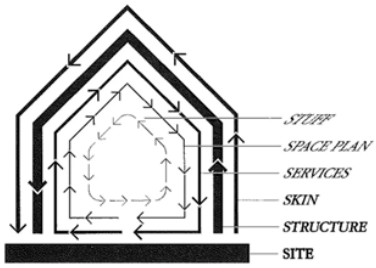


Figure 27, Shearing layers by Brand.

23 Marieke Kuipers and Wessel de Jonge, Designing from Heritage: Strategies for Conservation and Conversion, , (Delft: TU Delft - Heritage & Architecture, 2017), 87.

Research methodology

On a societal level, addressing the challenges posed by the saturation of existing building stock through adaptive reuse and refurbishment strategies aligns with the growing emphasis on responsible resource management. The professional field of adaptive reuse design is gaining more and more prominence and I might argue that dealing what is already there is harder than designing from scratch. The challenges posed by dealing with existing structures can result in unique projects that seamlessly merge old and new.

By rethinking the role of libraries in a digitalizing society not as uniform archives to dynamic hubs of production of new knowledge, the typology has a new chance at life. Closely engaging the general public with issues like resource scarcity, building stock and sustainability, change in societal mentality can occur. The process of producing new materials is brought from a closed-off research center to a publicly accessible workshop. The conclusion of this research and design will result in a scientific framework that is applicable for future reference.

Figure 28, Staatsbibliothek zu Berlin - Preußischer Kulturbesitz, made by the author.

DESIGN BRIEF

04

CLIENT

Client

BAM

The main client involved in this project is the Federal Institute for Materials Research and Testing (BAM), operating under the umbrella of the parent government organization, Federal Ministry for Economic Affairs and Climate Protection. The initiation of the project comes from the ambition of the city to continue developing positive climate actions through energy transition and development of new materials. Since the Institute is highly specialized in developing and testing materials and structures, from nano to macro, the main client will provide the knowledge and professionalism needed for an institution like a specialized material library.

Situated at its headquarters in Berlin, the Institute faces geographical remoteness from the city center, isolated from the general public. Moreover, the department of material research and testing is funded by the government, which requires BAM to collaborate with potential investors to enhance its research capabilities and technological advancements. This collaborative approach ensures that BAM remains at the forefront of cutting-edge developments in materials science, thereby contributing to the broader goals of sustainable energy and innovative material solutions. [24]

SMB

The primary and influential stakeholder is the State Museums in Berlin, which falls under the purview of the overarching body of the Prussian Cultural Heritage Foundation. The latter is responsible for the management of several prominent buildings like the James-Simon-Galerie and the Neue Nationalgalerie, and the two state libraries. This emphasis on cultural heritage becomes especially pivotal in the context of adaptive reuse projects, where the foundation consistently advocates for the preservation of historical structures rather than their demolition and will consistently challenge the other clients' visions. While their dedication to preservation is evident, the organization might display a degree of conservatism, a characteristic that contrasts with the innovative approaches of other project stakeholders and the inherently transformative nature of the initiatives at hand. Furthermore, it's worth noting that, akin to the State Museums, the Prussian Cultural Heritage Foundation also relies on funding from the German government. Consequently, the collaborative effort calls for a primary investor to bridge financial gaps and ensure the realization of the project's ambitions. This financial partnership becomes crucial in navigating the intricate balance between preservation, innovation, and the fulfillment of broader cultural and governmental objectives. [25]

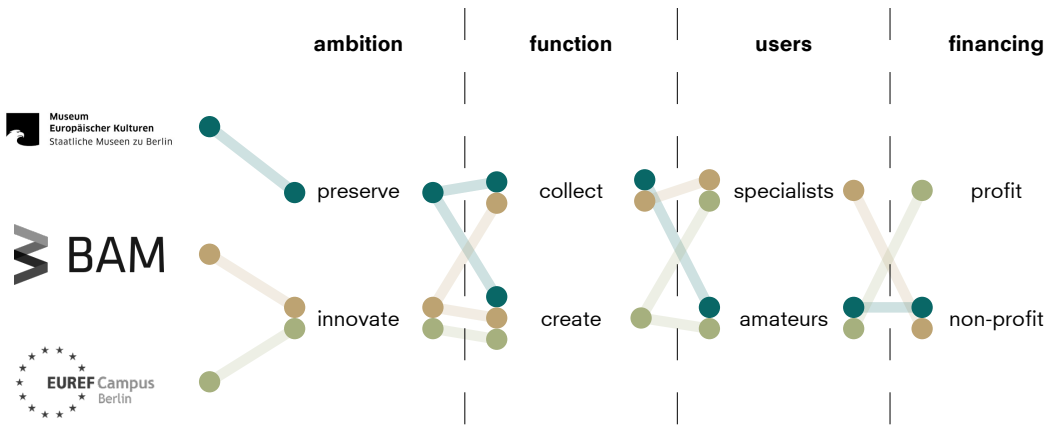


Figure 29, Ambitions and needs of clients.

EUREF

The driving force behind the project is its owner and main sponsor - EUREF Campus Berlin, a trailblazer in the realm of energy transition. With a sprawling 55,000m² plot hosting 26 buildings and a total gross floor area of 28,000m², the campus stands as a beacon of sustainability and innovation. Boasting a vibrant ecosystem comprising of 150 companies, 5,000 employees, 300 students, and housing 4 MSc programs and 2 scientific institutions, the campus is at the forefront of fostering collaboration and knowledge exchange. Notably, it has achieved the remarkable feat of becoming CO2 neutral, aligning with EU requirements. Beyond its physical infrastructure, the campus serves as a symbol of energy transition, underscored by its status as Germany's largest electric fuel station. Its significance transcends national boundaries, hosting over 500 events and welcoming more than 150 international delegations annually, cementing its reputation as a global leader in sustainable urban development. [26]

24 Startseite. BAM. https://www.bam.de/Navigation/DE/Home/home.html
25 Startpage - Preußischer Kulturbesitz. https://www.preussischer-kulturbesitz.de/en/index.html
26 EUREF-Campus. (n.d.). EUREF AG. Retrieved January 28, 2024, from https://euref.de/euref-campus/

- 55,000m² plot
- 26 buildings
- GFA of 28,000m²
- 150 companies
- 5,000 employees
- 300 students
- 4 MSc programs
- 2 scientific institutions
- symbol of energy transition
- Germany's largest electric fuel station
- >500 events and >150 international delegations annually

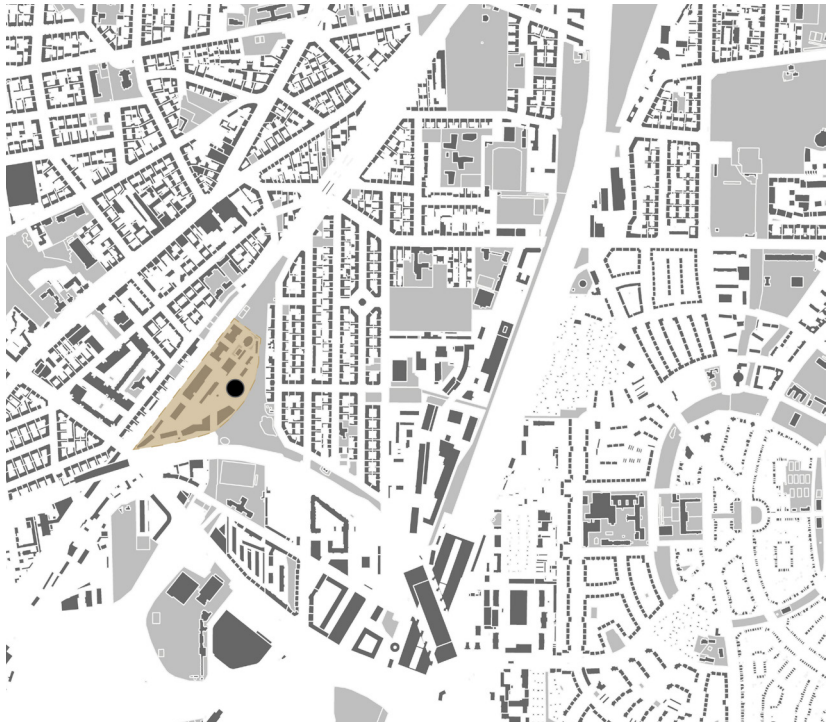


Figure 30, EUREF Campus Berlin map and stats.

FROM COLLECTIN

AMATEURS AND SPECIALISTS, JOIN FO

NG TO CRAFTING:

ORCES FOR A NEW ERA OF MATERIALS!

PROGRAM

Program

Benchmarking

To ascertain the dimensions and arrangement of the spaces, an investigation was conducted on four libraries serving as precedents: Oodi Helsinki Central Library, The Royal Library, The Institute for Sound and Vision, and Staatsbibliothek Unter den Linden. In this summary, the main zones have been divided into four parts: public and collaborative zones, such as exhibitions and auditoriums; private or operational areas for work and research; and the administrative and office spaces behind the scenes.

Buildings with a stronger emphasis on collaboration, such as the Oodi Helsinki Library and the Staatsbibliothek, allocate a greater portion of their space towards usage and sharing of knowledge. In contrast, buildings with a greater focus on collections, such as the Royal Library of Copenhagen and the Institute for Sound and Vision, devote more floor area to archives and private professional spaces.

Figure 32, Proportion of gross floor area towards collection going to use.

Oodi features an entrance foyer that seamlessly links all public areas, while the circulation is discreetly positioned to the side, connecting primarily public functions. The ground floor of the building seamlessly integrates with the surrounding urban environment, blurring the boundary between interior and exterior spaces. Within, the inner workshops create an immersive interior landscape, fostering an environment conducive to creativity and collaboration.

The Staatsbibliothek houses a majestic public reading room equipped with common facilities easily accessible from it. However, the main professional wing, along with its circulation, is distinctly separated from this area.

The other two reference projects utilize the main citculation area as a divider between the public plinth and the private spaces.

From the overall gross floor area, half is designated for the showroom, encompassing the exhibition space of 10,000m2, discussion areas like conference halls and auditoriums, as well as workspaces. The next largest portion is allocated to innovation or research areas, featuring laboratories, workshops, and storage facilities. The remaining third is apportioned to ancillary spaces, including storage, staff areas, and service facilities. The maximum capacity is estimated at approximately 12,000 individuals. Concerning the layout, the exhibition space serves as the central hub of the building, with all discussion and communal areas interconnected to it. The primary circulation pathway is likewise situated within this exhibition space, leading to the secondary hub, the workshop, where research activities occur. The focal points of attention are primarily the showroom, but also the workshop.

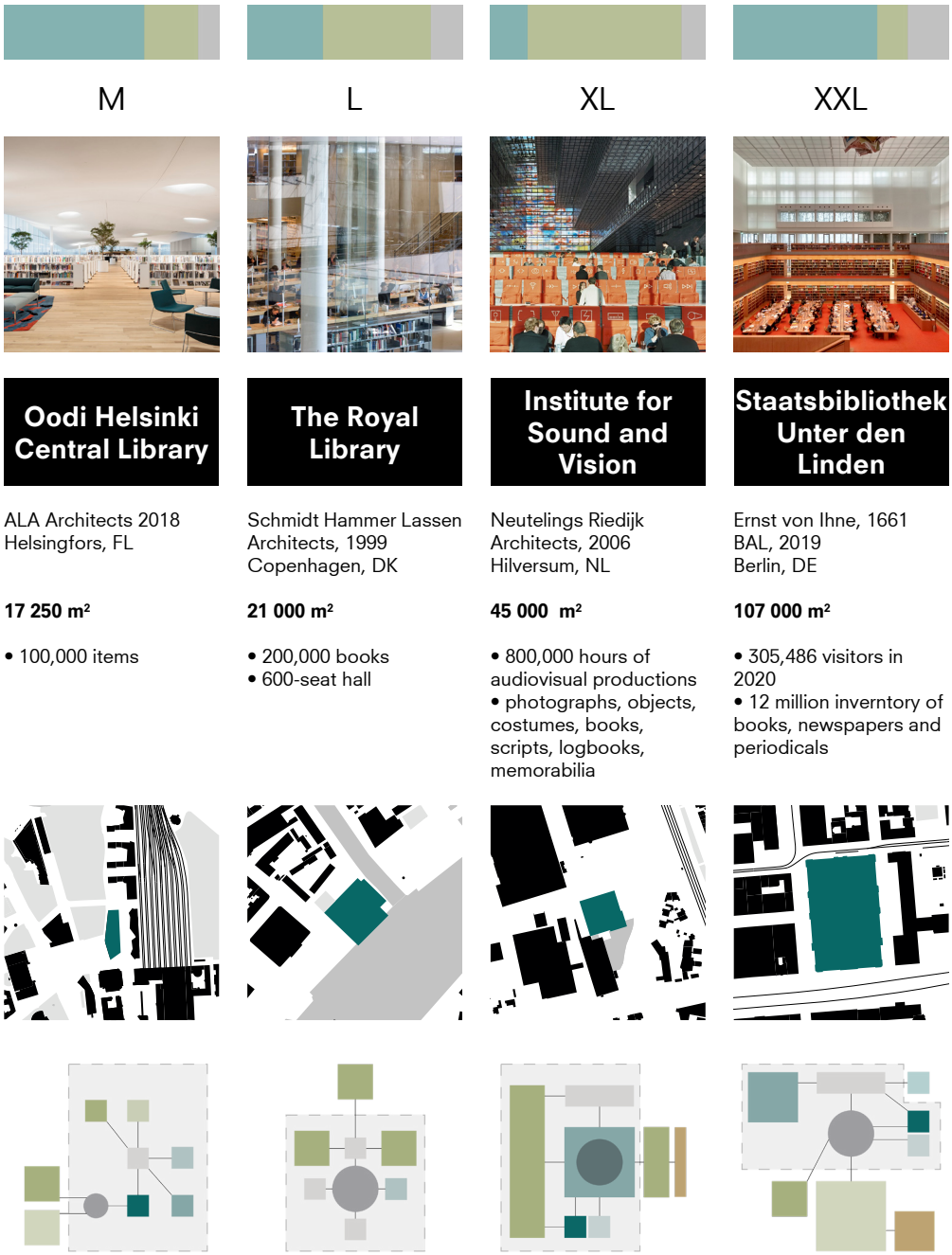
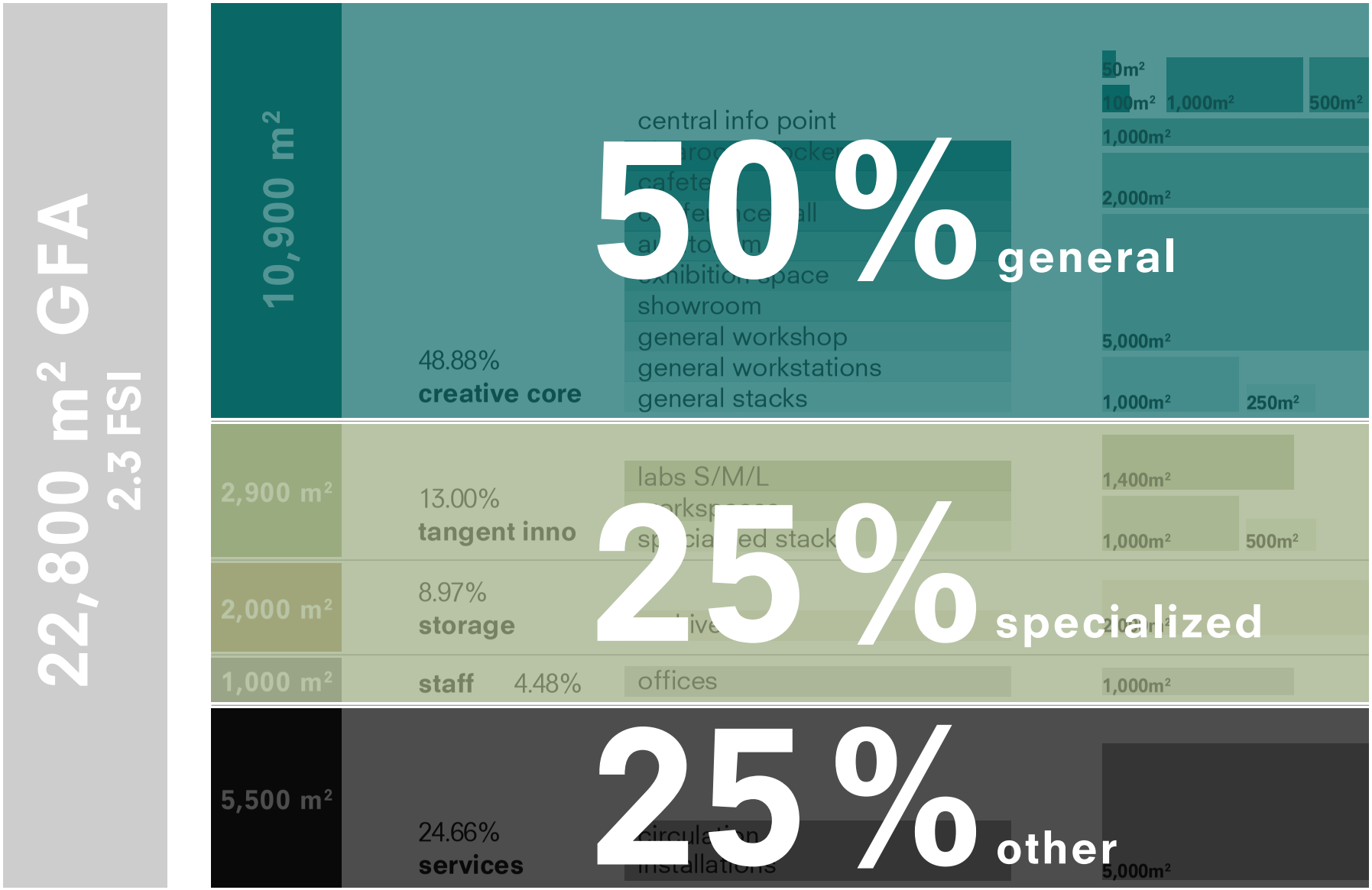


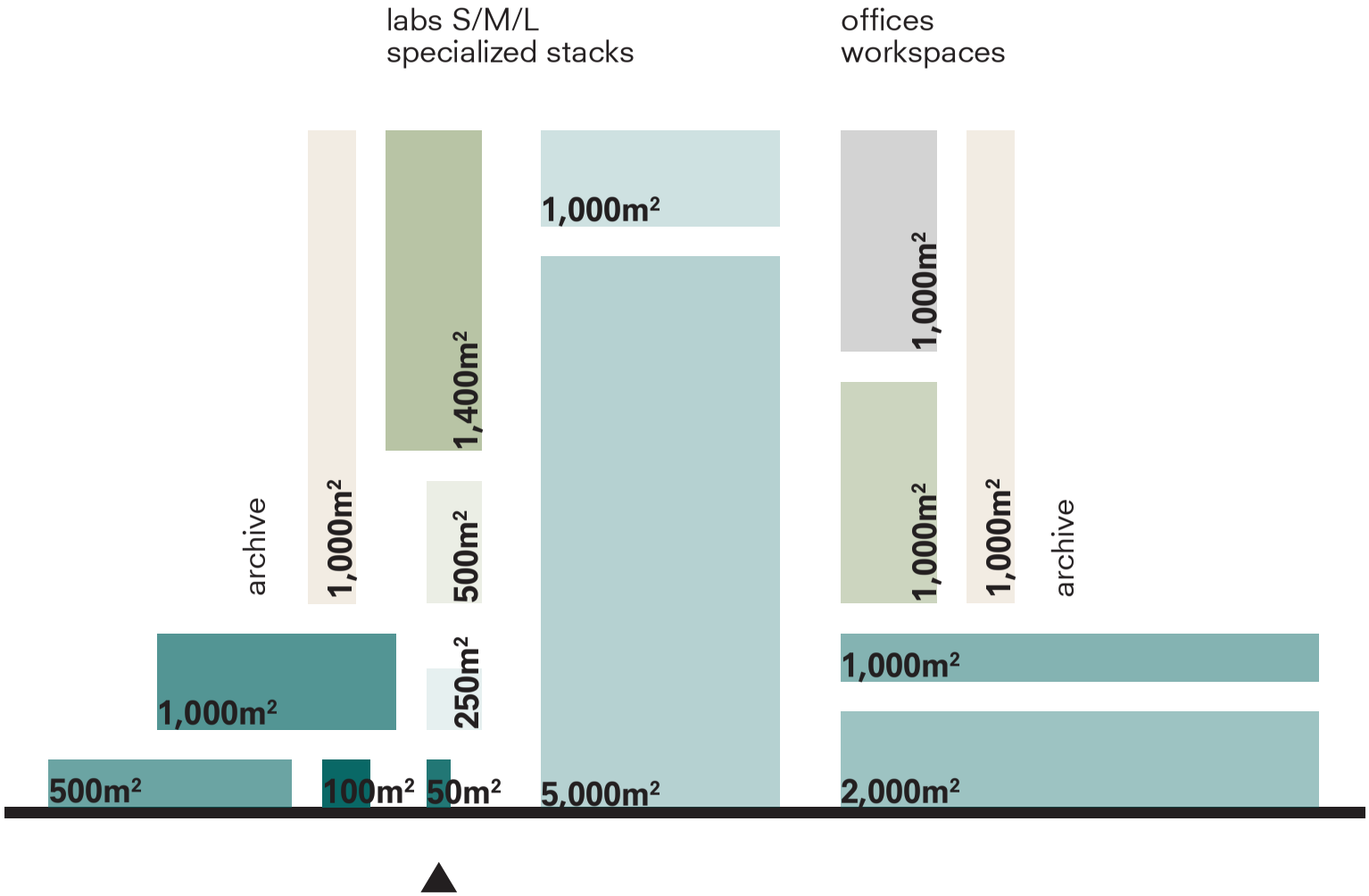
Figure 33, Benchmarking results.

22,800 m² GFA
2.3 FSI

10,900 m²	48.88% **creative core**	central info point cloarooms/lockers cafeteria conference hall auditorium exhibition space showroom general workshop general workstations general stacks	50m² 100m² 1,000m² 500m² 1,000m² 2,000m² 5,000m² 1,000m² 250m²
2,900 m²	13.00% **tangent inno**	labs S/M/L workspaces specialized stacks	1,400m² 1,000m² 500m²
2,000 m²	8.97% **storage**	archive	2,000m²
1,000 m²	**staff** 4.48%	offices	1,000m²
5,500 m²	24.66% **services**	circulation installations	5,000m²


22,800 m² GFA
2.3 FSI
10,900 m²
48.88%
creative core
central info point
cafete
showroom
general workshop
general workstations
general stacks
50m²
100m²
1,000m²
500m²
1,000m²
2,000m²
5,000m²
1,000m²
250m²
50% general
2,900 m²
13.00%
tangent inno
labs S/M/L
1,400m²
1,000m²
500m²
2,000 m²
8.97%
storage
25% specialized
1,000 m²
staff
4.48%
offices
1,000m²
5,500 m²
24.66%
services
25% other
5,000m²

22,800 m² GFA
2.3 FSI



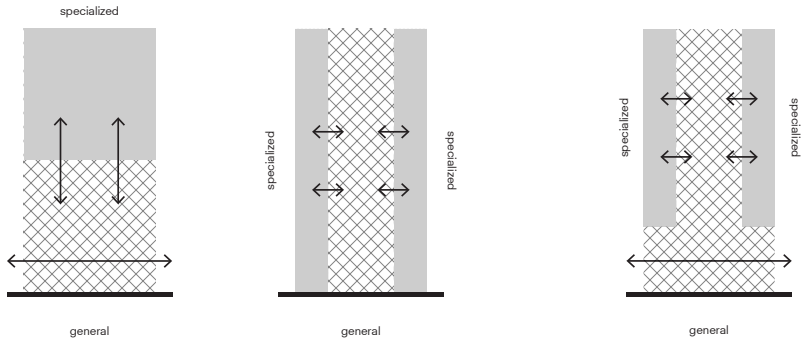


Figure 34, Design concepts.

Distribution of spaces

At the heart of the building lies a bustling general workshop area, meticulously stocked with an array of tools and machinery accessible to burgeoning creatives and amateurs alike, requiring little to no assistance for operation. This workshop space serves as the backbone of the structure, fostering a dynamic environment where individuals can experiment, innovate, and hone their craft.

Expanding outward from this central hub, the plinth emerges as a vibrant and inclusive space, fully open to the public and teeming with activity. Here, visitors are greeted by the welcoming expanse of the entrance foyer, alongside convenient amenities such as lockers, a bustling cafeteria, and an expansive showroom brimming with inspiration. The plinth further plays host to versatile spaces for exhibitions, conferences, and gatherings, including an expansive auditorium and a well-appointed conference hall.

This expansive ground level, pulsating with life and energy, serves not only as a functional extension of the building but also as a seamless integration with the surrounding urban fabric. Through its design and purpose, it acts as a conduit for the innovative ethos of the EUREF campus, seamlessly blending into the constellation of energy-driven edifices that characterize the area.

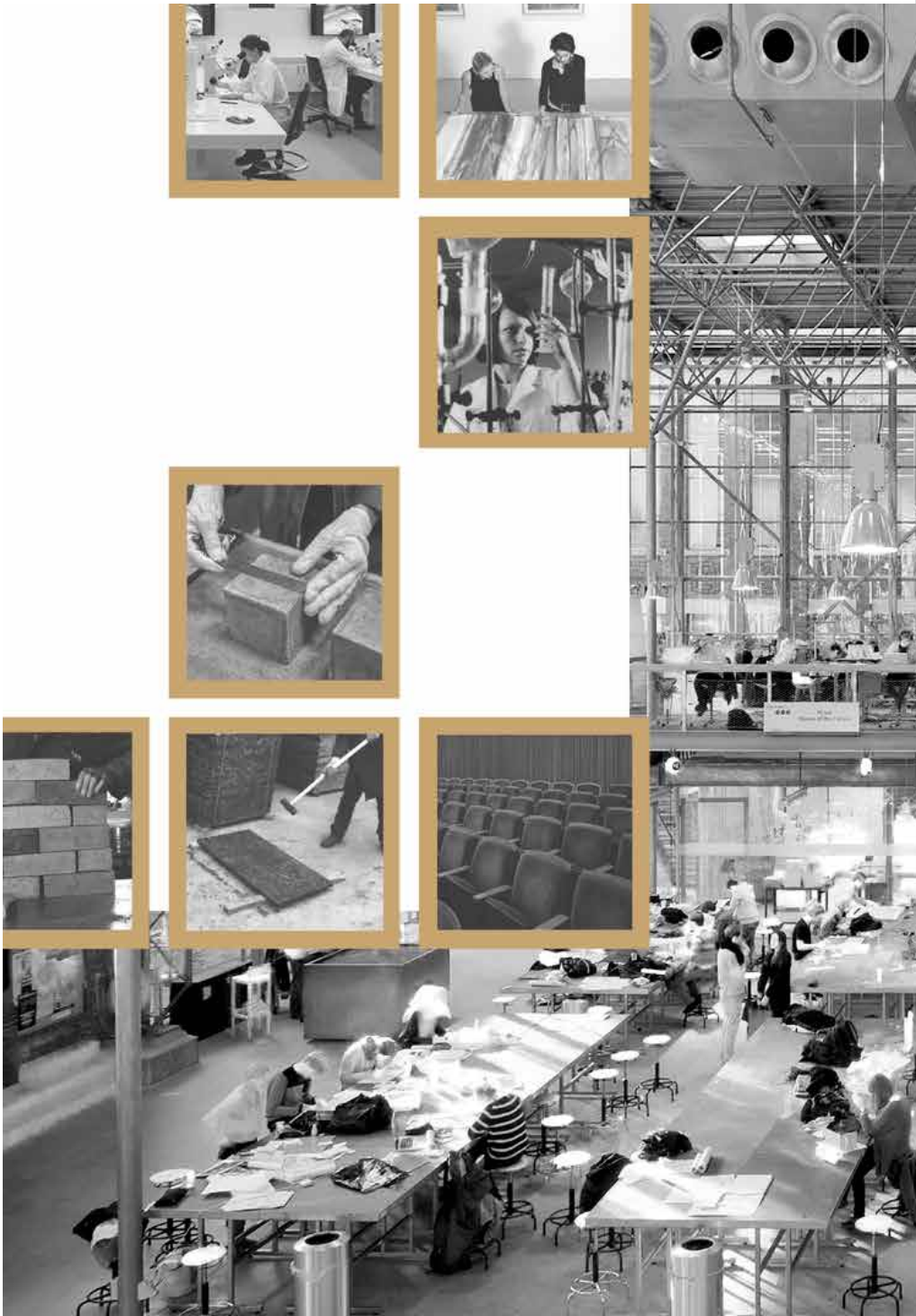
As one navigates beyond the bustling activity of the plinth, a gradual transition occurs, leading towards more specialized and professional zones. Here, laboratories buzz with scientific inquiry, meeting rooms hum with collaborative discourse, and offices provide a haven for focused work. This spatial arrangement ensures that both seasoned professionals and aspiring enthusiasts have ample opportunities for engagement and collaboration, each space carefully curated to maintain its unique identity and purpose.

In alignment with the building's overarching mission, the collection of materials and resources takes on a secondary role, its importance acknowledged but strategically placed towards the periphery. By relegating archival spaces to the outskirts, the core functions of creation, collaboration, and innovation remain at the forefront, driving the building forward as a beacon of creativity and progress.

complex projects

FROM SHELVES T

OUR LIBRARY, YOUR HUB FOR



TO WORKSHOPS:

R COLLABORATIVE CREATION!

SITE

	HAUS DER STATISTIK					GASOMETER					ABHÖRSTATION				
	historical	use/re-use	prominence	culture	rarity	historical	use/re-use	prominence	culture	rarity	historical	use/re-use	prominence	culture	rarity
CONTEXT	+		+		+	+	+	+			+	+	+	+	
SITE	+	+	+	+		+	+	+	+	+	+	+	+	+	+
STRUCTURE	+	+				+	+	+		+	+		+		+
SPACE PLAN		+				+	+	+	+						+
SPIRIT OF PLACE	+		+			+	+	+	+	+	+		+		

Figure 35, Evaluation matrix.

Site selection

The selection process for the project involved evaluating three potential sites using an evaluation matrix: the House of Statistic, the Gasometer, and the Abhorn Station. Criteria such as historical significance and spatial suitability were considered, leading to the Gasometer being chosen as the most suitable location.

The Haus der Statistik emerged as a promising candidate for housing the future library of materials due to its contextual advantages and immediate surroundings. Situated in the bustling neighborhood of Mitte, known for its vibrant renovation and construction projects, the site holds particular significance as it once resided on the East Side of the wall. This historical context presents an opportunity for the library to serve as a benchmark for addressing the unique challenges posed by Plattenbau blocks. Additionally, the spatial layout offers high use and reuse value, with an orthogonal structural grid allowing for flexibility in design. However, despite these advantages, the location may not be culturally or historically significant, potentially making it less ideal for a research-oriented facility.

The Abhorn Station emerged as a strong contender for hosting the library of materials, scoring highly across various criteria, particularly in terms of its prominent location atop a hill, offering visibility from numerous vantage points throughout the city. However, the site's heavy historical associations, particularly concerning World War II and the Cold War, may present challenges in integrating a positive and innovative function like the library of materials. Additionally, the rigid architectural form and space plan of the station may limit its adaptability and utility for the intended purpose.

The Gasometer emerged as the top choice among the three locations, excelling across all evaluation criteria. Situated within the campus of energy transition, it offers a prime location and is currently underutilized, presenting a ripe opportunity for repurposing. The distinctive steel exoskeleton of the Gasometer lends itself perfectly to accommodating the central hub of the library, traditionally represented by the grand reading room surrounded by stacks. Further detailed analysis of the Gasometer is provided in the following pages.

ICGA 1825

GASAG 1847

gasometer I 1871

expansion 1889

gasometer IV 1910

ownership change 1918

WWII 1944

shutdown 1946

monuments 1994

EUREF 2007

CO_2 clock 2019

new life 2024

The English company "Imperial Continental Gas Association" (ICGA) receives a concession for Berlin build gasworks and pipeline networks. In 1826 the first gas lanterns lit up Unter den Linden.

The Berlin GASAG was founded on January 1st after the ICGA monopoly expired. As a result, gas made a triumphant advance in households, industry and craft businesses.

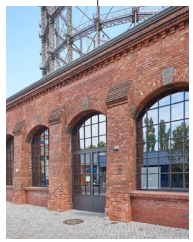
The Schöneberg gasworks is built with a unique telescopic structure without a traditional brick casing; a second container was added to it in 1877. Schöneberg was the first suburb of Berlin to receive its own gas network in 1854.

The engine, boiler house with the striking water tower and a blacksmith shop were built

Gasometer IV was built as the last and largest gas holder. Its circular steel frame has a diameter of 63m and height of 78m. Up to 160,000 m^3 of gas could be stored in a extendable bell. This made the container one of the three largest in Europe.

The site was forcibly transferred from ICGA to the GASAG.

During WWII large sections of the area were destroyed, and gasometer IV was slightly damaged.

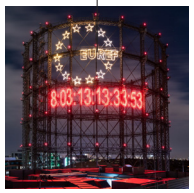


The gasworks was shut down in 1946 and the gasometer remained in operation as a gas storage facility until it was shut down in 1995.

By February 24, 1994, the significant buildings of the former gasworks were placed under monument protection as an entire complex. Today these include the controller house, magazine/district office, boiler house with water tower, the lock house, the low-pressure gas container, the forge and the former east wing of the former retort house.

EUREF Campus Berlin

The location of the EUREF campus around topics such as energy transition and mobility begins. Reinhard Müller concludes the purchase agreement with GASAG on February 21st.



A 40m long carbon clock was put into operation counting down the time remaining to reach the 1.5 degree target in Paris.

The Gasometer will be transformed into an office building, starting in 2024. The GFA of 28,000m² will include a conference hall and a rooftop lounge area. The project has a budget of 200 million euros. The client is DB, with a mission to create 800 new jobs and to increSe digitalization of the railway systems nationally.

Figure 36, Timeline.

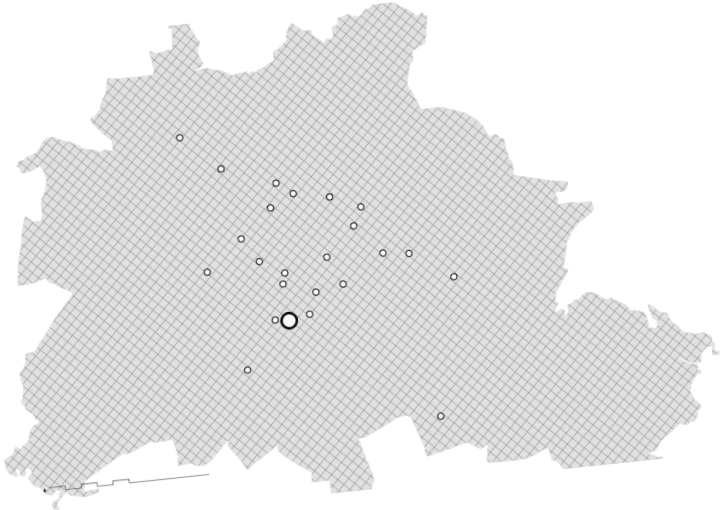


Figure 37, Public libraries.

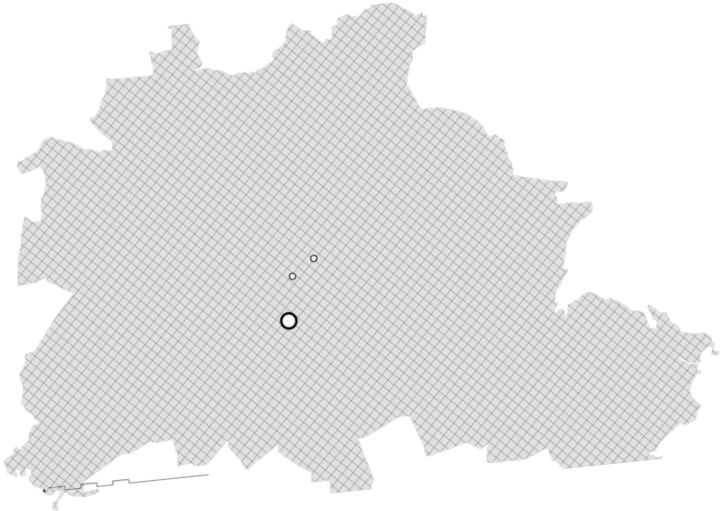


Figure 38, State libraries.

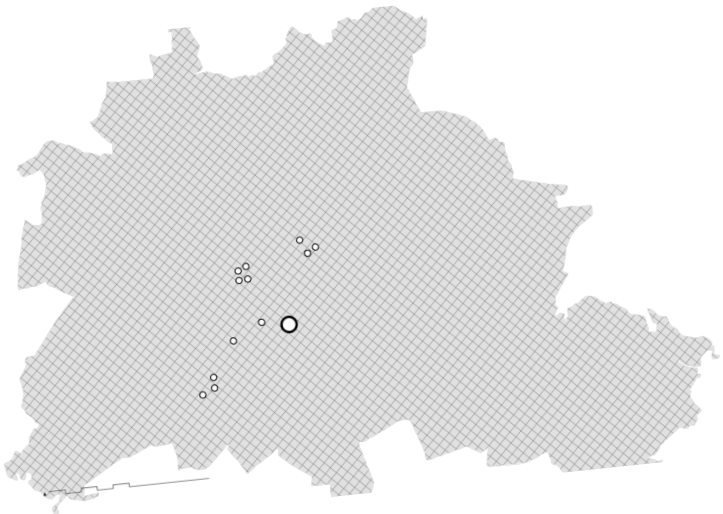


Figure 39, Academic libraries.

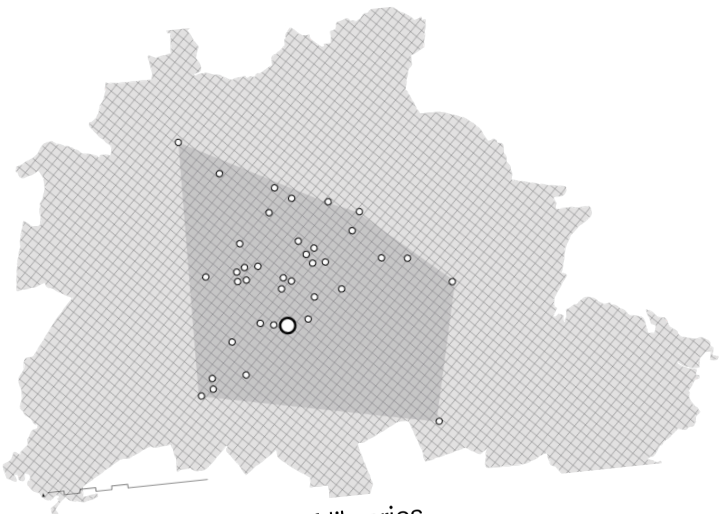


Figure 40, Cultural cluster of libraries.

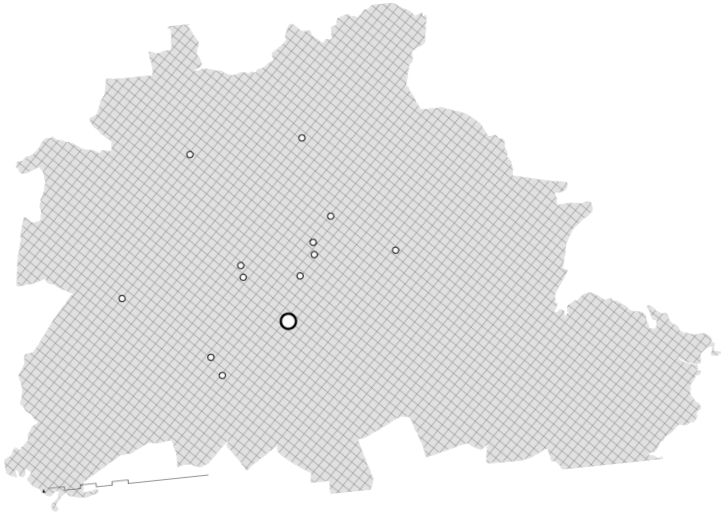


Figure 41, Campuses.

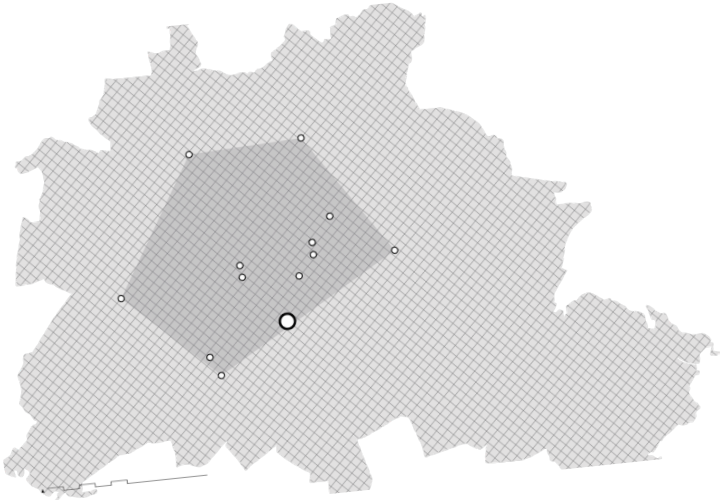


Figure 42, Academic cluster.

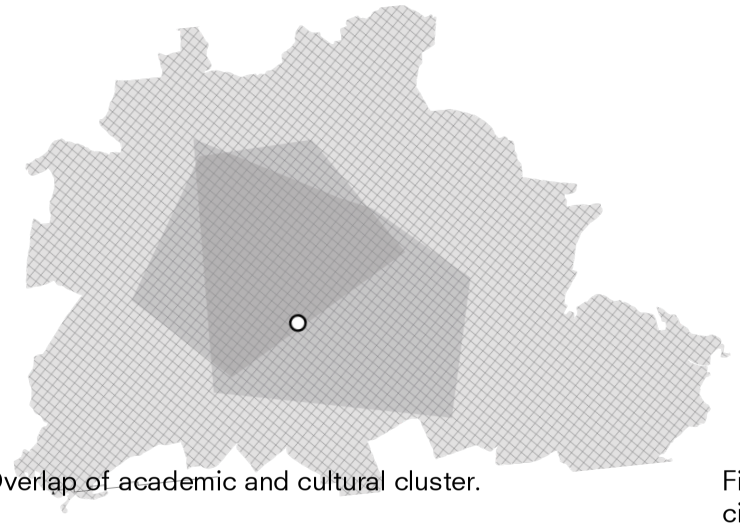


Figure 43, Overlap of academic and cultural cluster.

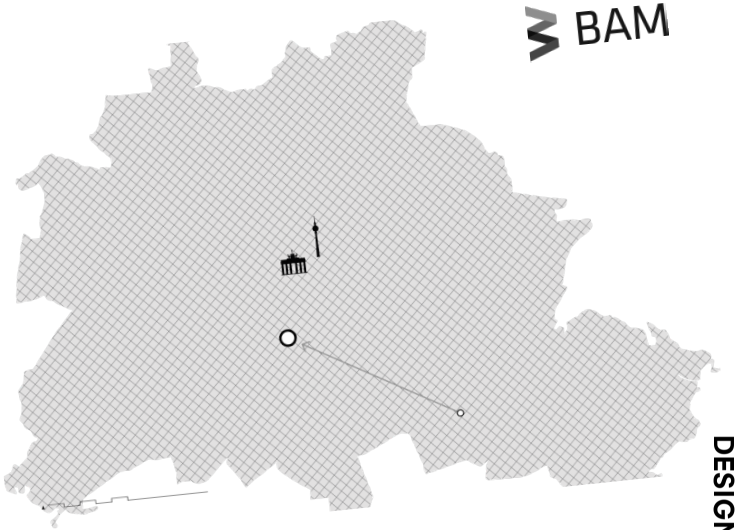


Figure 44, Moving client headquarters from outskirts towards city center.

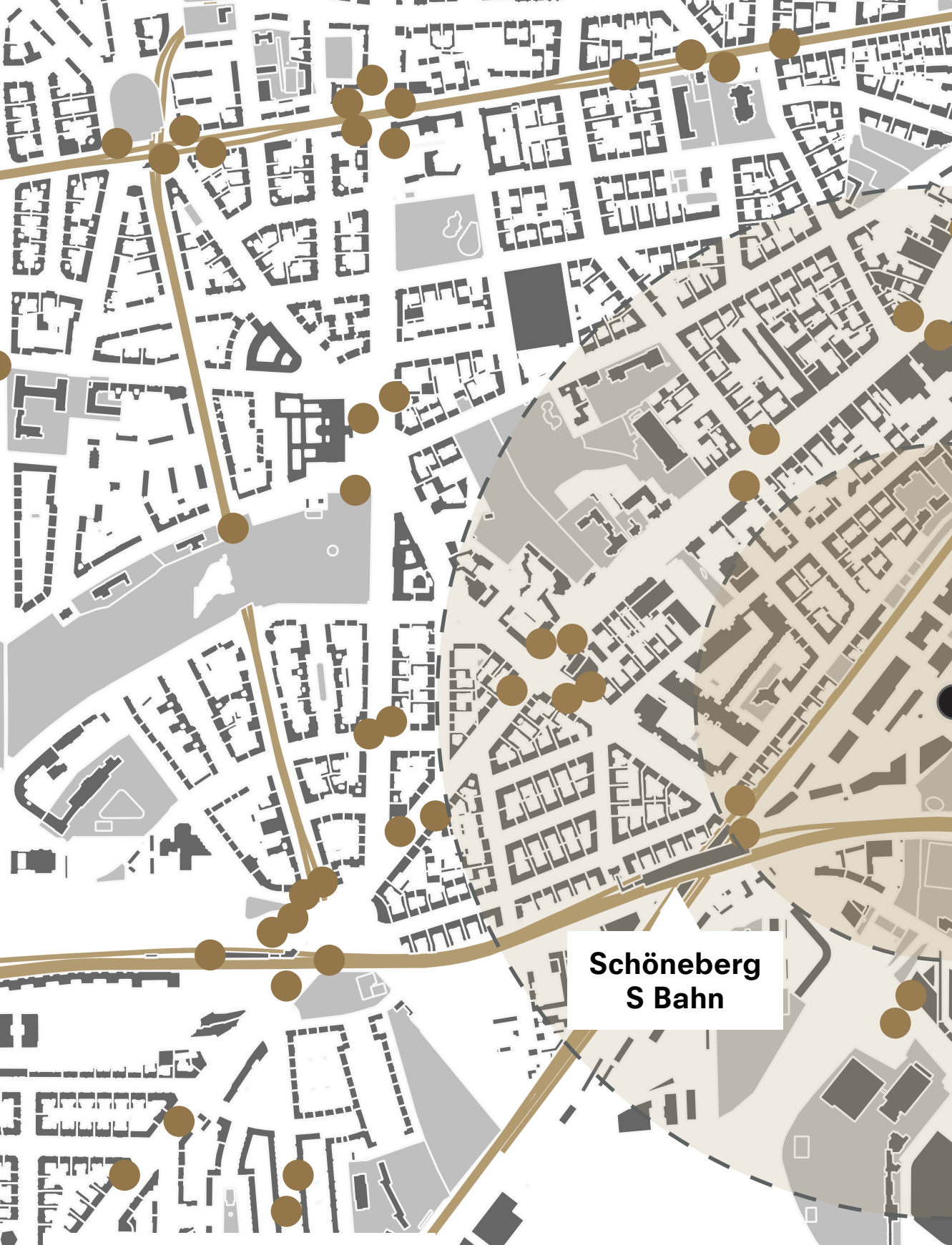


Figure 45,Public transport of wider Berlin.


10 min walking distance
5 min walking distance
Südkreuz
S Bahn + DB

Site analysis

The Gasometer, the largest and most recent structure erected pre-WW2, underwent a transformative journey from being a disused monument to now serving as a beacon of innovation with a new purpose. Situated within easy reach of public transport, including a Deutsche Bahn station within walking distance, the site is surrounded by densely populated housing blocks, setting it apart from the open urban fabric. The Gasometer's imposing height and visibility from various viewpoints make it a prominent feature in the urban landscape, contributing to the perception of space around it.

Exploration of volume alternatives highlighted the potential of the Gasometer's circular shape to house an exhibition space and working areas, promoting environmental consciousness and energy efficiency. Ultimately, the research question centered on whether libraries can evolve into future-proof hubs for sharing creative knowledge through curatorial design, with the Gasometer presenting an intriguing opportunity to explore this concept further.

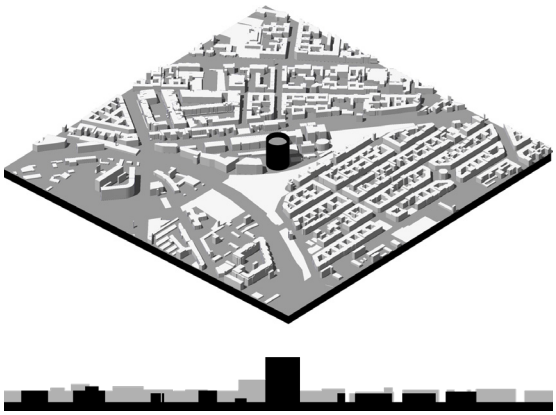
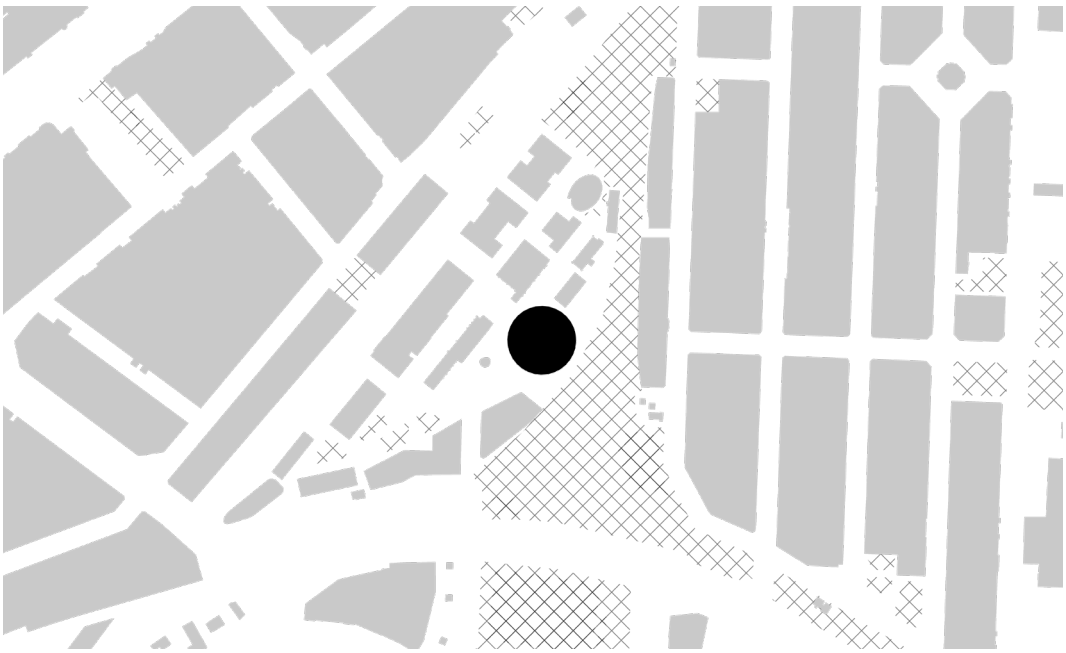


Figure 46, Height analysis.

Figure 47, Viewpoints of the Gasometer. Retrieved from GoogleMaps.



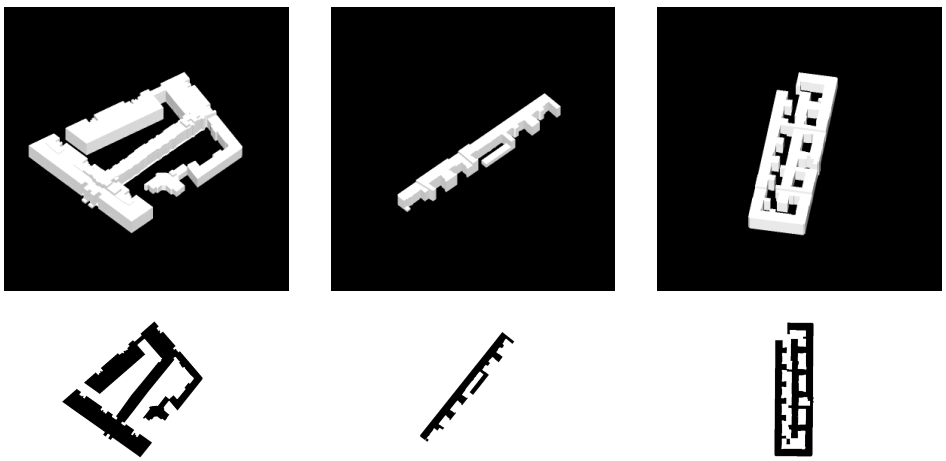
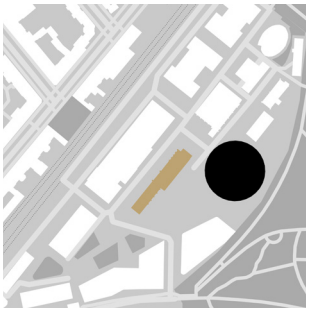


Figure 48, Density analysis.



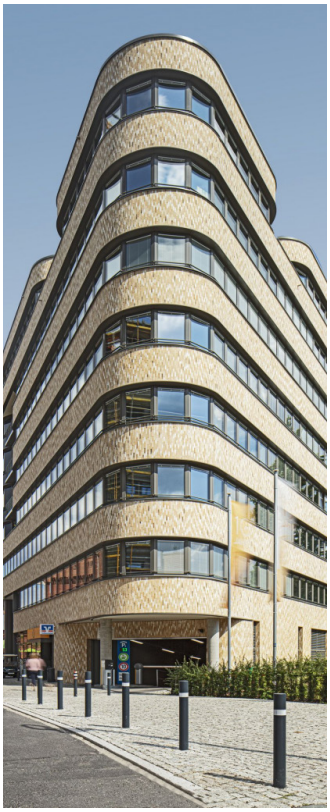
Boiler house + water tower

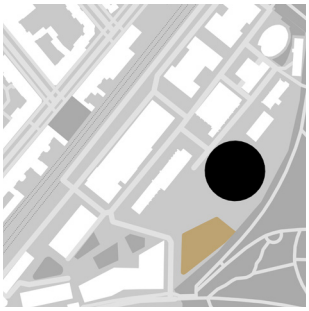
completion: 1891 + 1924

function: event space, restaurant.

architect: Alfred Messel

characteristics: load-bearing masonry tower; energetically refurbished and climate-neutral





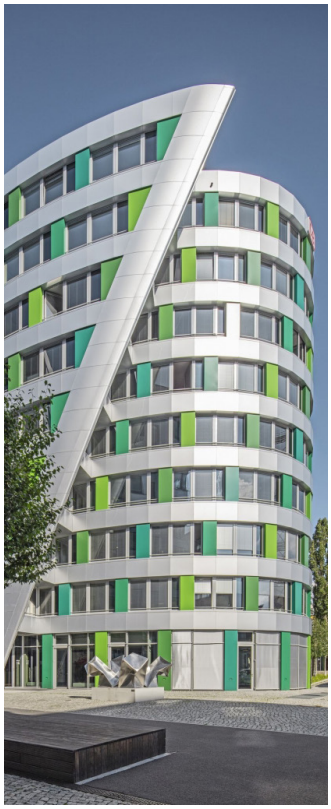
EUREF-Campus 21-22

completion: 2018

function: office and coworking, energy industry and mobility, gastronomy and events.

GFA: 18,600m^2

characteristics: horizontal glass bands along a curved facade; open-plan floors; CO_2 neutral.



EUREF-Campus 14

completion: 2014

function: office and coworking; mobility.

GFA: 7,300 m²

characteristics: 'inspired' by the gasometer - green facade, oval shape, play of green verticality and silver horizontality.

1.

2.

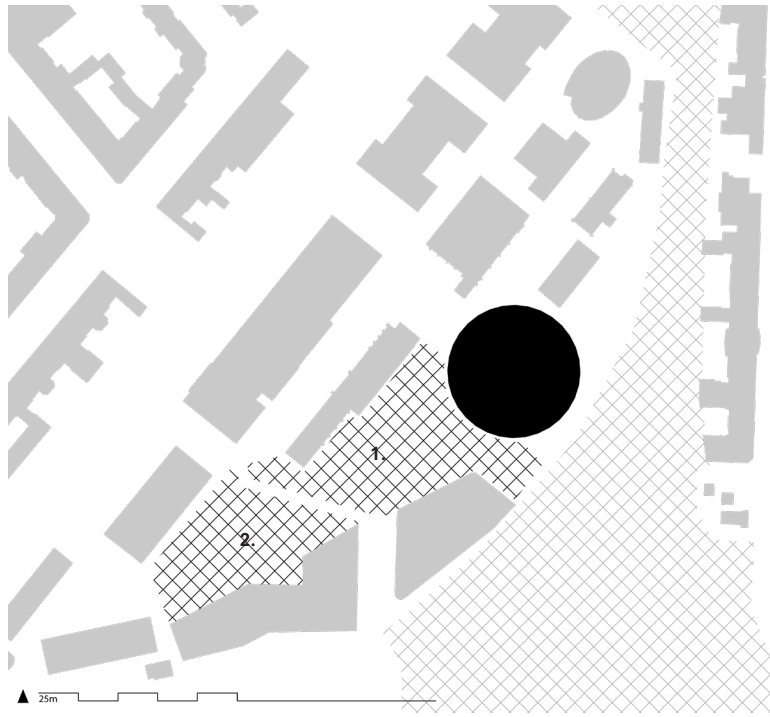
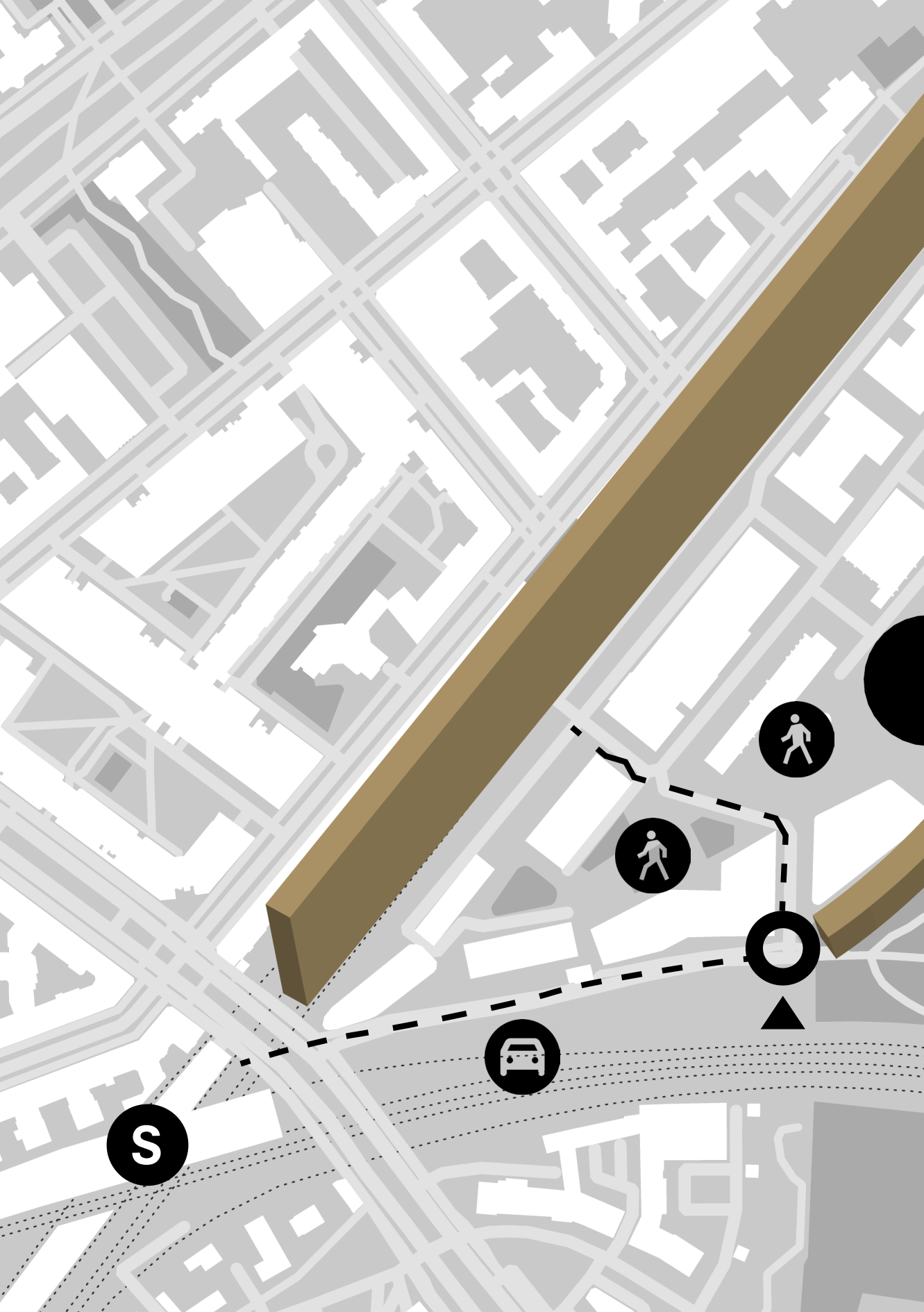


Figure 49, Open spaces.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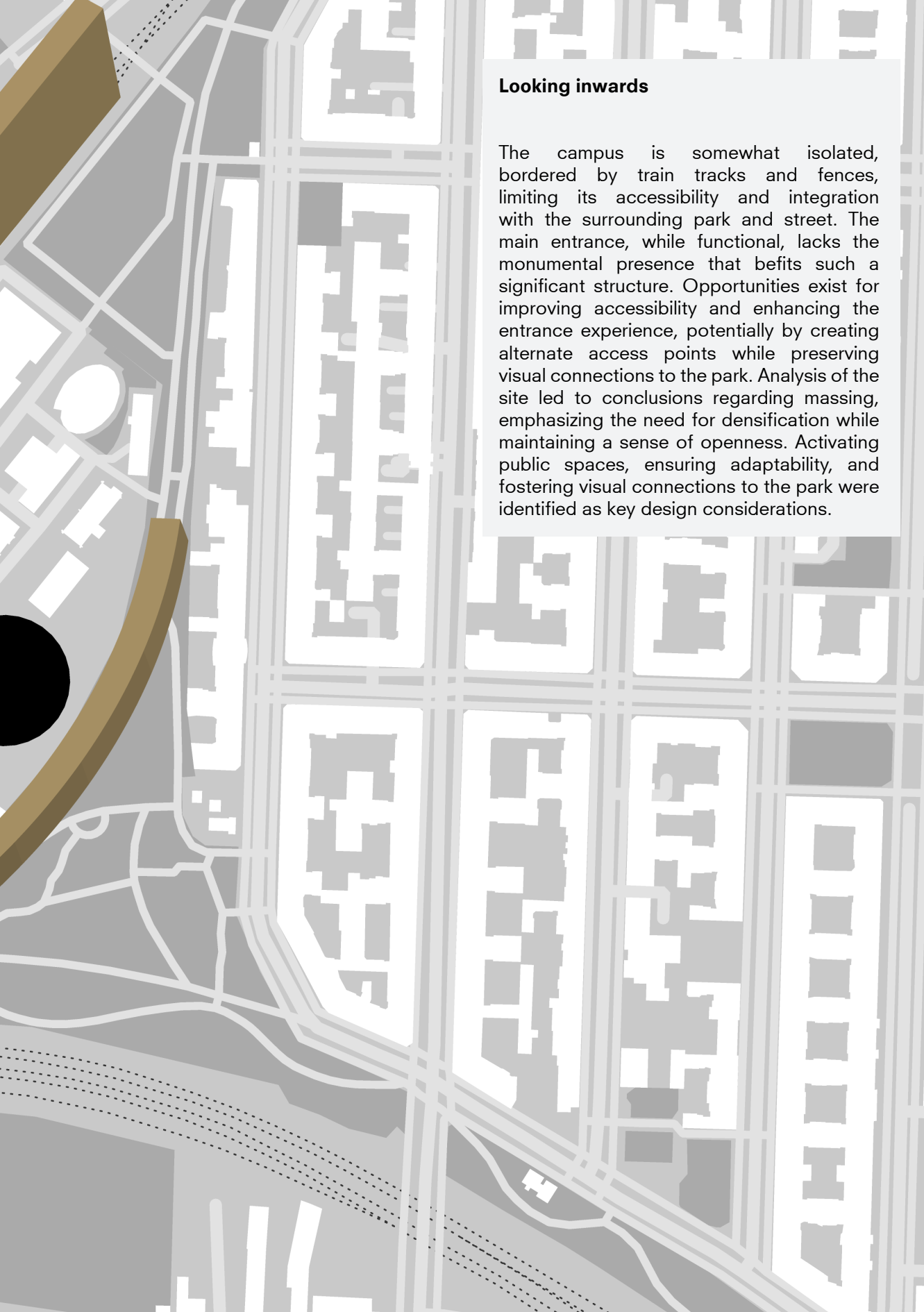
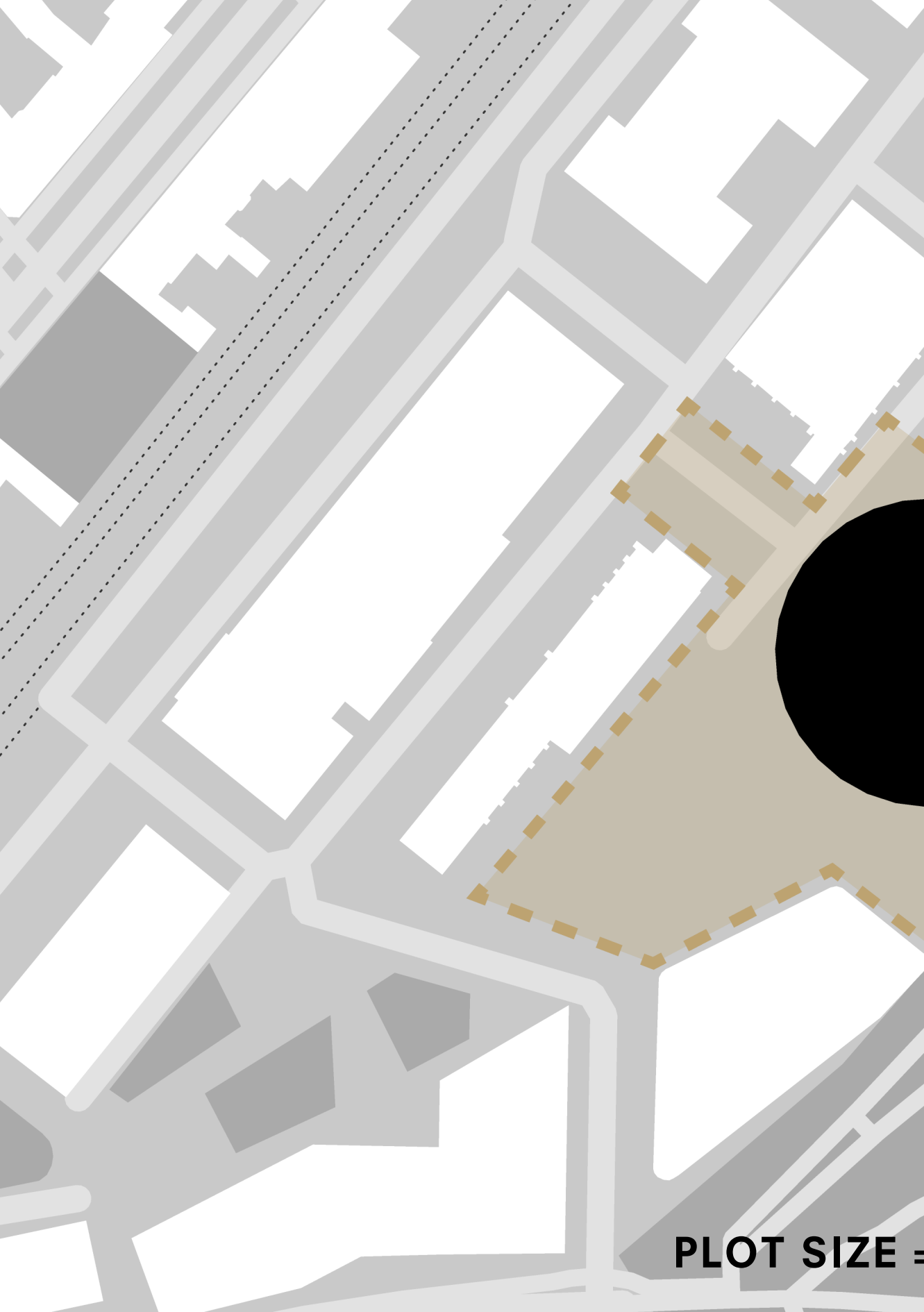
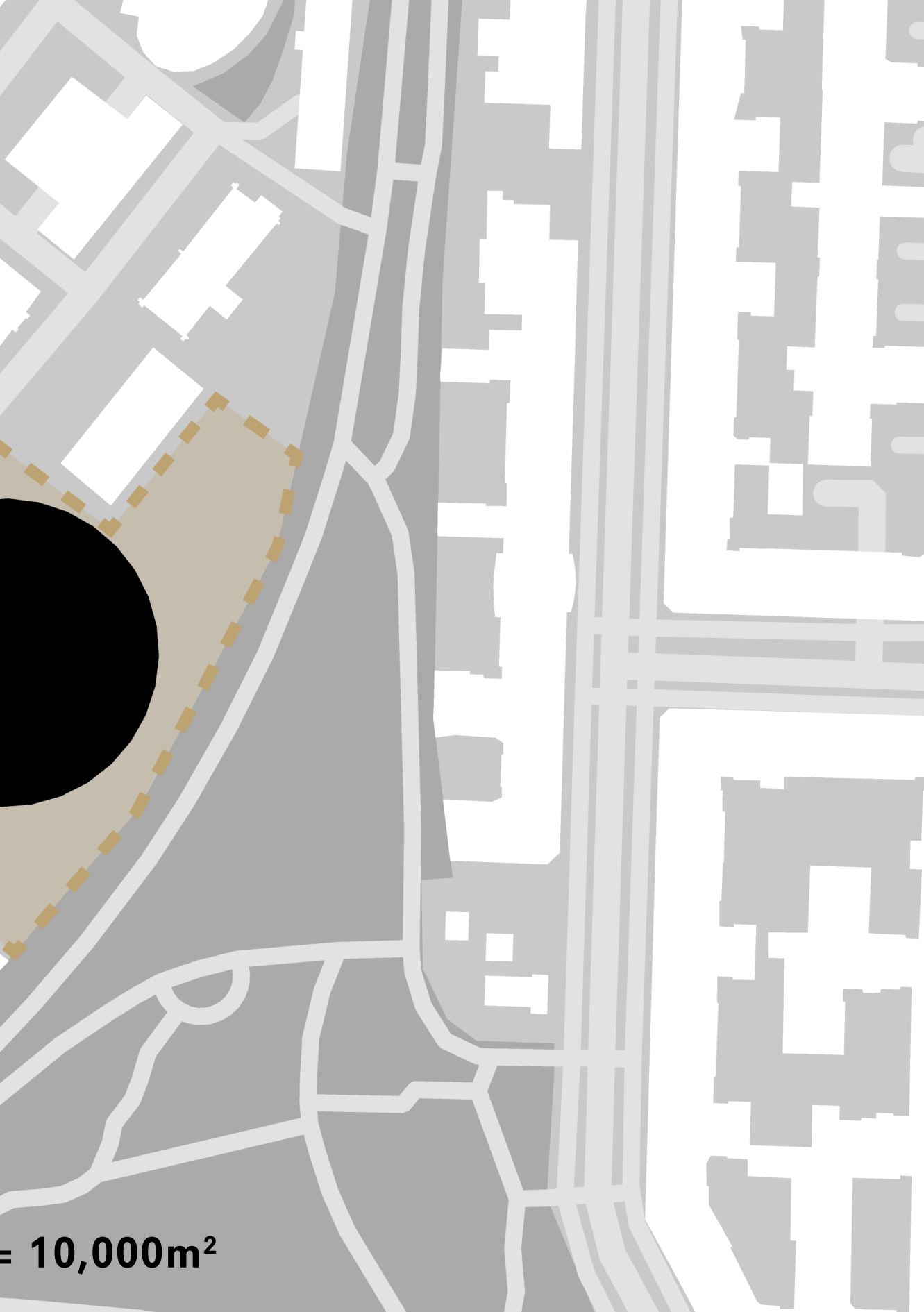


Looking inwards

The campus is somewhat isolated, bordered by train tracks and fences, limiting its accessibility and integration with the surrounding park and street. The main entrance, while functional, lacks the monumental presence that befits such a significant structure. Opportunities exist for improving accessibility and enhancing the entrance experience, potentially by creating alternate access points while preserving visual connections to the park. Analysis of the site led to conclusions regarding massing, emphasizing the need for densification while maintaining a sense of openness. Activating public spaces, ensuring adaptability, and fostering visual connections to the park were identified as key design considerations.


PLOT SIZE =


= 10,000m²

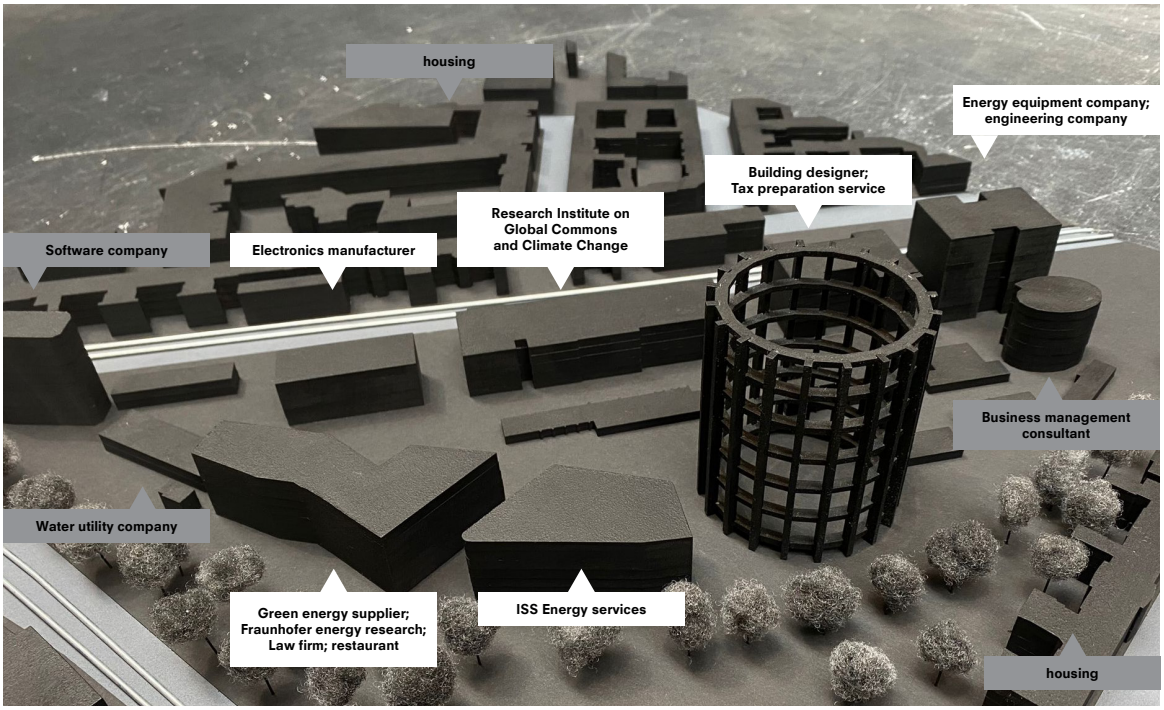


Figure 50, Building functions.

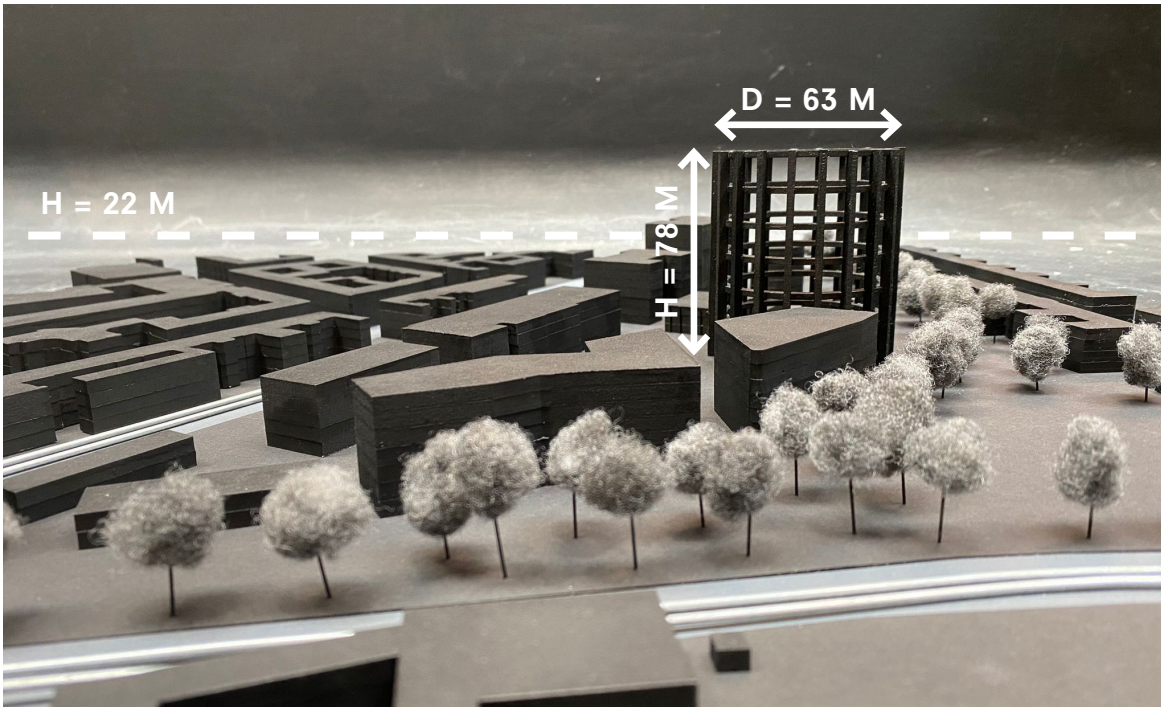


Figure 51, Building heights.

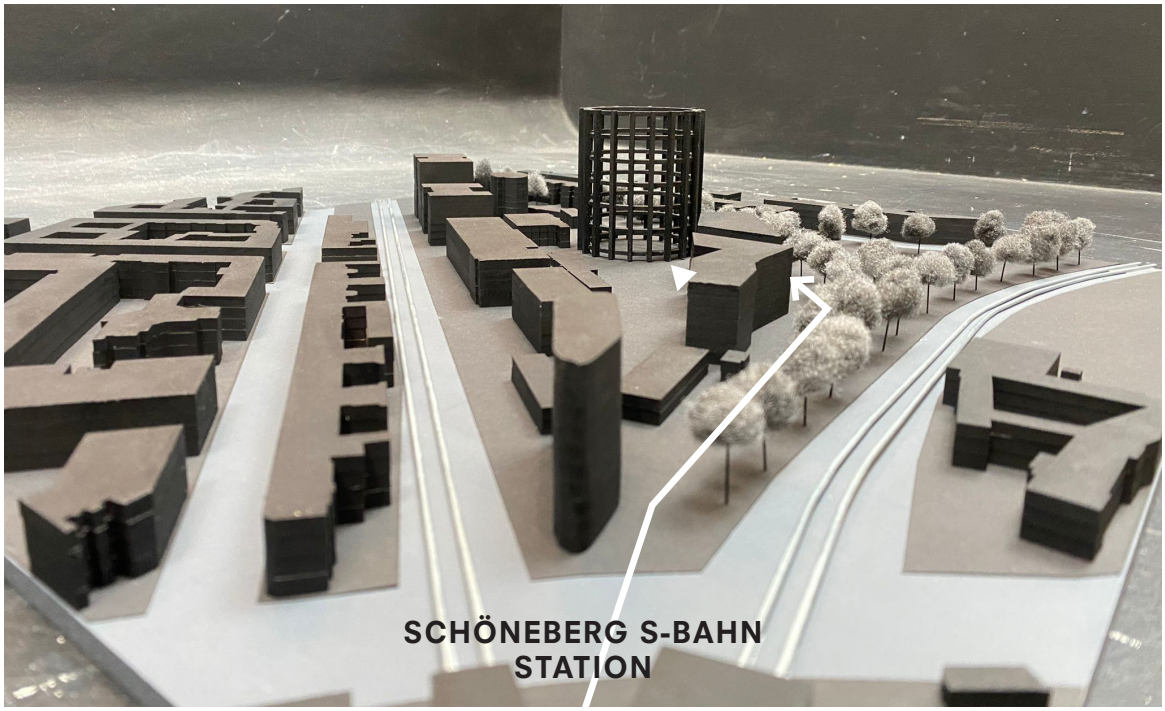


Figure 52, Approach from metro station.

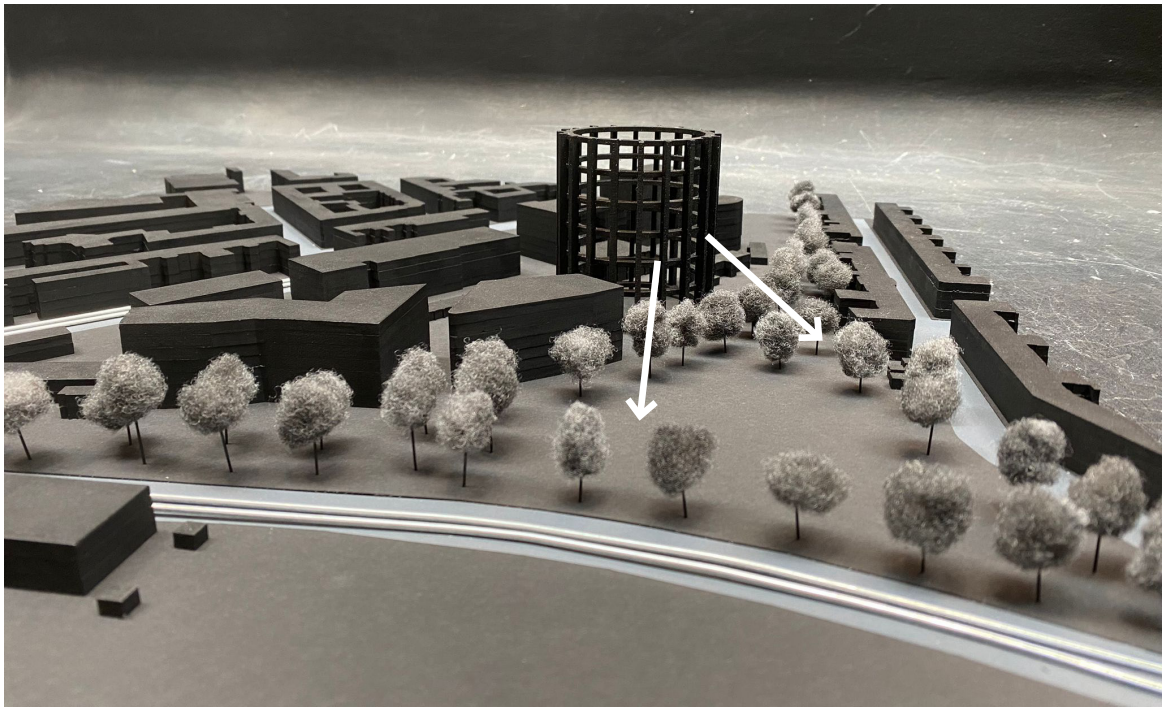
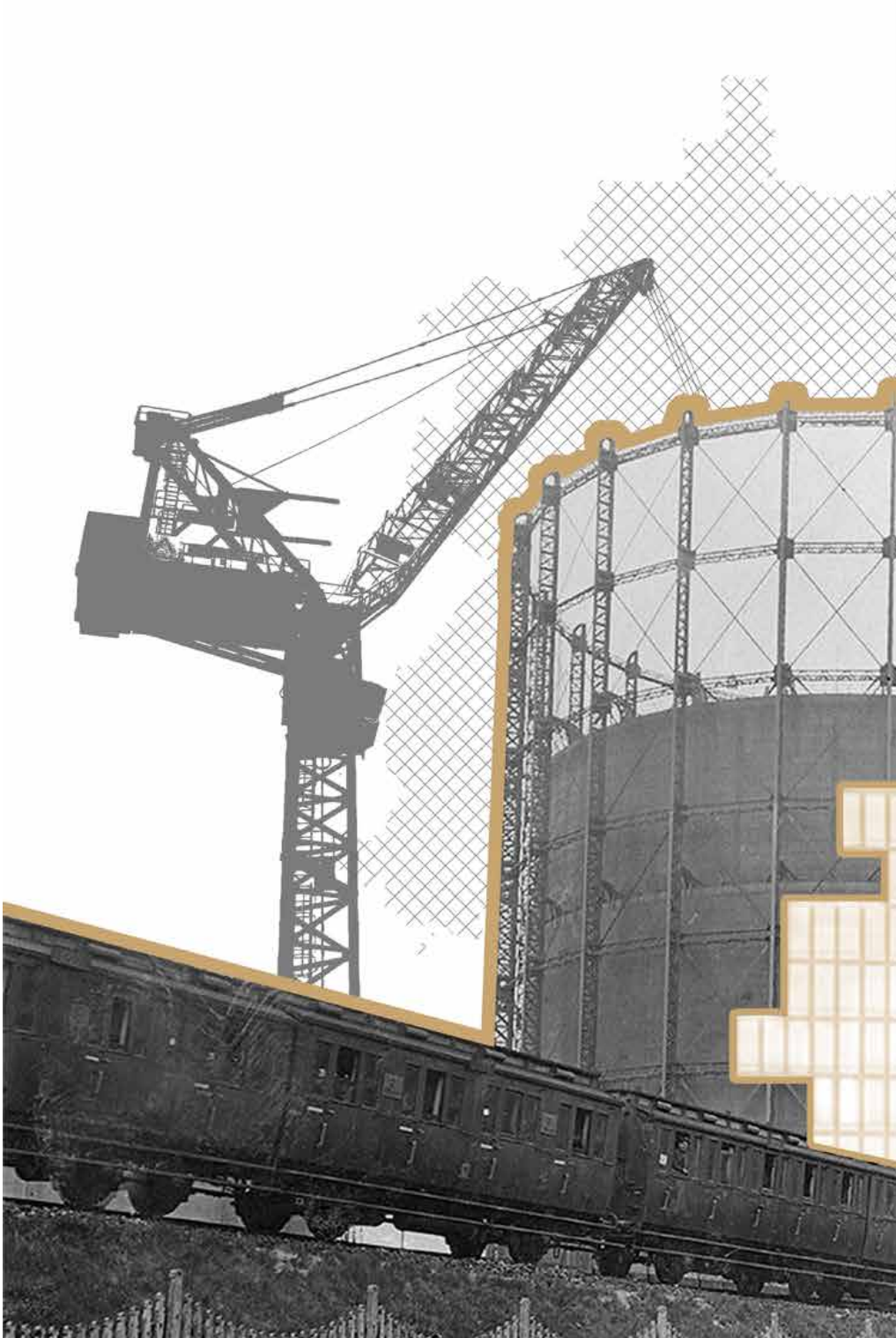


Figure 53, Sightlines into the park.

complex projects

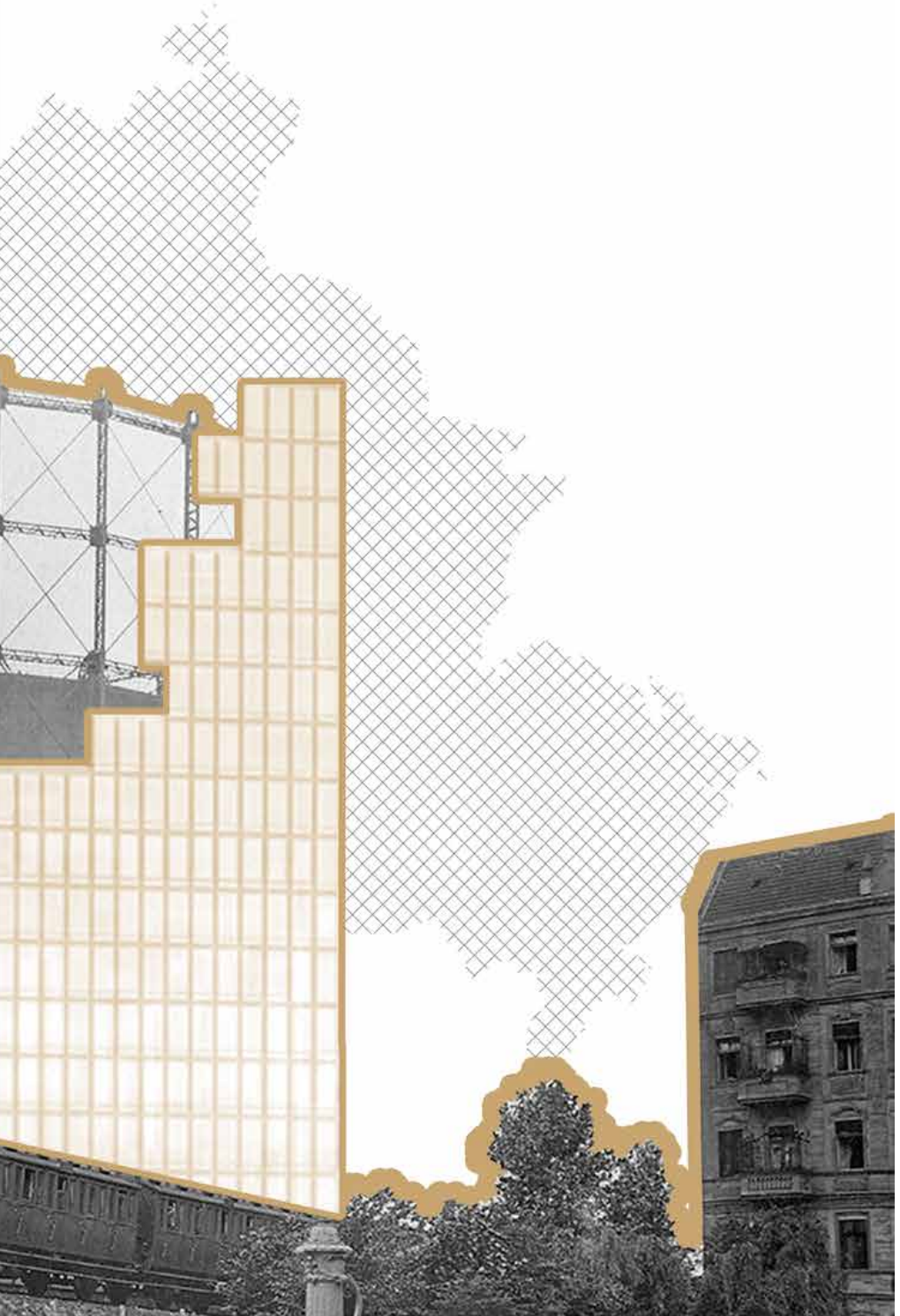
FROM LEGAC

SHAPING HERITAGE ICONS INTO B



CY TO LIGHT:

EACONS OF ENERGY TRANSITION!



DESIGN FRAMEWORK

05

- focus on creation rather than collection
- engage amateurs and specialists alike
- emphasize energy transition
- specialized labs around general core
- stack public functions in an open space
- allow for expansion and adaptability
- densify & compact, avoid sprawl
- reconsider entrance through the plot
- height consideration (22m - 78m)
- activate public spaces on campus
- visual connection to the park

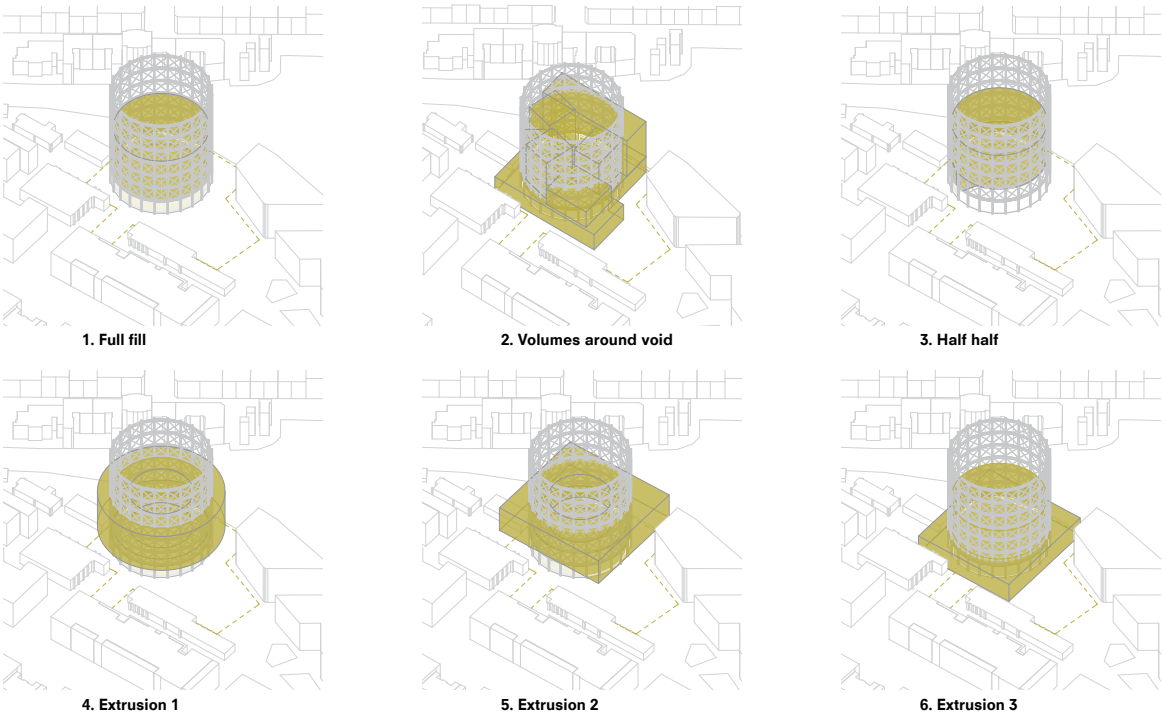


Figure 54, Volume alternatives.

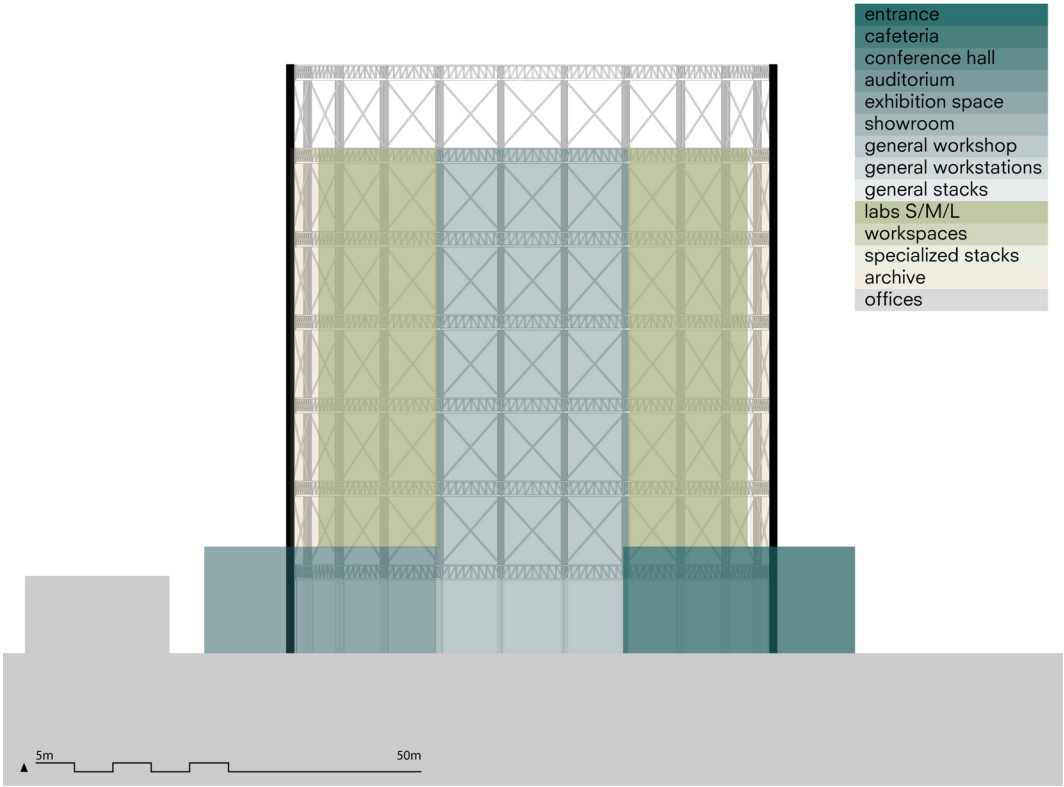
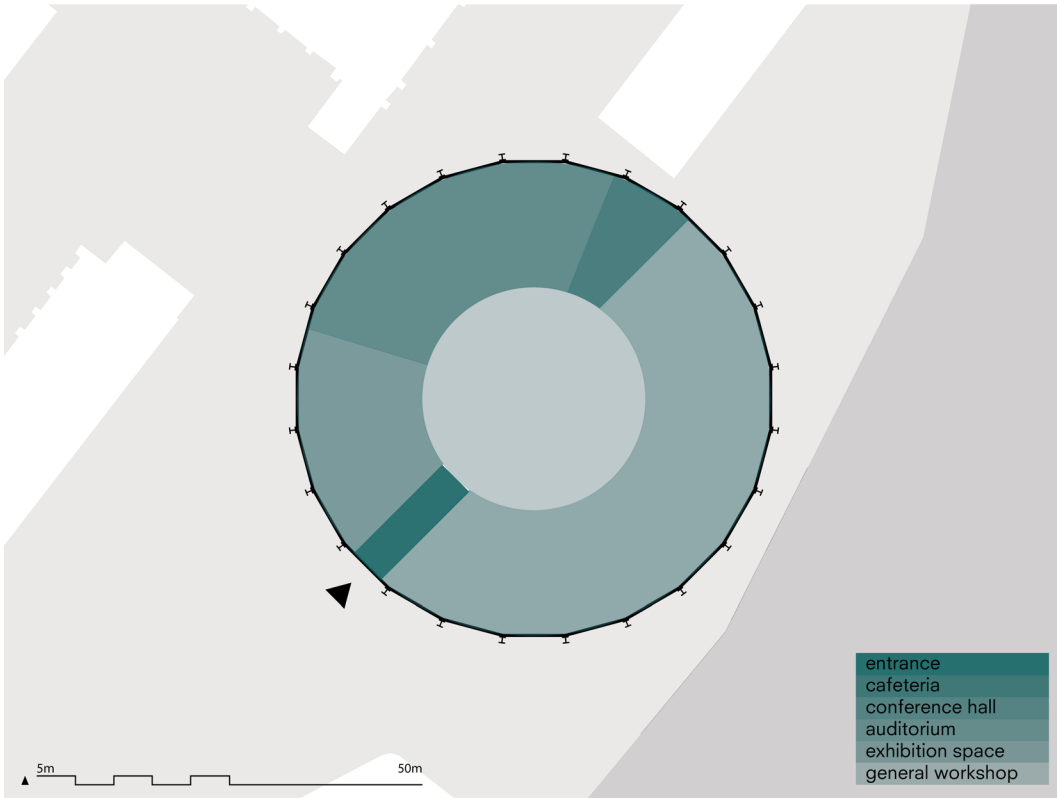
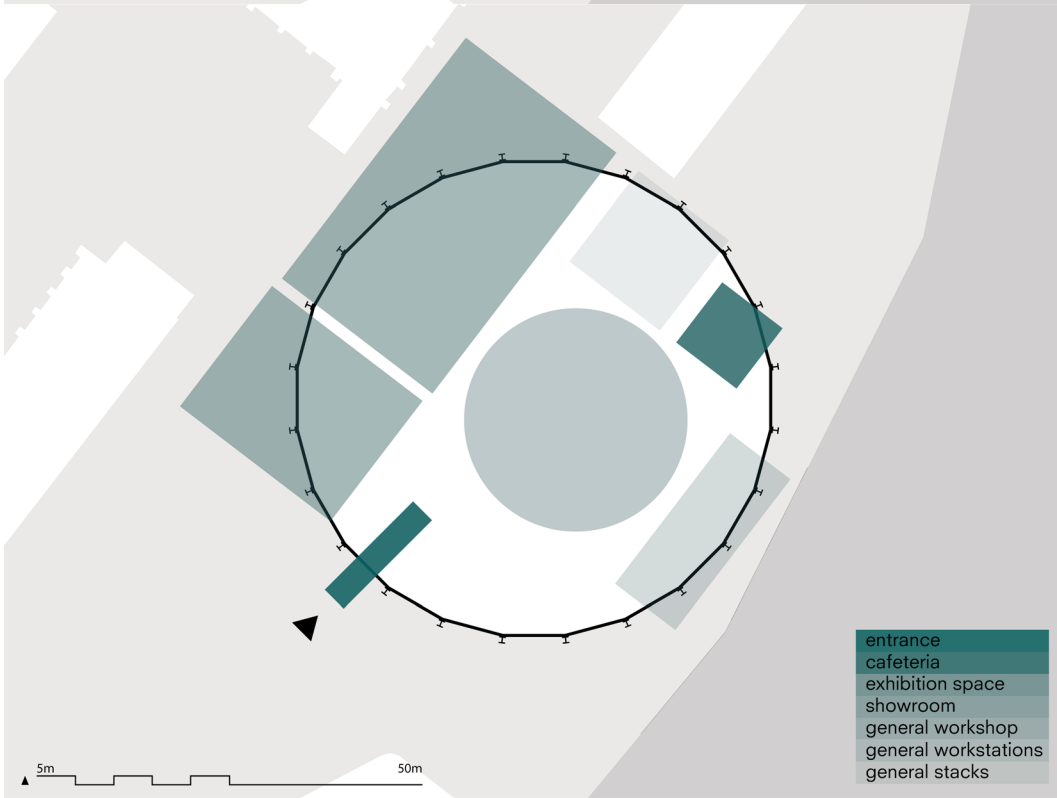
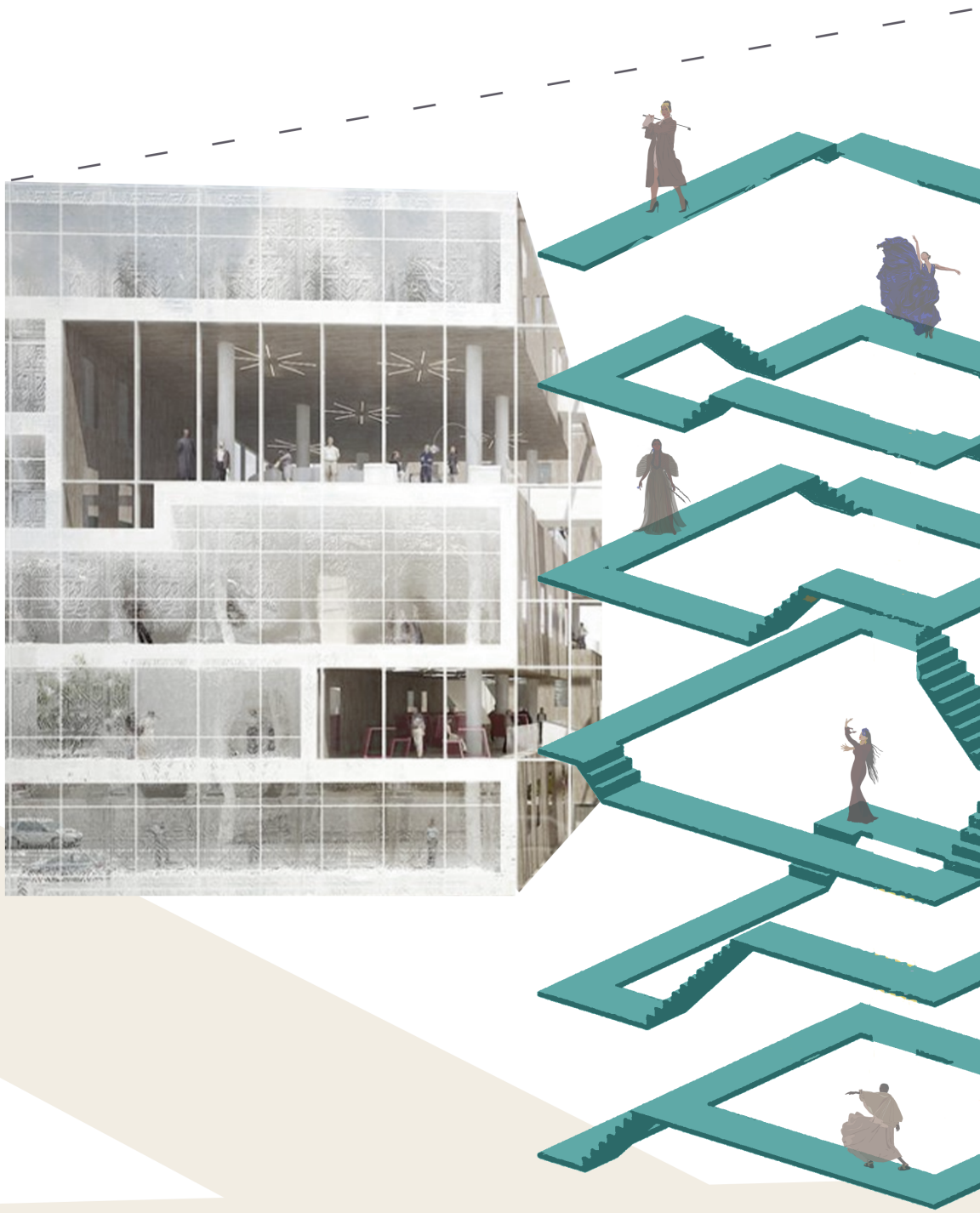


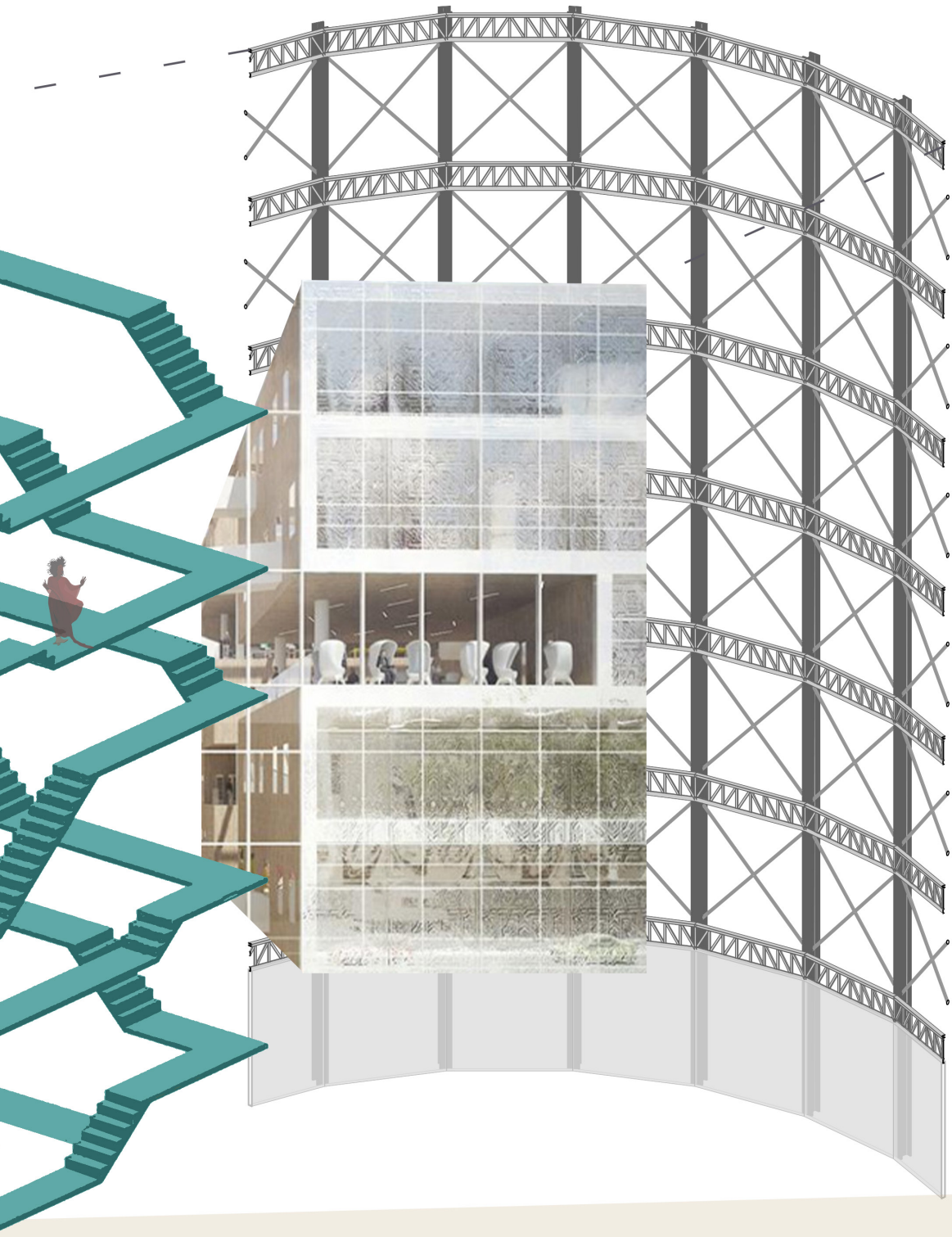
Figure 55, Schematic section.





Figures 56-57, Schematic floor plan alternatives.





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