deSINGEL INTERNATIONAL ARTS CAMPUS

A CONSERVATION STUDY

FACULTY OF ENGINEERING SCIENCE
RAYMOND LEMAIRE INTERNATIONAL CENTRE FOR CONSERVATION
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deSINGEL INTERNATIONAL ARTS CAMPUS.
A CONSERVATION STUDY.

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Thesis to obtain the degree of Master of Science in Conservation of Monuments and Sites
Presented by Marie Huyghe

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Abstract

This dissertation concerns a case study of deSingel International Arts Campus. The current state of the complex is the result of a vital development. Léon Stynen (1899-1990) and Paul De Meyer (1922-2012) designed the Royal Flemish Music Conservatoire of Antwerp that was built between 1963 and 1980 (phase 1: 1963-1967 and phase 2: 1973-1980). Already during the construction the programme of the building changed: a national Music Conservatoire has transformed into an International Arts Campus. Today three main users share the building: the Royal Conservatoire Antwerp, deSingel cultural organisation and Radio 2. To house all these functions several volumes were added and designed by respectively Paul De Meyer (phase 3: 1985-1987) and Stéphane Beel (phase 4.1: 1999-2000 and phase 4.2: 2007-2010).
The building has reached a high level of complexity, both architectural and functional. The original modernist building has become part of an architectural stratified landscape.

Today the contrast between the 'new' and the 'old' building is striking. The actualisation of the historic building after the latest reorganisations is at this point a relevant topic. This research provides a global vision and methodology for the future development of an integrated masterplan of restoration of the total complex.

In this study an in-depth historic, urban, architectural, functional and technical analysis is made in order to formulate an evaluation of the current state. By studying the first and oldest building phase, a methodology for a masterplan of restoration is developed.

This research demonstrates the true intrinsic value of the original building. A guideline with restrictions and necessary liberties is defined on the one hand to safeguard the qualities of the historic core and on the other hand to provide the freedom for the open future development of the programme.

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INTRODUCTION

1. Identification of building and site

The complex is located at the edge of the city of Antwerp, between the ring road (R1 / E34) and 'De Singel' (R10 / Desguinlei). The building was realised in different phases. The original complex for the Conservatoire was realised between 1963 and 1980 and designed by Léon Stynen (1899-1990) and Paul De Meyer (1922-2012). In 2010, the latest extension designed by Stéphane Beel (°1955) was inaugurated. The total complex houses facilities for the Royal Conservatoire of Antwerp, deSingel cultural organisation and Radio 2 Antwerp. The owners of the complex are the Flemish Community, Artesis Plantijn University College and Flemish Radio and Television Broadcasting Organisation (VRT).

2. Title of this study

The title of this dissertation is 'deSingel International Arts Campus. A Conservation Study'. This title covers the study of the entire complex, including the buildings of the Royal Conservatoire Antwerp, deSingel cultural organisation and Radio 2. The study focuses on the original building Léon Stynen and Paul De Meyer designed for the Royal Flemish Music Conservatoire, but also considers the evolution of the complex and the actual condition and organisation. The name of the building evolved together with this development. First it was called the 'Royal Flemish Music Conservatoire', then 'deSingel' (1980) and now 'deSingel International Arts Campus' (2010).

100 m

Figure 0.1: Top view of the site (adapted from Google Earth, 2014)

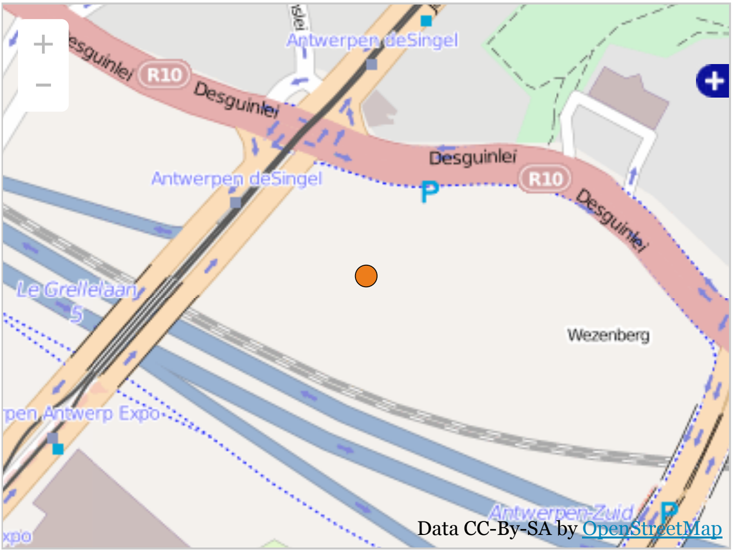
deSingel International Arts Campus

Address:	Desguinlei 25, 2018 Antwerp, Province of Antwerp, Belgium
Year of construction:	Low-rise building and halls: 1963-1980 Extension: 2007-2010
Architects:	Léon Stynen (1899-1990) & Paul De Meyer (1922-2012) Stéphane Beel (°1955)
Function:	International Arts Campus for theatre, dance, music and architecture Radio station
Owner:	Flemish Community, Artesis Plantijn University College, VRT
Total Surface:	46.000 m^2
Capacity:	Conservatoire: 600 students Concert Hall (Blue Hall): 900 seats Theatre Hall (Red Hall): 235 - 800 seats
Status:	Not classified as a monument

Figure 0.2: View on the complex (© Jan Kempenaers, Ghent: SBA)

De Inventaris van het Bouwkundig Erfgoed

"Koninklijk Vlaams Muziekconservatorium" en "Singel" (ID: 6723)



[Alle foto's]

Administratieve Gegevens

Alternatieve naam:	
Provincie:	Antwerpen
Gemeente:	Antwerpen
Deelgemeente:	Antwerpen
Adres:	Desguinlei 25
Status:	Bewaard
Vastgesteld:	Ja
Beschermingen:	
Gebeurtenissen:	▪ Actualisatie Antwerpen (05-01-2006 - 05-01-2007). ▪ Adrescontrole Antwerpen (23-07-2007 - 23-07-2007). ▪ Inventarisatie Antwerpen (01-01-1976 - 31-12-1989).
Verdere informatie:	

Beknopte karakterisering

Typologie:	concertzalen, muziekscholen, theaters
Datering:	na WO II, vanaf 1975
Stijl:	
Trefwoorden:	
Betrokken personen:	▪ Stynen, Léon (Ontwerper) ▪ De Meyer, Paul (Ontwerper)

Figure 0.3: Flash card (https://inventaris.onroerenderfgoed.be/dibe/relict/6723, 2015)

3. Protection and classification

Forty-one buildings designed by Léon Stynen are registered on the 'Inventory of Architectural Heritage'. Twelve of them were designed in collaboration with Paul De Meyer. Ten of those forty-one registered buildings are classified as a monument, of which the BP-tower, Stynen's own house and the Casinos of Knokke and Ostend. deSingel is **not classified as a monument** but is registered on the 'Inventory of Architectural Heritage'. The building is not protected but has a level of safeguarding. Being listed has four legal consequences of which two are relevant for this building:

- the possibility to deviate from the standard concerning energy performance and indoor quality;
- the building can only be demolished after the heritage authorities provide advice to the city authorities.

This means that very few restrictions are applicable and the building's only safeguard is that it probably will not be demolished.

4. Motivation and objectives

After graduating at the University of Ghent (2009), I worked as an architect at the office of Stéphane Beel Architecten for three years. I am familiar with the work of Stéphane Beel and had a basic knowledge of the building from the beginning of this study. The contrast between the original and the new building always fascinated me, but also raised a certain concern about the 'destiny' of the perfectly balanced building designed by Léon Stynen and Paul De Meyer.

The infrastructure of deSingel has recently been expanded in order to fulfil its role as an International Arts Campus. This expansion was part of a masterplan created in 1996 by Stéphane Beel to define the future course of the complex. The evaluation of the existing building and an integrated restoration and revaluation of the original building were however not part of the masterplan. Today the contrast between the 'new' and the 'old' building is striking.

Figure 0.4 & 0.5: Extension by Stéphane Beel (2007-2010)
(© Johnny Umans, johnnyumans.wordpress.com, 2014)

Figure 0.6 & 0.7: West wing low-rise building
(MH, 09/05/2014)

The actualisation of the historic building after this radical reorganisation is at this point a relevant topic. In best practice, it was integrated in the masterplan.

This research aims to provide a global vision and methodology for the future development of an integrated masterplan of restoration of the total complex. The information and in-depth historic, urban, architectural, functional and technical analysis create a guiding paradigm in which future decisions can be evaluated and justified. This methodology is developed by a profound analysis of the first building phase (1963-1967).

5. Methodology

The subject of this study is situated within the field of conservation of architectural heritage and within the specialised field of building materials and conservation techniques. This dissertation is an intrinsic case study of a building. The methodology originates from the research method developed at the Raymond Lemaire Centre for Conservation, particularly applied in the Integrated Project Work 3.

5.1. Research

5.1.1. Literature

A structured literature review was the first reconnaissance of the topic and its historic and architectural context. The monograph on Léon Stynen by Albert Bontridder[1] and the exhibition catalogue of the oeuvre of Léon Stynen by Geert Bekaert and Ronny De Meyer[2] were two important works for this orientation. Also the publication in consequence of the centennial anniversary of the Conservatoire[3] gave a clear overview of the history of the complex.

5.1.2. General observation

The next stage of the exploratory research was a general inspection of the building, the site and its surroundings. Walks across the interior and exterior of the building were carried out to observe the building and the activities within the building. This first reading of the building provided a visual framework and a preliminary definition of the research questions.

5.1.3. Archival research

First the different archives containing potential information were consulted. The 'State Archive Antwerp', 'Archives d'Architecture Moderne' and archive of the policy area 'Education and Training' did not contain usable information for this investigation. The following archives were a valuable source of information.

- Architectuurarchief Provincie Antwerpen / Architecture archives of the province of Antwerp (APA)

The archives of Léon Stynen and Paul De Meyer are preserved in the Architecture archives of the province of Antwerp. Dirk Laureys, head of the archive, selected various items that could be relevant for this study. This selection contained a large amount of drawings (rolls numbered from KVMC1 until KVMC15), correspondence, tender documents (incomplete) and historic photographs taken during construction and right after completion of the building.

1 BONTRIDDER Albert, *Gevecht met de rede, Léon Stynen: Leven en werk*, Antwerpen: Comité Léon Stynen, 1979.
2 BEKAERT Geert, DE MEYER Ronny, Léon Stynen, een architect. Antwerpen 1899-1990, exhibition catalogue, Antwerpen: deSingel, 1990.
3 PERSOONS Guido (ed.), Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998.

- Archief Regie der Gebouwen Provincie Antwerpen / Archive Buildings Agency province of Antwerp (RdGA)
The Archive of the Buildings Agency of the province of Antwerp is located in Lier. The archival documents of the building were selected together with Debby Vander Velde, civil servant at the Buildings Agency, and mainly concerned documents of the second construction phase (tender documents and reports of the construction). Different contracts and selective correspondence were also stored in this archive.

- Stadsarchief Antwerpen (Felix) / City Archive Antwerp (Felix)
The database of the City Archive of Antwerp is online accessible. A selection of the files was made using the different search items. These files concerned the different building permit application files and were consulted in the archive.

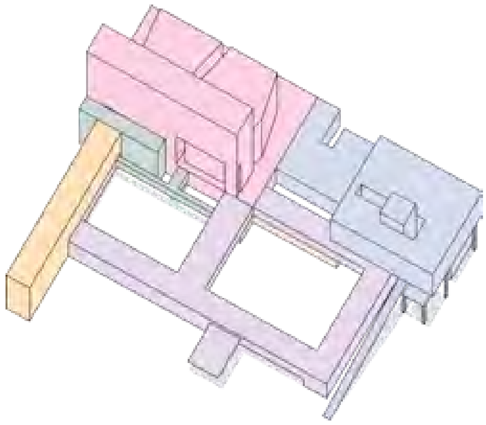
- Archief deSingel / Archive deSingel (deSingel)
Paul Vermeir and Tony Arnouts, technical service deSingel, provided documents from the Archive of deSingel and concerned drawings of the different construction phases. Mainly drawings on scale 1-100 and sections on scale 1-50 of the first construction phase are selected for this study.

5.1.4. Detailed observation
A deep understanding of the building was acquired through photographs, material observations and detailed measurements. A constant return from the historical information to the building itself and vice versa allowed me to recognise the original lay-out of the building and distinguish the alterations of the original concept.

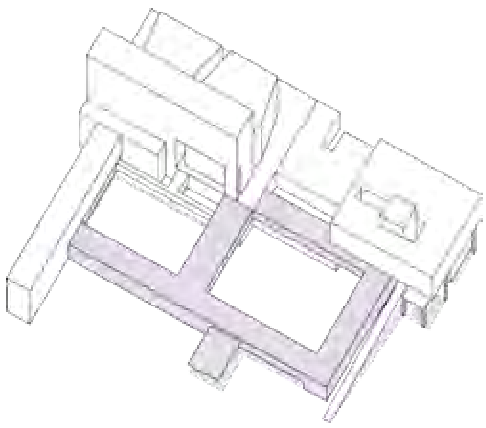
5.1.5. Interviews
During the total research process interviews with people with different knowledge of the building were carried out. A necessary discussion partner was indeed Paul Vermeir, technical director of deSingel. Regular conversations took place in person or by mail and provided essential information on the history, technical aspects and building policy. The interview with Minister Andries Kinsbergen was a valuable contribution to the understanding of the period between the first and the second construction phase. Roger Quadflieg, who is familiar with the building from the beginning, could indicate the different turning points and the reasons of those changes.
Sofie Meersseman of the office Stéphane Beel Architecten provided valuable information on the current vision on the building and the different studies that have been carried out in the past.

5.2. Structure of the dissertation
This dissertation has the structure of parallel cross-referring analyses. Different aspects of the building are studied in separate chapters. The sequence of those chapters follows the idea of successive zooming: from general to specific. This study adopts the form of a masterplan of restoration with in-depth historic, urban, architectural, functional and technical analysis and a profound evaluation of the current state.

The analysis is carried out in two main parts: a general study of the entire building and site (PART I) and a detailed study of phase 1 (PART II). This analysis is followed by a creative part (PART III: Proposal) in which the insights of the different analyses are taken as a basis to suggest concrete future projects.



PART I: General Study of the Entire Building and Site
The study begins with a historic analysis of the complex, ‘Building History’. The evolution of a music conservatoire to an international arts campus is illustrated. Attention is paid to the different driving forces behind this process.
This chapter is succeeded by ‘A Changing Urban Context’ in which the evolution of the site is analysed. Also the changing context and different theoretic views on this urban area are explained.
In the third chapter, ‘Architectural and Functional Analysis’, a study on the concept of the original building and the different extensions is carried out. The changing use of the building is analysed by mapping the circulation and zoning within the building.
A first reflection on this general study is made in the fourth chapter, ‘Intermediate Review’.

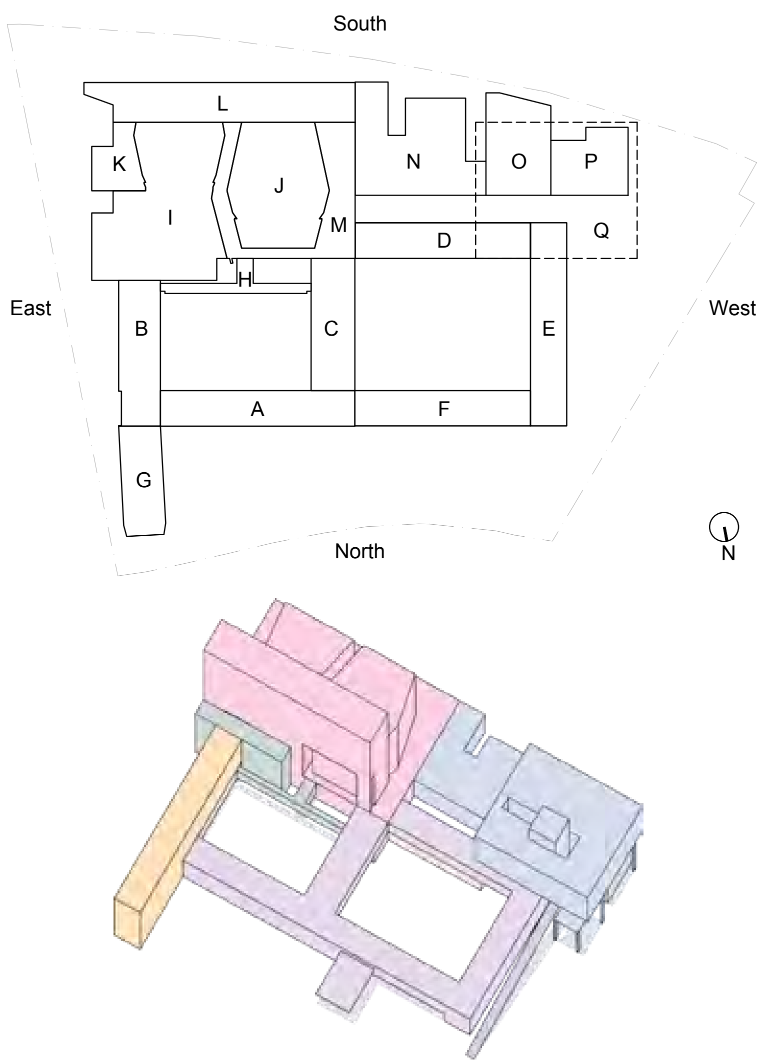


PART II: Detailed Study of Phase 1
In order to establish a profound methodology and study of the original building a part of the building (first construction phase) was surveyed in detail. This research method can also be applied on the second construction phase.
The first chapter of this second part, ‘Technical Analysis’, investigates different technical aspects of the building such as the construction, acoustic measurements and the overall pipeline system. An inventory of the interior and exterior materials gives a clear impression of the original building and its concept. The technical investigation is summarised in an exemplary section.
The following chapter, ‘Masterplan of Restoration’, is a key point in this dissertation. This chapter defines a global vision on the building based on the different analyses. As the detailed technical analysis has only been carried out for the first construction phase, the masterplan only covers this part of the building. For the development of a global masterplan, the detailed study of the second phase is essential. This was however not possible in this study considering the scale of the building.

PART III: Proposal
The first chapter of this third part, ‘Future Scenario’ is a test case for the future course of the building and offers a new global perceptive.
The second chapter, ‘Improvement Exemplary Section’, focuses on the oldest part of the building and gives an overview of the integrated possibilities to improve thermal, technical and aesthetic aspects of this part.

PART IV: Conclusion
The final chapter reflects on the different results of the research and questions the ‘position of the building’ and its ‘destiny’.

6. Bookmark
A bookmark with the legends and names of the building parts is attached to this book.



Phase 1: construction classes and administration Conservatoire (1963-1967 / Léon Stynen and Paul De Meyer)

Phase 3: construction classes Conservatoire (1985-1987 / Paul De Meyer)

Phase 2: construction music and theatre hall, library and radio station (1973-1980 / Léon Stynen and Paul De Meyer)

Phase 4.1: construction hallway and transformation flytower (1999-2000 / Stéphane Beel)

Transformations between 2-3: construction offices deSingel (1980-1985)

Phase 4.2: construction new facilities deSingel and Conservatoire (2007-2010 / Stéphane Beel)

PART I

GENERAL STUDY OF THE ENTIRE BUILDING AND SITE

PART I
CHAPTER 1: BUILDING HISTORY

1. deSingel situated within the oeuvre of Léon Stynen (1899-1990)

Léon Stynen and Paul De Meyer designed the Music Conservatoire. Léon Stynen can be considered as the 'conceiving' architect as the complex is a continuation of his total oeuvre. Paul De Meyer, a former student of Stynen, joined the office of Stynen after the Second World War. De Meyer realised many building in collaboration with Léon Stynen. De Meyer's individual work is less known.

Léon Stynen is one of the most important representatives of modernism in Belgium.
He was an authoritative personality, not only because of the quality of his oeuvre, but also because of his position and involvement in education and the organisation of the profession of architects.[1]
Stynen worked as a professor (from 1939) and later as director (from 1948) at the Antwerp Academy. In 1946 he established the 'School for Architecture and Urban Planning' and the 'Higher Institute for Urban Planning'.[2] In 1950 he became Herman Teirlinck's successor as the director of the 'National Higher Institute for Architecture and Decorative Arts in La Cambre' (Brussels). When the 'Order of Architects' was founded in 1963, Stynen became the first national president after which he was president for four years of the Antwerp provincial board.

"*Stynen was a man who wished to remain civilised and, in his own words, 'tactfully' in the background. He did not appear in the spotlights, but did design sophisticated auditoria: concert halls, cinemas and casinos."*[3]

Stynen considered architecture as a way of life. He preferred to react with his drawings and designs rather than to participate in big debates. For Stynen architecture was the beauty that saved the reality from triviality and absurdity.[4] Stynen left an outstanding, elaborated and divers oeuvre. He was well known in Belgium however his name never crossed the border. He is hardly ever mentioned in international reviews on modern architecture.

1.1. An overview of Stynen's oeuvre

1.1.1. Education and early work

Léon Stynen was born in Antwerp on the 15th of July 1899. He states during an interview with Joos Florquin that he became an architect 'by accident'.[5] Initially he prepared himself to become an engineer and went to the secondary school of the 'Broeders Josefieten' in Melle. Due to exigencies of war he ended up at the Antwerp Academy of Fine Arts instead of the University of Ghent. During his education at the Academy (1915-1921) he became acquainted with the classical order, the sense for proportion and harmony.

1 LAUREYS Dirk, "Stynen, Léon", in: VAN LOO Anne (ed.), *Repertorium van de architectuur in België van 1830 tot heden*, Antwerpen: Mercatorfonds, 2003, p. 523.
2 "Hoger Instituut voor Stedenbouw (1946-1952)", in *Odis*: www.odis.be (accessed on 13/07/2015). The School for Architecture and Urban Planning and the Higher Institute for Urban Planning were in 1952 merged into the National Higher Institute for Architecture and Urban Planning in Antwerp.
3 DE MEYER Ronny, "Léon Stynen", in: DE KOONIG Mil & BEKAERT Geert, *Horta and after: 25 masters of modern architecture in Belgium*, Ghent: University of Ghent. Department of architecture and urban planning, 2001, p. 166.
4 BEKAERT Geert, DE MEYER Ronny, *Léon Stynen, een architect. Antwerpen 1899-1990*, Antwerpen: deSingel, 1990, p. 5.
5 "Ten huize van … 18", in *Digitale Bibliotheek voor de Nederlandse Letteren (dbnl)*: http://www.dbnl.org/tekst/flor007tenh18_01/flor007tenh18_01_0005.php (accessed on 13/07/2015).

Figure I.1.1: Memorial WWI Knokke, 1921 (beeldenindestad.be, 2015).

Stynen worked as a trainee at the office of Gerard De Ridder and started his career with taking part in a few competitions. His designs are monumental and inspired by the architecture of **Berlage**. In 1922 he wins the triennial price of the 'Royal Company for Architecture of Antwerp' with the classical design for an open-air theatre. His sculptural designs for a memorial for the casualties of the First World War at Knokke (1921) and the casino of Knokke (1925) are realised.[6] Meanwhile he designed a couple of houses and stores in art-deco style. The first academic designs of Stynen are important to understand his work. The classical inspiration is present in his total oeuvre.

6 LAUREYS Dirk, "Stynen, Léon", in: VAN LOO Anne (ed.), *Repertorium van de architectuur in België van 1830 tot heden*, Antwerpen: Mercatorfonds, 2003, p. 523.

Figure I.1.2: House Léon Stynen, 1933 (debalansvanbraem.be, 2015).

1.1.2. Modernism and pre-war work

Later on Stynen discovered this theatrical approach also in the work of **Le Corbusier**.[7] The play of volume and light of 'Pavillon de l'Esprit Nouveau (Arts décoratifs et industriels modernes, Paris, 1925) made on him a strong impression. This encounter caused a change in Stynen's work. He studied the ideas of Le Corbusier and wanted to implement them in his own work. Modulor and brise-soleil became part of Stynen's design method. Although Stynen profoundly studied modernist architecture, implementing the modernist language did not change his basic ideas. [8] It amplified his architectural language. According to Stynen

7 BEKAERT Geert, DE MEYER Ronny, *Léon Stynen, een architect. Antwerpen 1899-1990*, Antwerpen: deSingel, 1990, p. 8.
8 Ibidem, p. 5.

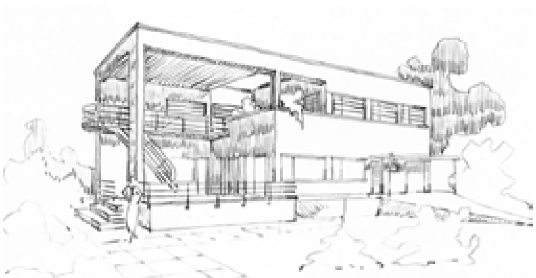


Figure I.1.3: Design house Van Parys, 1933 (debalansvanbraem.be, 2015)

Figure I.1.4: House Verstrepen (TAS 1990, p. 3).

modern architecture manifested itself as the best way to fulfil his desire for beauty and perfection. The design process of his own house (1933) in the Antwerp Exhibition Quarter illustrates the way Stynen uses modernism as a style, as a language. "*All the Corbusian elements are to be found in his preliminary design, a spacious plastered volume with a void-cum-sloping path and an outdoor room. In the end Stynen built himself a limited volume in brick, without a void, with a spiral staircase and a small terrace. Just as he did for other clients, for himself he exchanged a modernist appearance for a more classical one without the slightest problem.*"[9] Stynen's first realisation inspired by this vision is house Verstrepen (1927) in Boom, a plastic composition of brick volumes. Stynen's new ideas fully took shape in the realisation of the casino of Knokke (1929-1931). The design of 1925 is changed in a radical way. It was not anymore about the monumental nature, but about the function.[10] Other important works of this pre-war period are two pavilions at the World Exhibition of Antwerp in 1930 (the pavilion of Decorative Arts and the pavilion of De Beukelaar), the Elsdonck flats in Wilrijk (1932-33), the casino of Chaudfontaine (1938) and many houses of which his own house (1933) in the Antwerp Exhibition Quarter. Together with Victor Bourgeois and Henry van de Velde, Stynen designed the Belgian pavilion on the World Exhibition in New York (1938).

9 DE MEYER Ronny, "Léon Stynen", in: DE KOONIG Mil & BEKAERT Geert, *Horta and after: 25 masters of modern architecture in Belgium*, Ghent: University of Ghent. Department of architecture and urban planning, 2001, p. 168.

10 BONTRIDDER Albert, *Gevecht met de rede, Léon Stynen: Leven en werk*, Antwerpen: Comité Léon Stynen, 1979, p. 41.

Figure I.1.5: Elsdonck flats Wilrijk, 1932-1933 (www.debalansvanbraem.be, 2014).

1.1.3. Post war work and collaboration with Paul De Meyer

After the Second World War Stynen mostly worked together with architect **Paul De Meyer** (1922-2012), a former student of Stynen at the Antwerp Academy. De Meyer joined the office of Stynen and became his business partner. Already in the 1940's Stynen commissioned him to map the urbanisation in Schoten and assigned him with the execution of the Meir Center Building (1947-1948) in Antwerp. From 1950 until 1964 De Meyer took care of the daily leadership at the office.[11] Other employees at the office were Walter Bresseleers (1927-1980) and Paul Meekels (°1929).

11 "Paul De Meyer", in *Odis*: www.odis.be (accessed on 13/07/2015).

Figure I.1.6: Zonnewijzer apartment building, 1955 (inventaris.onroerenderfgoed.be, 2014).

One of the first important post-war buildings is the casino of Ostend (1948), where Stynen and De Meyer gave the modernist building mondain allure with classical elements. Besides many office buildings the duo designed the apartment building Zonnewijzer (1955) and a social housing project in Kessel-Lo (1956), both strongly inspired by Le Corbusier's Unité d'habitation. Ronny De Meyer states for the building Zonnewijzer: "*The modulor in the proportions of the façade panels, the projecting balcony on the top floor and the angled staircase are all direct references to the Corbusian vocabulary. And yet the individuality of Stynen's approach is visible here: a clear composition of both plan, section and façade, in which the urge towards formality is only limited, in fact almost absent.*"[12]

Stynen and De Meyer realised with the BP-Building (1960) one of the most modern office buildings of the 1960's. It had a daring constructional concept: the floors and facades hung up at a central beam construction. Stynens latest works, The Saint Rita church (1961-1968) in Harelbeke and the Royal Flemish Music Conservatoire of Antwerp (1963-1980), both in collaboration with De Meyer, are examples of refined brutalism and a direct homage to Le Corbusier.[13] Stynen died in 1990, at that moment a retrospective of his work was being set up in the Conservatoire.

12 DE MEYER Ronny, "Léon Stynen", in: DE KOONIG Mil & BEKAERT Geert, *Horta and after: 25 masters of modern architecture in Belgium*, Ghent: University of Ghent. Department of architecture and urban planning, 2001, p. 168.

13 LAUREYS Dirk, "Stynen, Léon", in: VAN LOO Anne (ed.), *Repertorium van de architectuur in België van 1830 tot heden*, Antwerpen: Mercatorfonds, 2003, p. 525.

Figure I.1.7 (right): BP-Building 1960 (TAS 1990, p. 15).

1.2. The monumental building and the city[14]

Stynen overviewed the city from a distance: an impressive scene, monumental and theatrical. The city is beauty, not a machine or a conditioned living environment.
His buildings belonged in the city. Stynen's oeuvre is characterised by casinos, cinemas, exhibition pavilions, theatres, shop windows and showrooms. Stynen tried, like Mies van der Rohe, to create order with pure architectural means.
Stynen participated in 1933 in the Imalso competition for the urban renewal of the Antwerp Left Bank. The influence of Le Corbusier's 'Ville Radieuse' can't be denied in this design. In opposition to the competition conditions, Stynen created a link between the existing city (Right Bank) and the new city (Left Bank).
He expressed the necessity of continuity by stressing the contrast between old and new.
He applied this vision also on the historic city: the old can evolve in and by the new. Stynen intervened drastically in the historic city of Antwerp by giving it injections of 'universal beauty'. He gave the 'Boerentoren' a new façade (1970-1976) and designed rectilinear shop windows at the Meir. In his master plan for the site Wezenberg (1962 and 1970), of which the Conservatoire and BP-building are part of, he considered the old city as a fragment of the new city (cfr. infra).
Stynen's public buildings show nothing but themselves. Wherever they are located, they reject their environment and create a new setting. Every building is a founding act for a utopic city. In this respect Stynen raised modernism to the extreme.
The four casinos Stynen designed show the way he wants to stipulate the view; the view on the surroundings, but also the view on the activity within the building. The casinos of

14 BEKAERT Geert, DE MEYER Ronny, "De toonkast", in: BEKAERT Geert, DE MEYER Ronny, *Léon Stynen, een architect. Antwerpen 1899-1990*, Antwerpen: deSingel, 1990, pp. 23-54.

Figure I.1.8: Casino Knokke, 1929-1931 (sincfala.be, 2014).

Knokke (1929-1931) and Ostend (1948) provide a wide panorama on the sea. The casinos of Blankenberge (1932) and Chaudfontaine (1938) provide a frame on the idealised nature but are also a showcase in which see and be seen come to the fore.
The Royal Flemish Music Conservatoire (1963-1980) is the most complete summary of Stynen's oeuvre: a theatre, a school, a pure plastic composition surrounded by a conditioned nature. The building doesn't enclose space but offers a podium with wide views and perspectives.

1.3. Léon Stynen, a rational aesthete

"In spite of all modernist references, Stynen remained true to his classical architecture training at the Antwerp Academy right up to his last building (the Conservatoire), which can be seen as his testament."[15]
A big stylistic evolution is present in Stynen's oeuvre. His first designs are classical and influenced by the art-deco style. His later works are modernist and purified. The two images on the next page illustrate this evolution. An art-deco apartment building, 'Residentie Van Rijswijck' (1931-1932), is located on less than 100 m from deSingel.[16]
Renaat Braem twice assed the oeuvre of Léon Stynen. The first time he wrote an article in an exhibition catalogue on the occasion of Stynen's 65th birthday. He stated that Stynen's work is open for interpretation. He confronted Stynen's rationalism with a lack of fantasy, his creative powers with cautiousness and his revolutionary accents with sophisticated conformism.
The second time Braem evaluated the work of his colleague was in 1973, on the occasion of the granting of the architectural price of the 'Société Centrale d'Architecture de Belgique' to Stynen. Braem stressed the quality of Stynen's classical work. According to Braem, the work of Stynen is a continuation of the classical and rational tradition of Henry Van de Velde.[17]
Stynen designed buildings that were sacrosanct, at the same time pure and mysterious.

15 DE MEYER Ronny, "Léon Stynen", in: DE KOONIG Mil & BEKAERT Geert, *Horta and after: 25 masters of modern architecture in Belgium*, Ghent: University of Ghent. Department of architecture and urban planning, 2001, p. 170.

16 "Residentie Van Rijswijck (ID: 6957)", in *Inventaris Onroerend Erfgoed*: https://inventaris.onroerenderfgoed.be/dibe/relict/6957 (accessed 27/12/2013).

17 "Léon Stynen gewikt en gewogen", in *De balans van Braem*: http://www.debalansvanbraem.be/braem_over_bouwen/leon_stynen_gewikt_en_gewogen (accessed 27/12/2013).

Figure I.1.9: Residende Van Rijswijck (MH, 04/06/2014).

Figure I.1.10: deSingel and Crowne Plaza (MH, 04/06/2014).

2. Timeline

1843
"Ecole de Musique de la ville d'Anvers" is founded in the Kaasstraat in Antwerp

1859
Institute is taken over by the city of Antwerp and moves to the Blindestraat

1867
"Antwerpsche Vlaamsche Muziekschool"

1883
Project for a new building (not realised)

1886
Institute moves to "House Moelnere"

1898
"Koninklijk Vlaams Muziekconservatorium"

1850 1860 1870 1880 1890 1900 1910 1920

Figure I.1.11: House Moelnere (Antwerp: Felix)

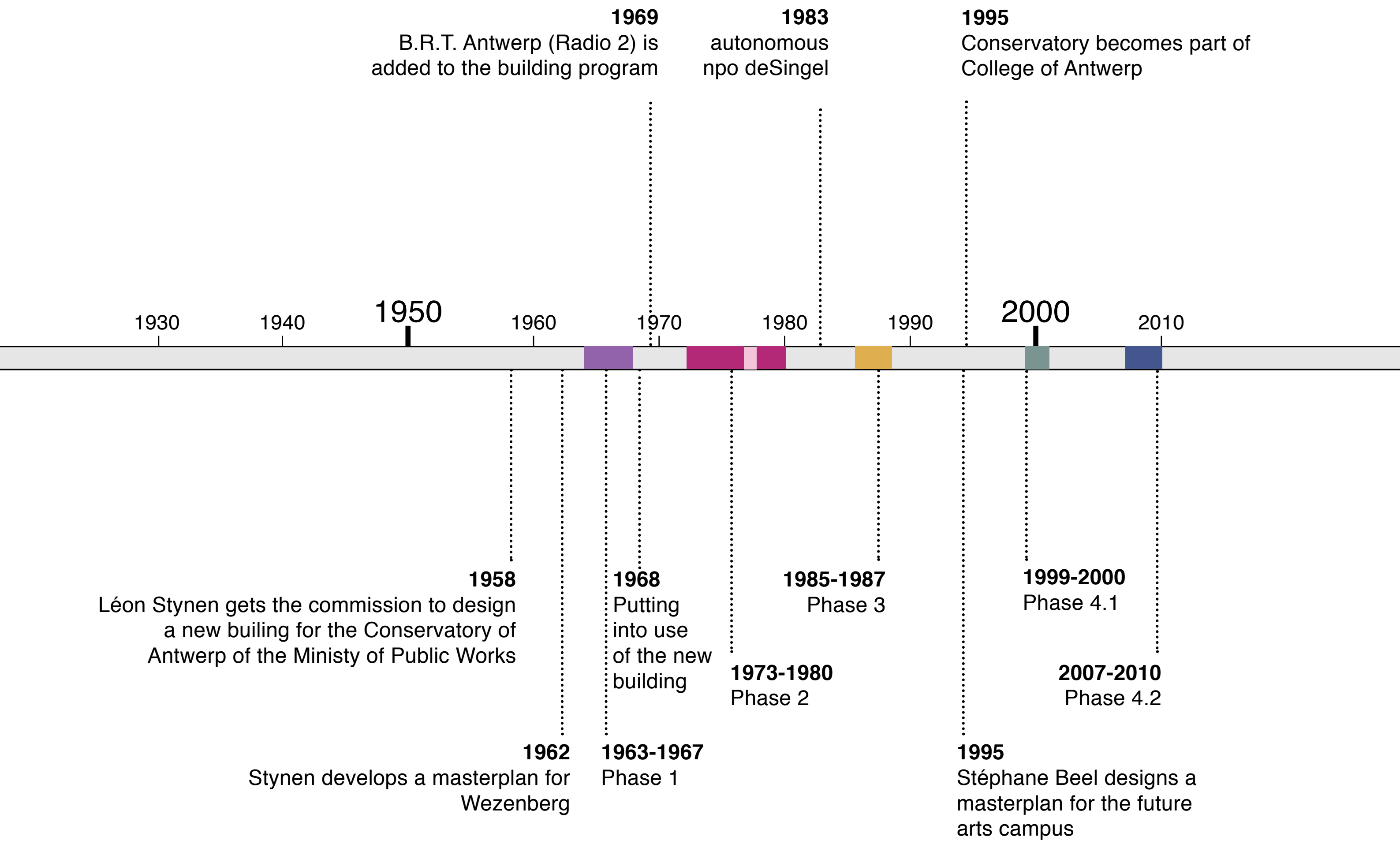


Figure I.1.12: Model design phase 1 and phase 2 (Antwerp: APA)

Figure I.1.13: deSingel International Arts Campus (Ghent: SBA)

3. The Royal Flemish Music Conservatoire and its need for a building[18]

The origin of the Conservatoire of Antwerp dates back to 1843, when the *Ecole de Musique de la Ville d'Anvers* (Music School of the City of Antwerp) was founded in the Kaasstraat in Antwerp.[19] The school was taken over by the city of Antwerp in 1859 and moved to the Blindestraat. Provided that the school would become Flemish, Peter Benoit became director in 1867 of the *Antwerpsche Vlaamsche Muziekschool* (Antwerp Flemish Music School). With the advent of Peter Benoit the school was reorganised and a pedagogical programme was set up. An adjusted learning environment was needed. The city of Antwerp designed a monumental building in 1883 but the project was rejected because of too little space on the selected plot. The school moved 'temporarily' to house *Moelnere* at the Sint-Jacobsmarkt. This situation would last for more than 85 years.
In **1898** the school was promoted to ***Koninklijk Vlaams Muziekconservatorium*** (Royal Flemish Music Conservatoire); the institution was partly taken over by the state. The building stayed property of the city and the operational means were divided between the city (7/16), the province (2/16) and the state (7/16).[20] This structure of ownership was complex and led to

Figure I.1.14: Theatre attic at Sint-Jacobsmarkt (PERSOONS 1998, p. 326).

Figure I.1.15: Classroom at Sint-Jacobsmarkt (PERSOONS 1998, p. 331).

Figure I.1.16: Courtyard at Sint-Jacobsmarkt (PERSOONS 1998, p. 327).

18 Unless mentioned, the source of this paragraph is QUADFLIEG Roger, "De symfonie van het eindeloze geduld", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, pp. 331-333.
19 BUYSSENS Marie-Thérèse, *75 Jaar Koninklijk Vlaams Muziekconservatorium 1898-1973*, Antwerpen: KVMC, 1973, p. 1.
20 BUYSSENS Marie-Thérèse, *75 Jaar Koninklijk Vlaams Muziekconservatorium 1898-1973*, Antwerpen: KVMC, 1973, p. 1.

a difficult struggle to collect funds and to reach consensus.
The next attempt to move to a new building can be situated in 1907, when the city of Antwerp decided to erect a new Conservatoire building at the Leopold De Waelplaats, opposite the Royal Museum of Fine Arts. These plans were suspended because of the First World War. During the interwar period, in 1923, the city of Antwerp bought a plot in the Mechelsesteenweg. The plans to erect a new building were postponed because of shortage of funds. A second attempt to build a new Conservatoire on the acquired plot in the Mechelsesteenweg by city architect Van Averbeke in 1939 came to a deadlock because it was too expensive.[21]
After the Second World War the situation at the Sint-Jacobsmarkt (house *Moelnere*) became excruciating: the building was congested, the technical requirements were insufficient and the building was heavily damaged during the war. In 1949 the city of Antwerp released funding and city architect Fivez made a plan for fundamental renovations. Nevertheless only urgent repairs were carried out.

21 BUYSSENS Marie-Thérèse, *75 Jaar Koninklijk Vlaams Muziekconservatorium 1898-1973*, Antwerpen: KVMC, 1973, p. 7.

The strife for a new building continued under the directorship of Flor Peeters. Mayor Lode Craeybeckx together with all involved boards came to the agreement that the operational means were fully at the expense of the state and that the city of Antwerp would provide a plot without any cost. In 1958 the 'Ministry of Public Works and Reconstruction' assigned architect Léon Stynen to design a new Conservatoire.[22]

4. The design of Stynen and De Meyer (1958-1960)

A plot at the Wezenberg, a former military site located at the crossing of the Jan Van Rijswijcklaan and Victor Desguinlei, was handed over from the city of Antwerp to the state in 1958. Léon Stynen himself selected the plot. The plot was particularly suited because it was unoccupied, it had a hilly landscape and it was well accessible for both people from the city and people from the surroundings of Antwerp.[23]

22 DE MUL Wim, LE ROY Onno, VAN HASSEL Dieter, VAN ROEY Jo, *deSingel*, unpublished work Academie Antwerpen (prof. FOQUE R.), academic year 1991-1992, p. 2.
23 BONTRIDDER Albert, *Gevecht met de rede, Léon Stynen: Leven en werk*, Antwerpen: Comité Léon Stynen, 1979, p. 181.

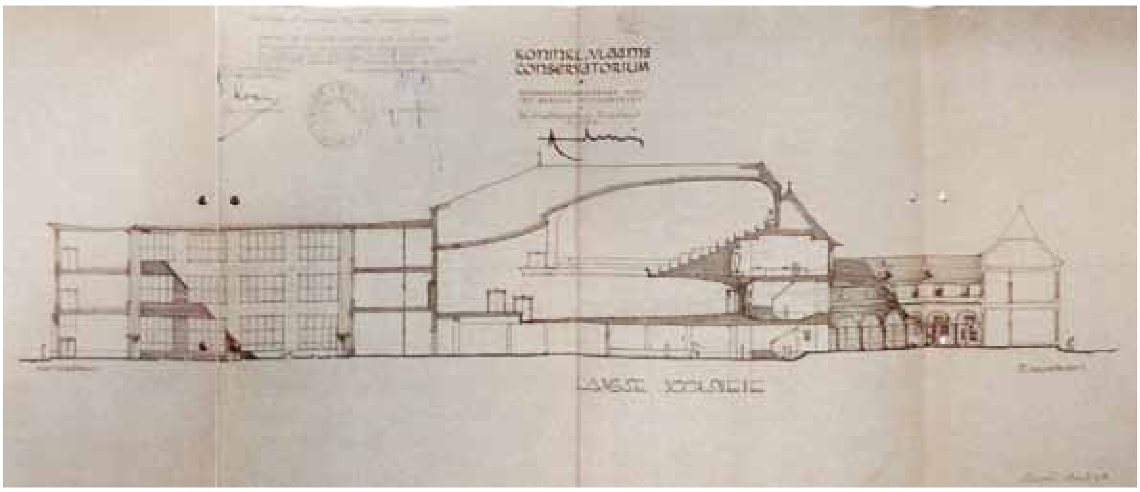


Figure I.1.17: Project Sint-Jacobsmarkt, Section by A. Fivez, 1949 (Antwerp: RdGA).

The new building had to satisfy both the current and future needs of the Royal Flemish Music Conservatoire. Director Flor Peeters composed the building programme together with the department of Fine Arts of the Ministry, the national Buildings Agency and the Fund for School Buildings.[24] This building programme covered the requirements for the Conservatoire: class rooms, auditoria, administrative rooms, a library, a restaurant, a concert hall and a theatre hall. A first sketch of Stynen and De Meyer to translate this programme into a building showed that the plot was too small for the required programme. Taking note of this comment, the city of Antwerp provided an extra piece of land.[25]

The design of Stynen and De Meyer was a composition of a horizontal and vertical volume. The main entrance, both for students and visitors was located at the Desguinlei and marked with a canopy.
The low-rise building contained the classes, auditoria and administrative rooms, all organised

24 Antwerpen, RdGA: Antwerpen – KVMC – P3¹/ BG5/11611 – 1e schijf: overeenkomst (VAN BOGAERT A., *Antwerpen – Koninklijk conservatorium –Bouwprogramma*, 24/11/1958).

25 The official transfer of the extra piece of land from the city of Antwerp to the state would last until 2003. Until that time, the complex was both build on grounds of the State and grounds of the city of Antwerp. Antwerpen, Dienst Gebouwenonderhoud deSingel: VERMEIR Paul, *Eigendomssituatie deSingel-Conservatorium-Radio 2*, 04/12/2013.

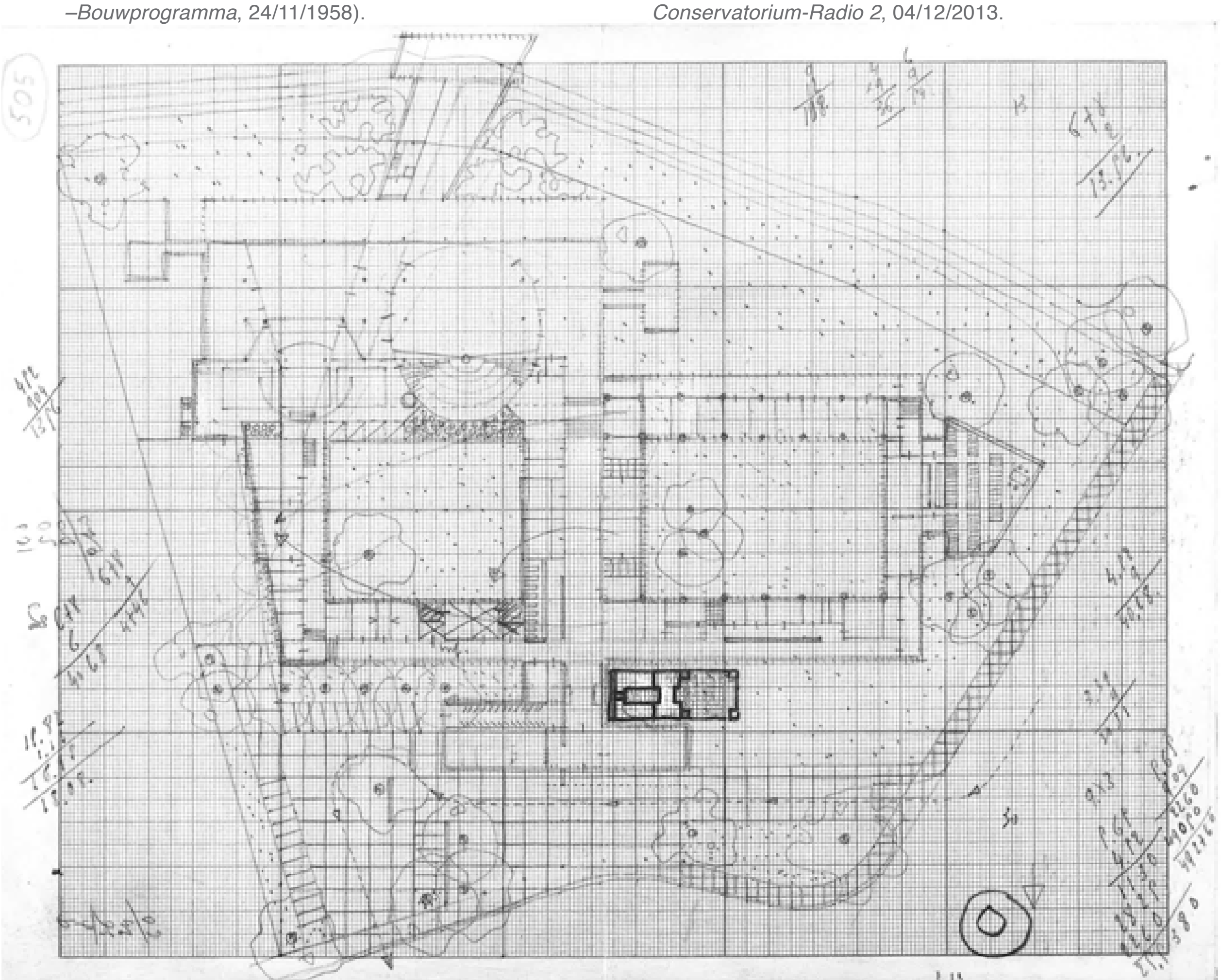


Figure I.1.18: Sketch, 1959 (BEKAERT & DE MEYER 1990, p. 51).

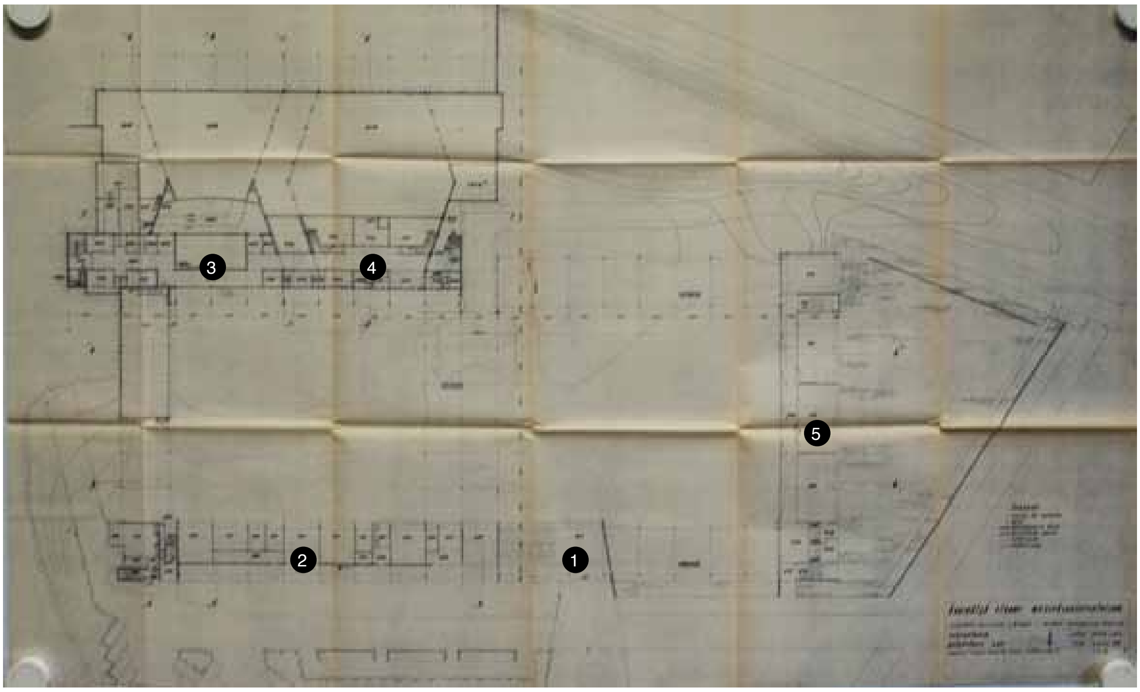


Figure I.1.19: Level 0, first design 1959 (Antwerp: Felix).

1. Entrance Hall
2. Offices Conservatoire
3. Backstage
4. Artists' Foyer
5. Auditoria
6. Classes
7. Central Hallway
8. Concert Hall
9. Theatre Hall
10. Flytower

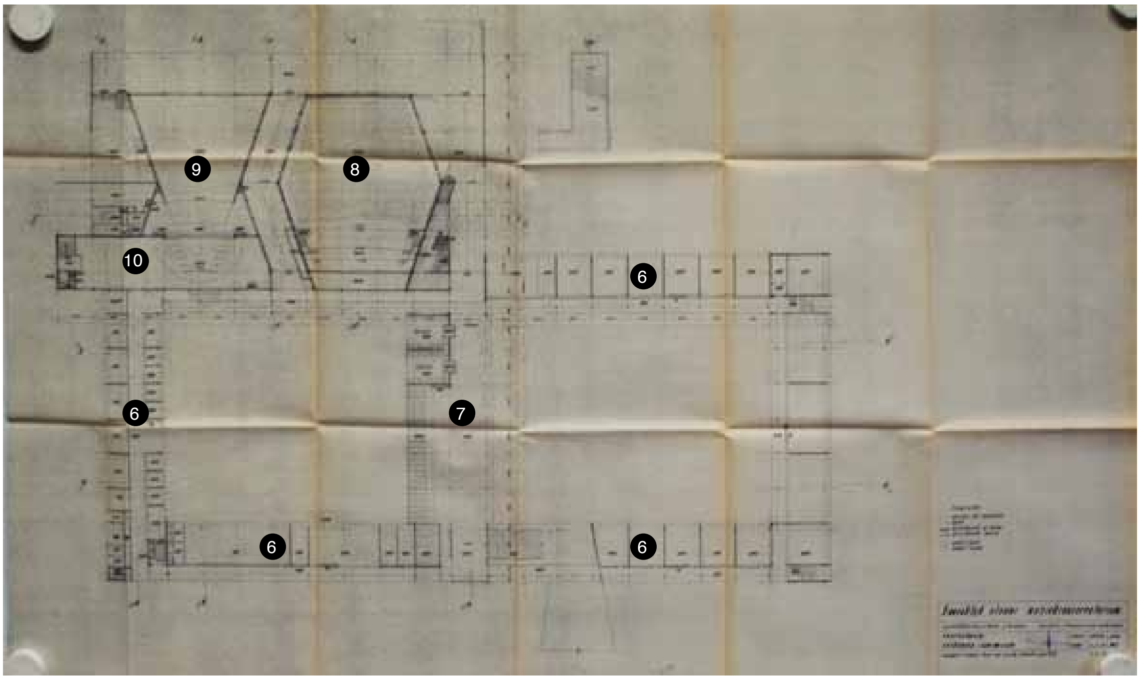


Figure I.1.20: Level +1, first design 1959 (Antwerp: Felix).

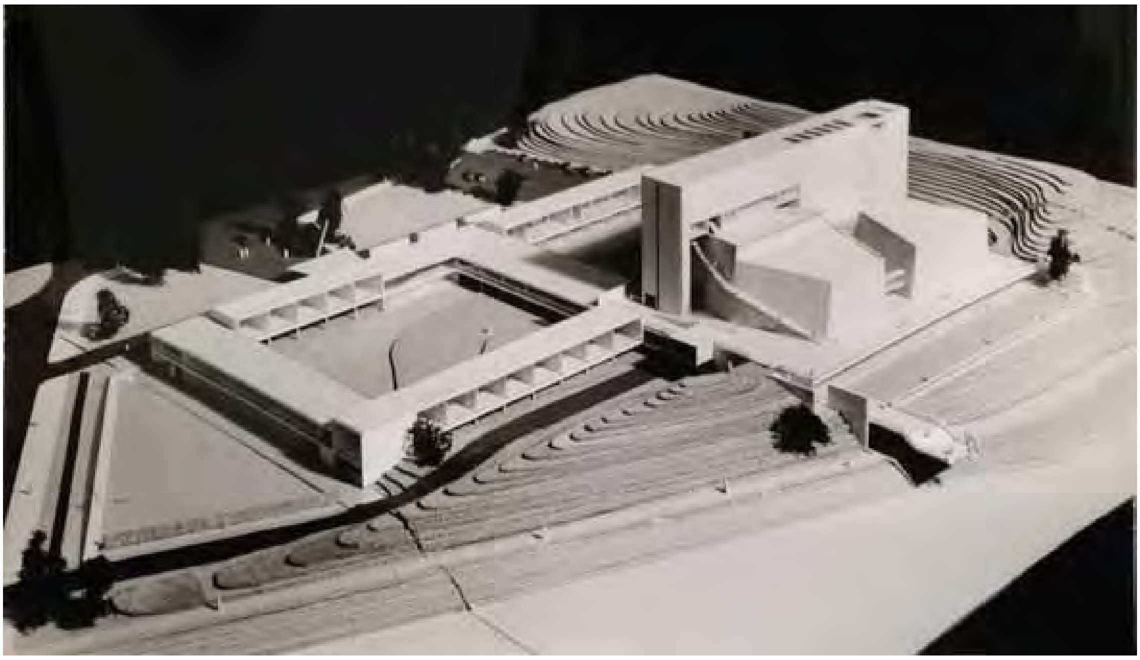


Figure I.1.21: Model, first design 1959 (Antwerp: APA).

around two patios of 40m x 40m. To avoid acoustical problems, all the classes were situated on one level, 3,5 m above street level. The three big auditoria and the administrative wing were located at ground level. The building was designed on pilotis in order to provide the hilly landscape to continue underneath the structure.
The concert hall (800 people), theatre hall (500 people), library and restaurant formed together the vertical volume.[26] The artist rooms and foyer (backstage) were located underneath the big halls. The corridors around the halls offered views on the old military ramparts. The roofs around the halls were accessible and provided 'une promenade architecturale' (note the stairs along the big volumes in the model).

The total complex was designed in and together with the surrounding nature; an inspiring setting, a refuge where talent could bloom freely. The edges of the plot were interpreted that way they formed an acoustic buffer, but also a transition zone to the refuge: a hill at the east, a rampart at the south, a pond at the west and a parking lot at the north.
After the different commissions approved the global design, a planning application was handed in at the city of Antwerp, in order to get approval concerning the urban set-up of the building. The building permit was obtained the 18th of March 1960.[27]

26 Antwerpen, RdGA: Antwerpen – KVMC – P3[1]/BG5/11611 – 1e schijf: overeenkomst (STYNEN Léon, DE MEYER Paul, *Memorie van toelichting*, 07/07/1959)

27 Antwerpen, Felix: Archief van de Stad Antwerpen: 18#40662 - Bouwaanvraag Voorontwerp.

Figure I.1.22: Entrance Hall used as auditorium (PERSOONS 1998, p. 336).

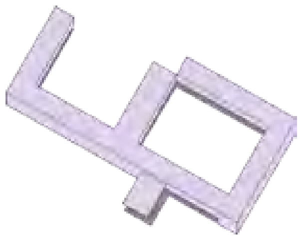
5. The realisation of the design of Stynen and De Meyer: phase 1 (1963-1967) and phase 2 (1973-1980)

The Conservatoire was realised in two building phases:

- phase 1: the low-rise building containing the classes, auditoria and administrative rooms;
- phase 2: the vertical volume of which the concert hall, theatre hall and library were part.

The decision of a phased executing was made upon practical and financial grounds. The biggest need of the Conservatoire was to move as fast as possible to safe and adapted facilities. Different funds had to be collected to realise the building.

5.1. Phase 1 (1963-1967)



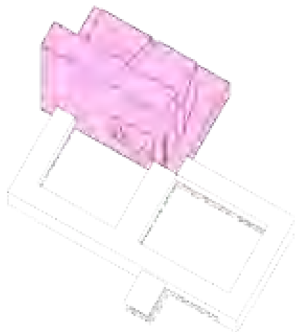
The first phase concerned the realisation of the low-rise building and lasted from 1963 until 1967.[28] The building permit was obtained the 25th of January 1963. Already the 27th of October 1962 the calling for tenders appeared in the 'Offiële Bouwkroniek'. The main contractor was

28 VERMEIR Paul, "Nieuw conservatoriumgebouw aan de Desguinlei – eerste tot derde schijf door architect Leon Stynen met architect Paul De Meyer als medewerker", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 339, 341.

company Aerts from Lier.[29]
The cornerstone ceremony took place the 3rd of February 1964 in the presence of the Minister of National Education and Culture Henri Janne.[30]
The building was put into operation the 4th of January of 1968. The official inauguration took place the 21st of March 1968.
Because the big halls did not yet exist at that time, the performances and events took place in the central hall. The main stair with gentle sloop served as an amphitheatre. The temporary refectory was established in a provisional structure underneath the central wing (block C). [31]

29 Circular publicity brochure published by the Ministry of Public Works, 1980, p. 27.
30 BUYSSENS Marie-Thérèse, *75 Jaar Koninklijk Vlaams Muziekconservatorium 1898-1973*, Antwerpen: KVMC, 1973, p. 12.
31 VERMEIR Paul, “Nieuw conservatoriumgebouw aan de Desguinlei – eerste tot derde schijf door architect Leon Stynen met architect Paul De Meyer als medewerker”, in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 336, 344.

5.2. Phase 2 (1973-1980)



The second phase concerned the realisation of the vertical volume and lasted from 1973 until 1980.[32] Initially the start of phase 2 was intended to take place shortly after the completion of phase 1, but lasted for more than 5 year.

32 VERMEIR Paul, “Nieuw conservatoriumgebouw aan de Desguinlei – eerste tot derde schijf door architect Leon Stynen met architect Paul De Meyer als medewerker”, in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 341.

Figure I.1.23: Construction second phase, 1980 (Antwerp: deSingel).

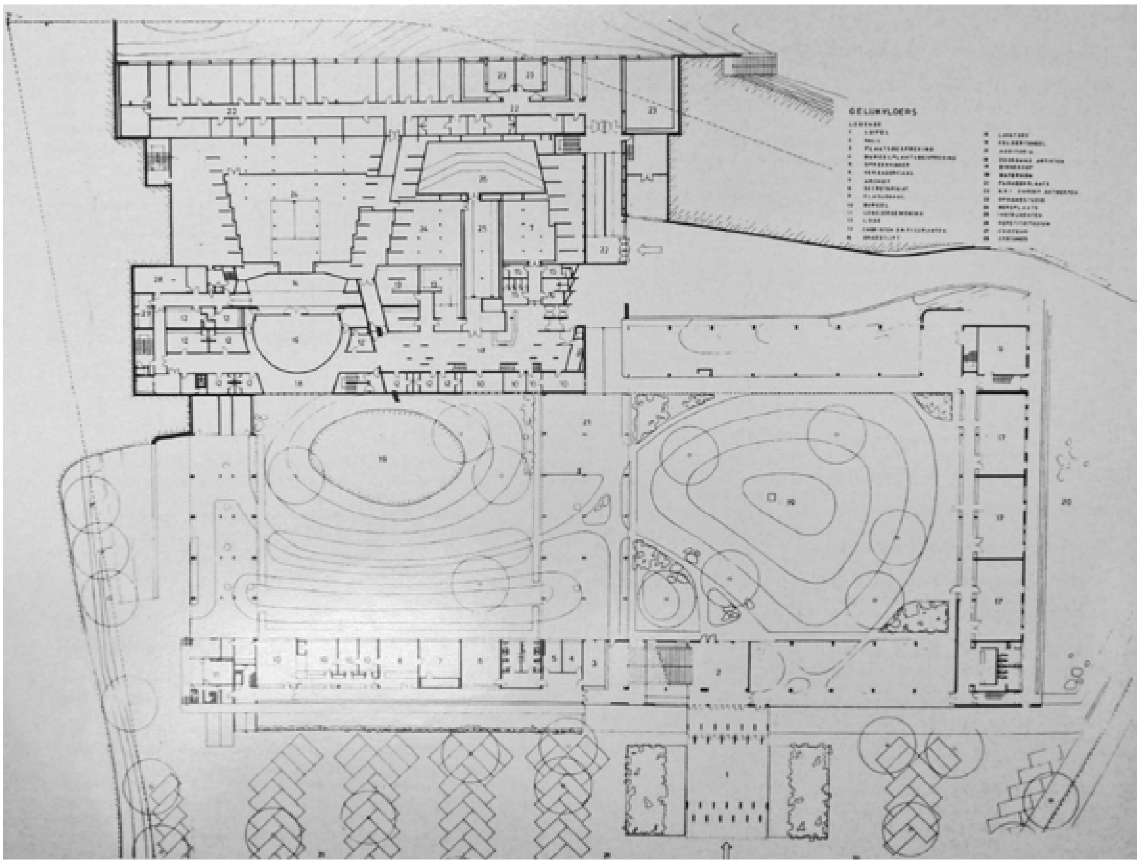


Figure I.1.24: Level 0 (Antwerp: APA).

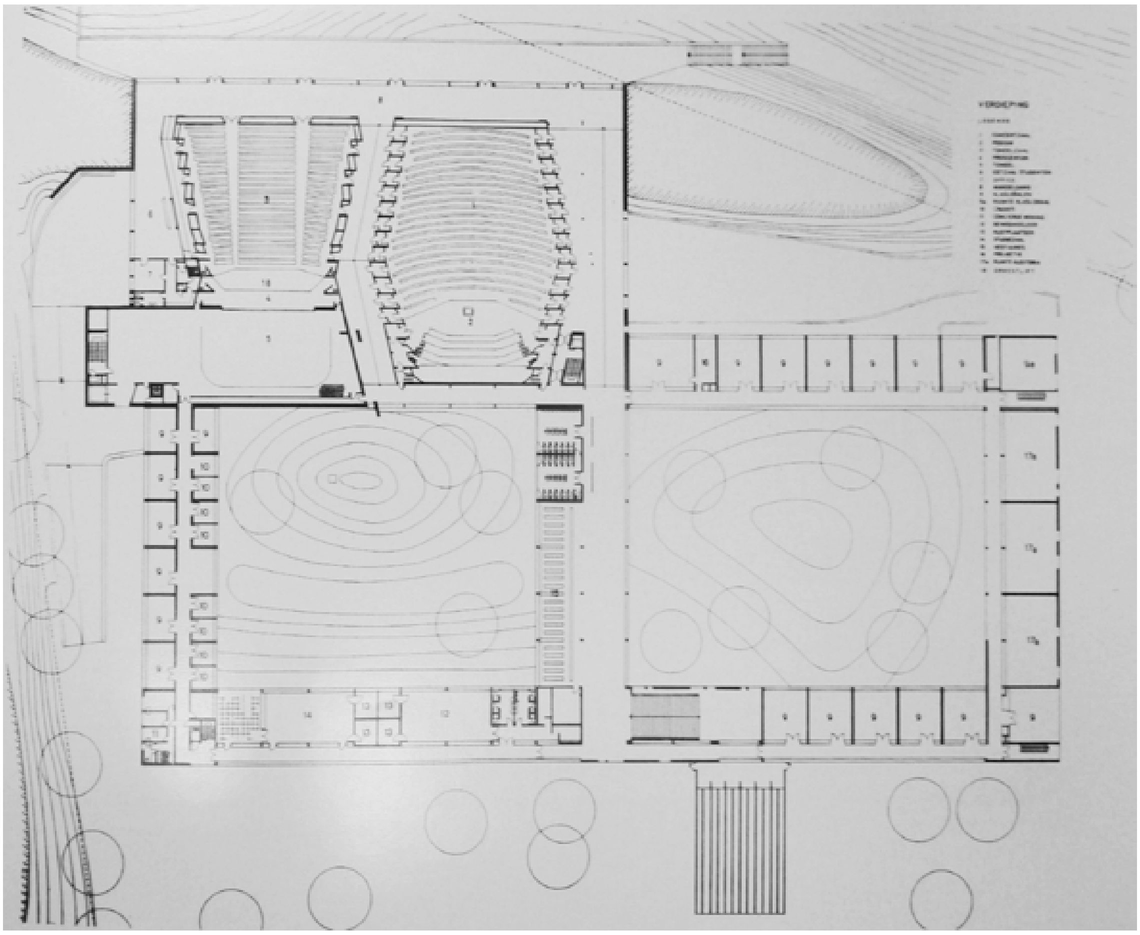


Figure I.1.25: Level +1 (Antwerp: APA).

During the opening speech of the academic year 1967-1968 director-general A. Van Bogaert already implied that the funding of the next phase would not occur without any difficulties.[33] The first phase, with merely pedagogical functions, was totally subsidised by the Fund for School Buildings. The second phase was the 'cultural component' and had to be funded by the department of Public Works.[34]
Because the budgetary resources were inadequate, governor Andries Kinsbergen took in 1968 the initiative to integrate the Antwerp division of the Belgian Radio and Television ('*B.R.T. Antwerpen', now Radio 2 Antwerpen*) into the building. The B.R.T. assented in 1969 with the agreement of a leasehold estate of 50 years, meaning they would rent the ground for 50 years and finance the building cost for their part of the building.[35] Besides budgetary reasons, this change of programme was part of a broader perspective to provide the building a public cultural function.[36]
Meanwhile big infrastructural works were planned in the direct surroundings of the Conservatoire.[37] The new railway Antwerp-Ghent would pass adjacent to the south edge of the site. This implied that an enlargement of the site was no longer possible and extra measures concerning acoustics had to be taken.
Stynen and De Meyer had to integrate the extra programme into the complex without being able to expand the building. The facilities for B.R.T. were interpreted as an independent part of the building, with separate entrance, located at the south of the vertical volume. A reorganization of the circulation system at the north side of the volume of phase 2 made this possible.
The building permit for the second phase was obtained the 13th of January 1972. The calling for tenders was made public the 2nd of September 1971.[38] The main contractor was Van Coillie. The cornerstone ceremony took place the 16th of November 1973.[39]
The works were paused from 1976 until 1977 because of a bankruptcy of the main contractor Van Coillie in December 1975. Company Gillion resumed the works in 1977 after a new public calling for tenders.[40] The total building was officially inaugurated the 4th of November 1980 in the presence of king Boudewijn and queen Fabiola.

In 1977, during the construction of the second phase, Léon Stynen, becoming 78 that year, decided to end his career as an architect. He handed down his assignment and obligations for the Conservatoire and B.R.T. to his associate Paul De Meyer.[41]

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33 Antwerpen, APA: Archive Léon Stynen (VAN BOGAERT A., Opening Academisch Jaar 1967-1968, 2/10/1967).
34 The first phase had a building cost of 88 million BEF. The building cost of the second phase was estimated on 240 milion BEF. The Fund for School Buildings had an annual budget of 300 milion for the whole of Flanders. The departement of Public Works subsidised among other cultural centres and museums.
Antwerpen, APA: Archive Léon Stynen (VAN BOGAERT A., Opening Academisch Jaar 1967-1968, 2/10/1967).
35 Antwerpen, RdGA: Antwerpen – KVMC – P3²/ 2e schijf: ontwerp.
36 KINSBERGEN Andries (Minister van Staat), 12th of February 2015, interview concerning the period 1968-1980 and the addition of Radio 2 to the building.
37 Cfr. 'Chapter I.2 A Changing Urban Context' for detailled information.
38 BUYSSENS Marie-Thérèse, *Van private muziekschool tot Koninklijk Vlaams Muziekconservatorium*, Antwerpen: KVMC, 1980, 74.
39 QUADFLIEG Roger, "De symfonie van het eindeloze geduld", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 333.
40 Ibidem, p. 333.
41 Antwerpen, RdGA: Antwerpen – KVMC – P3¹/ BG5/11611 – 1e schijf: overeenkomst (STYNEN Léon, LS/GW-54, 24/01/1977).

STYNEN
DE MEYER
architecten

LS/GW - 54.

2000 Antwerpen, 24 januari 1977.

De Heer Minister van Openbare Werken
Residence Palace
Wetstraat, 155

1040 BRUSSEL.

Mijnheer de Minister,

Het gaat mij in het hart U te moeten melden dat ik, nà wijs beraad en overleg, besloten heb een punt te zetten achter een 55-jarige loopbaan, geheel gewijd aan de architektuur.

Er op vertrouwend dat ik mijn plichten ben nagekomen tegenover diegene die in mij hun vertrouwen stelden, verzoek ik U beleefd, dit zelfde vertrouwen aan mijn medewerker Paul DE MEYER, die mij reeds 25 jaar trouw heeft bijgestaan, te willen verlenen.
Ik ben ervan overtuigd dat dhr. DE MEYER de belangen van de Staat op de meest efficiënte en meest eerlijke wijze zal behartigen.

De heer DE MEYER heeft alle studies in verband met het Koninklijk Vlaams Muziekconservatorium Antwerpen, meegewerkt, en hij kent het dossier in al zijn bijzonderheden.
Geen ander is beter geplaatst dan hij om U bij te staan bij de voltooiing van dit bouwwerk, verwezenlijking waaraan ik mij met hart en ziel gewijd heb.
Hij alléén begrijpt de geest en de bedoelingen die door mij aan het trouwens volledig afgewerkt dossier, verbonden werden.

Indien U uw akkoord hieraan kan verlenen, Mijnheer de Minister, kan aan het kontrakt dat ik met uw Departement afsloot, eenbijakte in die zin gevoegd worden.

Met mijn oprechte dank voor het gestelde vertrouwen en voor de aandacht die U mijn verzoek ongetwijfeld zult schenken, bied ik U, Mijnheer de Minister, de verzekering mijner hoogachting aan.

ZONNEWIJZERSTRAAT 2
(MECHELSE STEENWEG 247)
2000 ANTWERPEN - TEL. 031/30 86 25
B. T. W. L. STYNEN : 504.177.393

Figure I.1.26: Letter Léon Stynen (Antwerp: APA).

Figure I.1.27: Inauguration second phase (PERSOONS 1998, p. 341).

6. Extensions and alterations to the original building

6.1. A changing political and cultural context and the establishment of deSingel

Between the moment the building was designed (1958) and the moment the total complex was inaugurated (1980) the political and cultural climate in Belgium had changed. Concerned by the growing individualisation of Belgian society and driven by the democratisation ideal of giving everyone access to culture, the government tried to encounter the growing social isolation in the 'modern world' by subsidising cultural centres.[42] The post-war welfare sate had to provide, besides affordable healthcare and education, also access to more 'luxurious' facilities like holidays and culture. In 1972 the 'Cultural Pact' (*'Cultuurpact'*) was taken out.[43] This pact covers the intention that cultural institutions have to be pluralistic and may not discriminate their users by ideological, philosophical or political reasons. A cultural institution had to be, besides being a place where culture was produced, a meeting place.[44]

Because of this changed political and cultural climate and the aftermath of the economic crisis of the 1970's, the exclusive exploitation of the concert and theatre hall by the Conservatoire could societal not be justified in the beginning of the 1980's. [45] Furthermore did the concert and theatre hall comply with all modern standards at that time and was their combination in one building unique in Belgium.[46] In other words: the potential of the two halls exceeded the needs of the Conservatoire.
Former director of the Royal Flemish Music Conservatoire Eugène Traeye appointed in 1979 Frie Leysen to prepare the opening of the two halls.[47] Initially the working group was part of the Conservatoire and had to create a platform for future artists of the institution. Taking the potential of the building in mind, the

42 GOSSEYE Janina, HEYNEN Hilde (ed.), LOECKS André, VAN MOLLE Leen, *Architectuur voor vrijetijdscultuur: culturele centra, zwembaden en recreatiedomeinen*, Leuven: LannooCampus, 2011, p. 43.

43 "Wat is het cultuurpact", in *Cultuurpact*: http://www.cultuurpact.be/nl (accessed on 21/06/2015).

44 GOSSEYE Janina, HEYNEN Hilde (ed.), LOECKS André, VAN MOLLE Leen, *Architectuur voor vrijetijdscultuur: culturele centra, zwembaden en recreatiedomeinen*, Leuven: LannooCampus, 2011, p. 23.

45 QUADFLIEG Roger, "De symfonie van het eindeloze geduld", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 332.

46 VERMEIR Paul, "Nieuw conservatoriumgebouw aan de Desguinlei – eerste tot derde schijf door architect Leon Stynen met architect Paul De Meyer als medewerker", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 342.

47 Historiek", in *deSingel*: https://www.desingel.be/nl/over-desingel/historiek (accessed on 20/12/2014).

Figure I.1.28: Programme deSingel, April 1983 (desingel.be, 2015).

halls were also leased to other organisations.[48] In 1983 the Flemish Community established '**deSingel**', an autonomous npo whose core tasks were the management of the building, the development of a cultural programme and the leasing of the facilities. The first season (1983-1984) presented classical music, theatre and dance from both home and abroad. The first architecture exhibition was organised in 1985.[49] Nevertheless cultural democratisation was the basic idea during the 1970's, deSingel wanted to be recognisable and unique in their artistic commitment instead of being a large-scale cultural centre.[50]

As the exploitation of the halls was initially not intended, no offices were available for the housing of deSingel. A workplace for the organisation was built underneath the south wing of the classes of the Conservatoire. [51]

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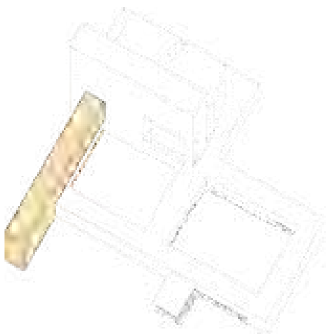
48 VERMEIR Paul, "Nieuw conservatoriumgebouw aan de Desguinlei – eerste tot derde schijf door architect Leon Stynen met architect Paul De Meyer als medewerker", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 342.

49 Historiek", in *deSingel*: https://www.desingel.be/nl/over-desingel/historiek (accessed on 20/12/2014).

50 AERTS Jerry, "deSingel en KVC: authentieke kuntsamenwerking of gelukzalig schijnhuwelijk?", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 418.

51 VERMEIR Paul, "Nieuw conservatoriumgebouw aan de Desguinlei – eerste tot derde schijf door architect Leon Stynen met architect Paul De Meyer als medewerker", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 344.

6.2. Phase 3 by Paul De Meyer (1985-1987)



In consequence of the educational reforms during the 1970's[52] and its influence on the institutionalising of the educational programme of the Conservatoire, the courses at the Conservatoire evolved from a limited curriculum to a full curriculum.[53] The learning process became more individual (self-tuition became part of the curriculum) and many new courses were established.[54] This reorganisation and expansion of the educational programme led to the need of additional facilities.

Paul De Meyer was assigned to design an extension of the building. This new volume contained individual studio's, classrooms, a small theatre hall (Black Hall) and a refectory for the students of the Conservatoire.[55] The last two elements, theatre hall and refectory, were a recapture of a part of the programme of the second phase. The big theatre hall (Red Hall) and the former refectory (now foyer) were occupied by other activities due to the establishment of deSingel.

For practical reasons the choice was made to overbuild and extend the east wing of the low-rise building. The construction of this extension lasted from 1985 until 1987. Furthermore this third phase included the extension of the corridor around the Red Hall with a small public foyer. [56]

6.3. Phase 4 by Stéphane Beel [57]

The activities of the users of the building evolved since their establishment. In 1992 the three main users, the Conservatoire – deSingel – Radio 2, decided to unite their infrastructural needs; the realisation of certain facilities for one group could indeed obstruct the expansion of the other

52 Wet 7 juli 1970: Wet betreffende de algemene structuur van het hoger onderwijs
1973: Plan Matthys

53 COOREMANS Kamiel, "De Nieuwe Structuur: etappe of omweg", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 311-317.

54 SCHECK Michaël, "Vernieuwing na 1950", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 311-317.

55 Initially the house for the caretaker was planned on the third floor of this extension. During construction these rooms were also installed as studio's.
The Black hall was primarily not included in the building programme. This was changed during construction. Because of this the changing rooms are not situated near the stage.
(QUADVLIEG Roger, 27th of March 2015, interview concerning the Conservatoire.)

56 VERMEIR Paul, "Nieuw conservatoriumgebouw aan de Desguinlei – eerste tot derde schijf door architect Leon Stynen met architect Paul De Meyer als medewerker", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 344.

57 Unless mentioned, the source of this paragraph is VERMEIR Paul, Fase van de toekomst: ontwerp van de vierde fase door architect Stéphane Beel", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 345.

Figure I.1.29: Aerial view after completion phase 3 (Antwerp: deSingel).

Figure I.1.30: Phase 3, east wing (MH, 23/05/2014).

group. The idea of a global plan of infrastructure arose.[58]

The educational programme of the Conservatoire had evolved from a limited curriculum to a full time curriculum (cfr. supra). New courses such as Jazz class and Opera class were established. Due to the merge with the College of Antwerp[59] the educational programmes Dance and Drama were added to the department.[60] The decision was made to house all educational programmes at one location. [61]

The Conservatoire had to search the balance between 'rationalising' by educating bigger groups and keeping the 'quality' of individual teaching. Big classes for theoretical courses and small rehearsal rooms for practical courses were required to reach this goal.

deSingel had developed to an international platform for contemporary art in Flanders. The existing infrastructure did not comply with the ambitions of the organisation and the needs of the artists. The following facilities were needed: rehearsal rooms for artists-in-residence, an

58 Ghent: Stéphane Beel Architecten, Nota bij de bouwaanvraag voor de bouwfase 4.2 van het infrastructuurplan, 30/06/2005.

59 The decree of colleges of higher education of the Flemish Community of the 13th of July 1994 establishes an overall frame for all educational programmes of the non-academic education. In the execution of this decree clusters with existing colleges of higher education are made. The Royal Flemish Conservatoire enters fully into the department Performing Arts, Music and Dance of the College of Antwerp ('*Hogeschool Antwerpen*').
(PEETERS Jacques, "De era van de hogeschool", in: DE GROOTE Pascale, DEWILDE Jan, DOWIT Hans, QUADFLIEG Roger, VOETS Barbara, VOETS Kevin, ZOBEL Jan, *Een vermoeden van talet. 111 jaar Koninklijk Conservatorium Antwerpen*, Antwerp: University Press Antwerp, 2009, p. 90.)

60 "De kunstcampus groeit +12.000m2", in *deSingel*: https://www.desingel.be/nl/gebouw/nieuwbouw-kunstcampus-desingel (accessed on 20/12/2014).

61 PEETERS Jacques, "De era van de hogeschool", in: DE GROOTE Pascale, DEWILDE Jan, DOWIT Hans, QUADFLIEG Roger, VOETS Barbara, VOETS Kevin, ZOBEL Jan, *Een vermoeden van talet. 111 jaar Koninklijk Conservatorium Antwerpen*, Antwerp: University Press Antwerp, 2009, p. 90.

Figure I.1.31: Door by Stéphane Beel, 1989 (MH, 23/05/2014).

independent exposition room and a café/ restaurant. Furthermore the existing theatre hall (Red Hall) was too small for big performances.

6.3.1. Masterplan (1996)

Flemish Minister of Culture Hugo Weckx assigned architect Stéphane Beel in 1995 to draw up a feasibility study for this plan of infrastructure. Beel was recommended by deSingel to be the lead architect because he already realised a successful intervention in the building in 1989. Then he designed a door to separate the entrance from the corridors around the hall. The pattern of the oval windows in the entrance hall is repeated and converted to 'negative': the voids become solid elements and the mass becomes transparent.

The feasibility study had to estimate if it was possible to realise the building programme on the site, if it did not conflict with the architecture of Stynen and De Meyer and what the total cost of the intervention would be. Beel developed a master plan together with the users of the building. The plan was approved in 1996.

This study resulted in the draw up of a preliminary design with two district spatial interventions: the extension of the complex with a new building and an intervention in the existing building. The total project was subdivided into two phases because of financial and practical reasons.

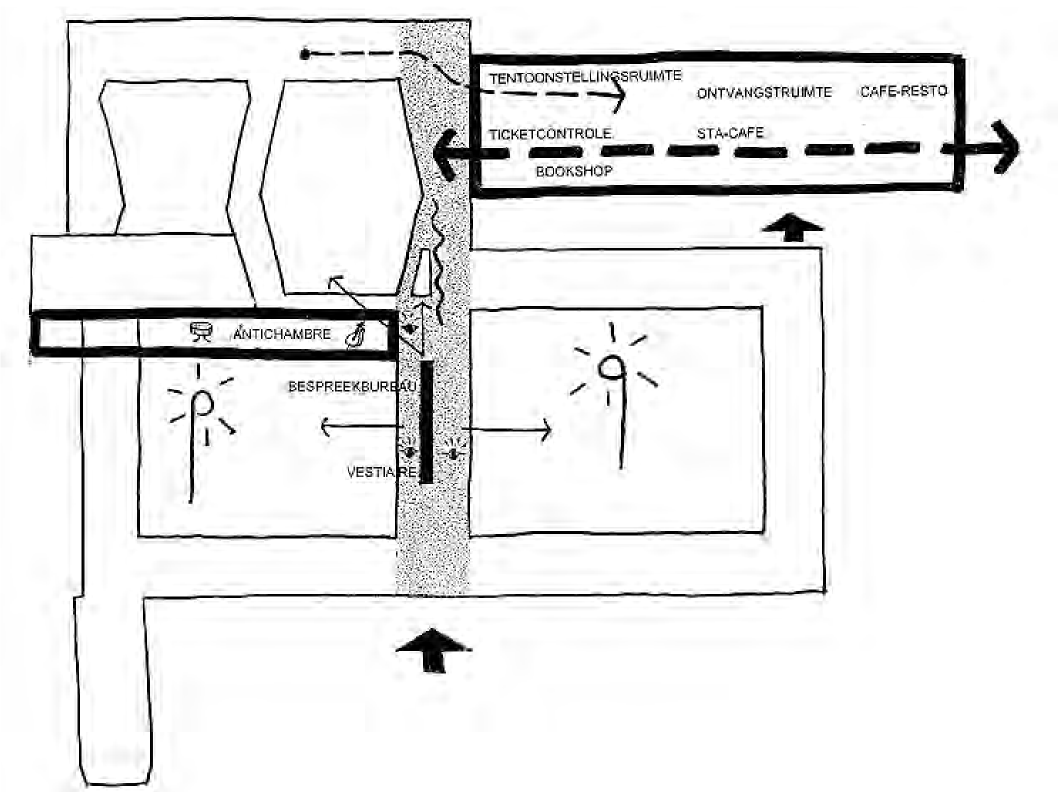
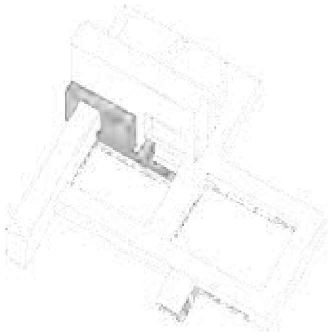


Figure I.1.32: Masterplan, 1996 (Ghent: SBA).

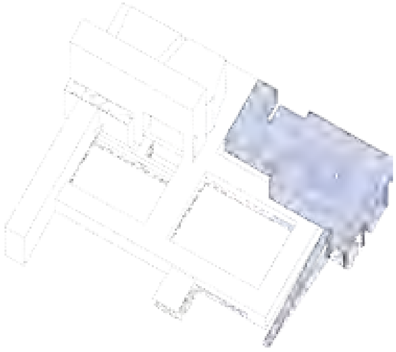
6.3.2. Phase 4.1 (1999-2000)



Phase 4.1 concerned the alteration of the existing building. These interventions were necessary to adapt the building to current operational standards: the stage of the theatre hall was extended, the logistics for theatre and concert hall were reorganised and the artists' rooms and foyer (backstage) were modernised.[62] The works were carried out between 1999 and 2000.

62 Antwerpen, Felix: Archief van de Stad Antwerpen: 86#980558 - Bouwaanvraag Fase 4.1

6.3.3. Phase 4.2 (2007-2010)



Flemish Minister of Culture Bert Anciaux gave the start of phase 4.2 in 2002. He assigned Beel to realise the new building.[63] Beel designed a building with a variety of new functional spaces: an exhibition space, a reading room, offices, teaching and rehearsal rooms, studios, experimental halls for the Conservatoire, a foyer

63 "De kunstcampus groeit +12.000m2", in *deSingel*: https://www.desingel.be/nl/gebouw/nieuwbouw-kunstcampus-desingel (accessed on 20/12/2014)

Figure I.1.33: Phase 4.1 (© Jan Kempenaers, Ghent: SBA).

for the concert hall and a restaurant. The initial volume concerned a socle with landmark tower to complete the towers that Stynen built around the site of the Conservatoire.[64] This design evolved to a 'horizontal tower' due to a variety of reasons, including apparent concerns about the acoustics. The new building of 12.000 m^2 was realised between 2007 and 2010.

"The new building also marks a change of direction for the centre, epitomised in the new name deSingel International Arts Campus or deSingel Art City. The centre, which also encompasses the Flemish Architecture Institute (VAi) and the Centre for Flemish Architecture Archives (CVAa), intends to cooperate intensively with the Conservatoire, which now offers a full programme of music, dance and drama, in a shared building that stimulates mutual encounters and inspiration while also allowing more effective communication with the outside world."[65]

7. Building chronology

The following drawings give an overview of the different building phases. The drawings obtained by the office of Stéphane Beel Architecten were adapted and used as base.[66] The ascertained historic drawings from the different archives were categorised and reference plans for the different building phases were selected. These reference plans were screened and summarised in the following 'building chronology' drawings for level -1 until +4 and a transversal section. The dark colour dates the building elements and the light colour refers to the origin of the interior of a room.

64 Stynen also designed the BP-tower and Crowne Plaza (former Crest Hotel) situated on the other side of the ring road. These towers were part of a masterplan 'Wezenberg'. Cfr. 'Chapter I.2 A Changing Urban Context' for detailled information.

65 BEKAERT Geert, "Extension of deSingel International Arts Campus, Antwerp", in: BEKAERT Geert, CLEPPE Birgit, DE KOONING Mil, VAN GERREWEY Christophe, *Stéphane Beel Architects. New Works & Words*, Tielt: Lannoo, 2011, p. 64.

66 Cfr. 'Chapter I.3 Architectural and Functional Analysis' for detailled information.

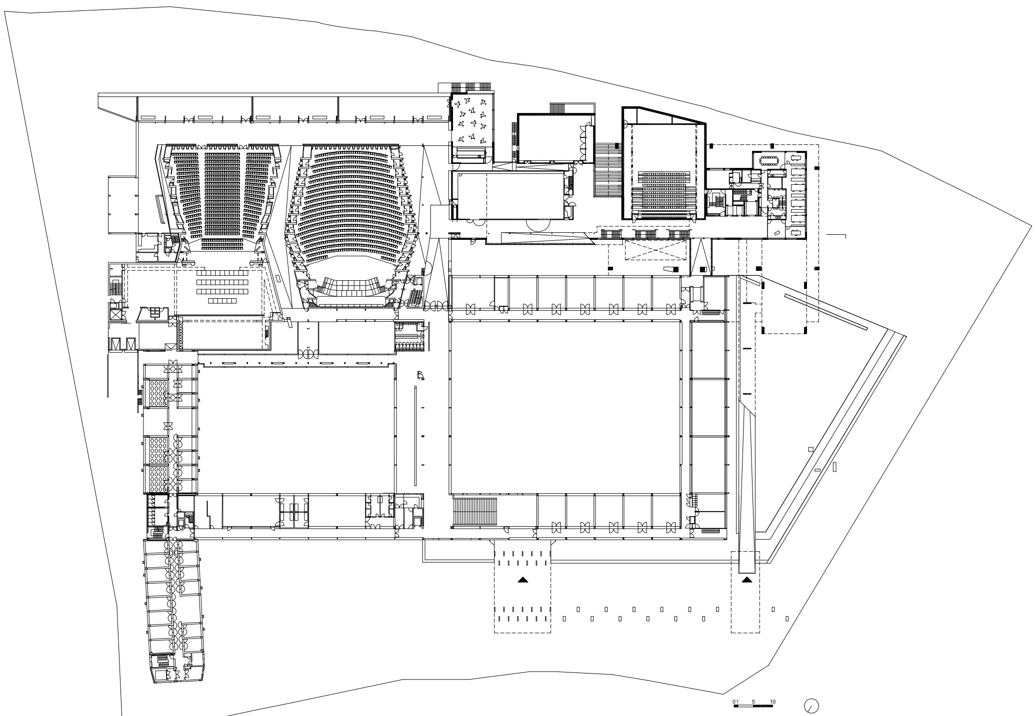


Figure I.1.34: Level +1, current situation (Ghent: SBA).

Figure I.1.35 (next page): 'Horizontal Tower' (© Jan Kempenaers, Ghent: SBA).


THEATER


MUZIEK

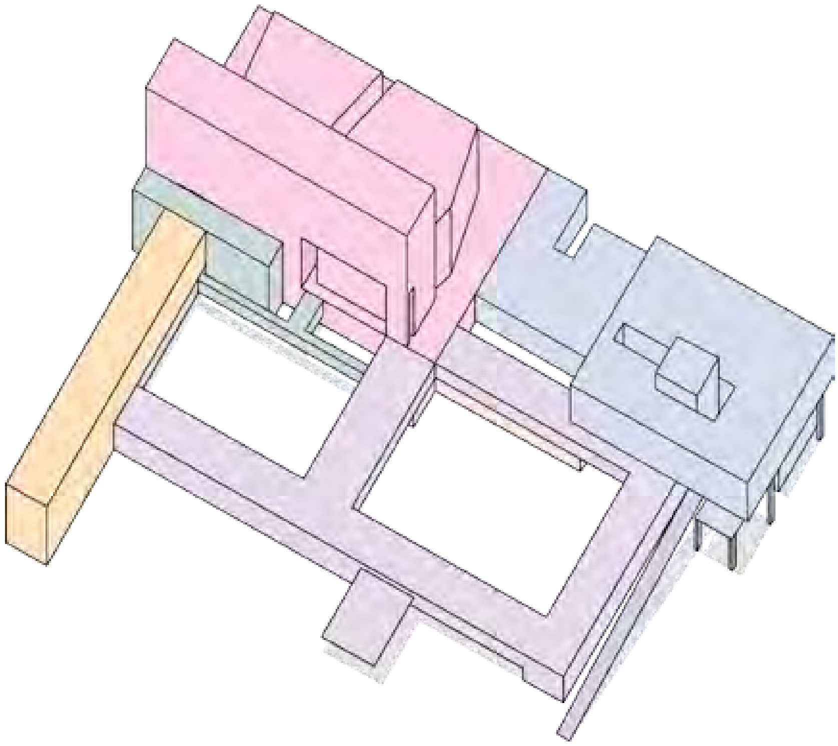


Figure I.1.34: Scheme building phases (MH)

- **Phase 1**: construction classes and administration Conservatoire (1963-1967 / Léon Stynen and Paul De Meyer)
- **Phase 2**: construction music and theatre hall, library and radio station (1973-1980 / Léon Stynen and Paul De Meyer)
- **Transformations between 2-3**: construction offices deSingel (1980-1987)
- **Phase 3**: construction classes Conservatoire (1985-1987 / Paul De Meyer)
- **Phase 4.1**: construction hallway and transformation flytower (1999-2000 / Stéphane Beel)
- **Phase 4.2**: construction new facilities deSingel and Conservatoire (2007-2010 / Stéphane Beel)

7.1. Level -1

This level shows a footprint of the complex and gives a clear indication of the zones of the different phases. The big building phases broadly correspond with a defined zone of intervention.

7.2. Level 0

The original building volumes (phase 1 and phase 2) are located in the northwest and southeast of the plot. Little interventions dating from various building phases are made to the rooms of the first phase.
The offices of deSingel are situated in the centre of the plot and intersect with the original building. The foundations of the overlying wing of the low-rise building (block D) are visible elements in the office rooms. The relief of the original landscape is readable in the south façade of this added volume.
A part of the volume situated underneath the central wing (block C) used to house the temporary students' refectory until the construction of the third phase. This volume was never demolished but reused and expanded to house offices.
The volume leaping out at the north façade is constructed during the third building phase.

The volume intersects with the original building at the corner of the low-rise building (block A). The janitor's house used to be positioned at this intersection but was suppressed to make the connection with the building.
During phase 4.1 the artists' foyer was renovated and the make-up rooms were relocated in a new volume. Phase 4.2 concerns the big extension located in the southwest of the plot.

7.3. Level +1

This level is the main level of the building and still broadly represents the original structure of the building (phase 1 and phase 2). The rooms located at the corners of the wings of the first phase are adapted during various building phases. The east wing (block B) has profoundly been altered and extended during the third phase. The additional volume at the east façade, red foyer, also dates from this third building phase.
The stage of the theatre hall (Red Hall) has been enlarged during phase 4.1. To realise this extension, a part of the east wing (block B) has been demolished. A new hallway is added in the east courtyard and a module of rest rooms is demolished to make the connection with the central hallway (block C). During this building phase also several little alterations are executed. A reception is created in the central hallway. The patio at the corner between the north and east wing (intersection block A and B) is closed and destined as offices. A classroom in the east wing (block B) is adapted according to the acoustic requirements for harpsichord. An elevator is installed at the intersection of the south and west wing (block D and E).
The new building (phase 4.2) is an independent entity with several connections to the original building. The main connection is present in the corridor adjacent to the concert hall (Blue Hall). The slope of the corridor is altered in order to make an accessible connection.

7.4. Level +2

Phase 4.1 is located at the intersection of phase 2 and phase 3.
Phase 4.2 is an independent volume on this level (horizontal tower).

7.5. Level +3

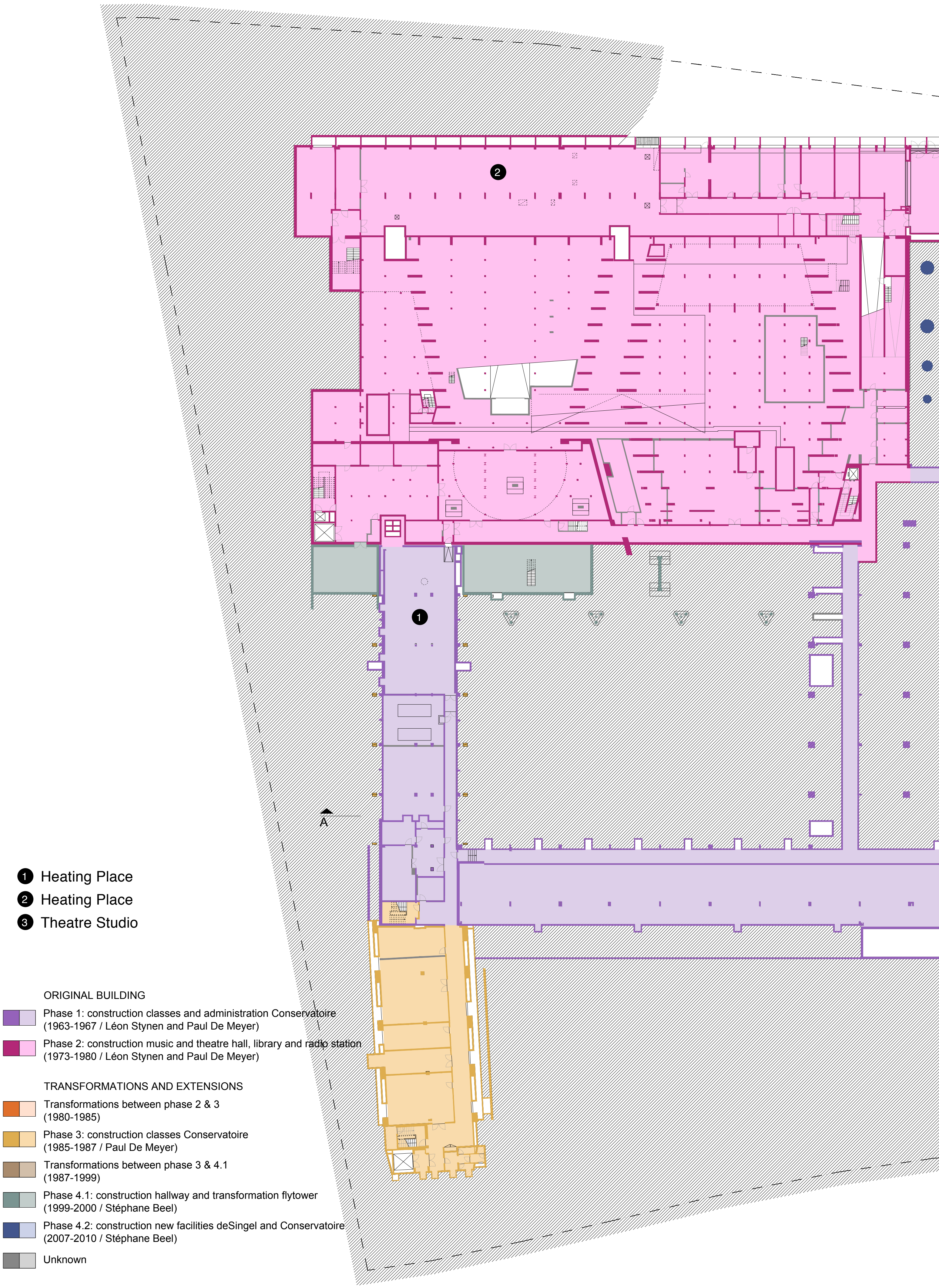
The recessed volume on top of the additional wing of phase 3 (block G) was initially provided to contain the janitor's house. During construction the decision was made to install extra classes on this level.

7.6. Level +4

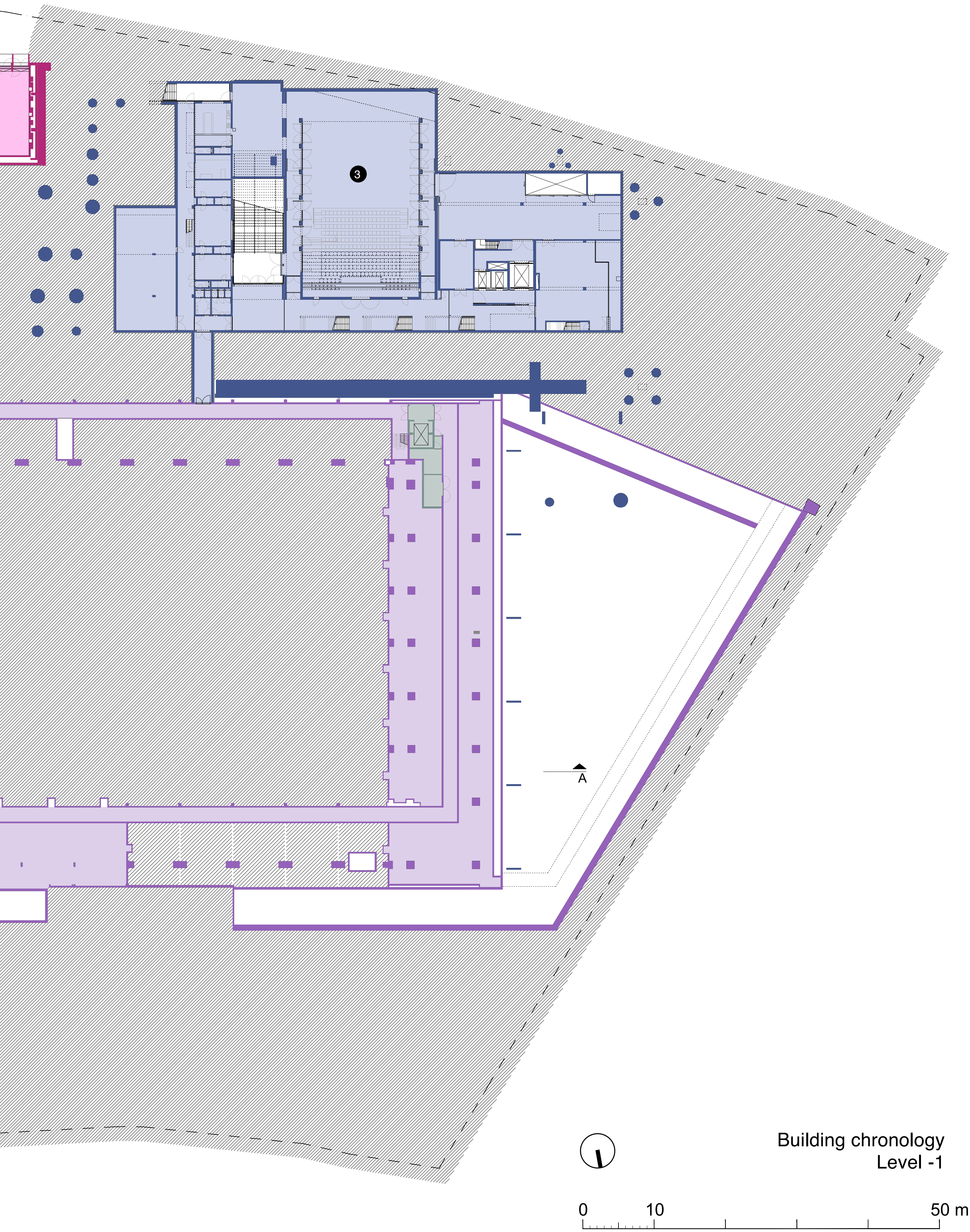
Two independent volumes are present on this level. The 'vertical' tower of phase 2 and the horizontal tower of phase 4.2.

Figure I.1.36: Offices deSingel underneath block D (MH, 03/04/2015).

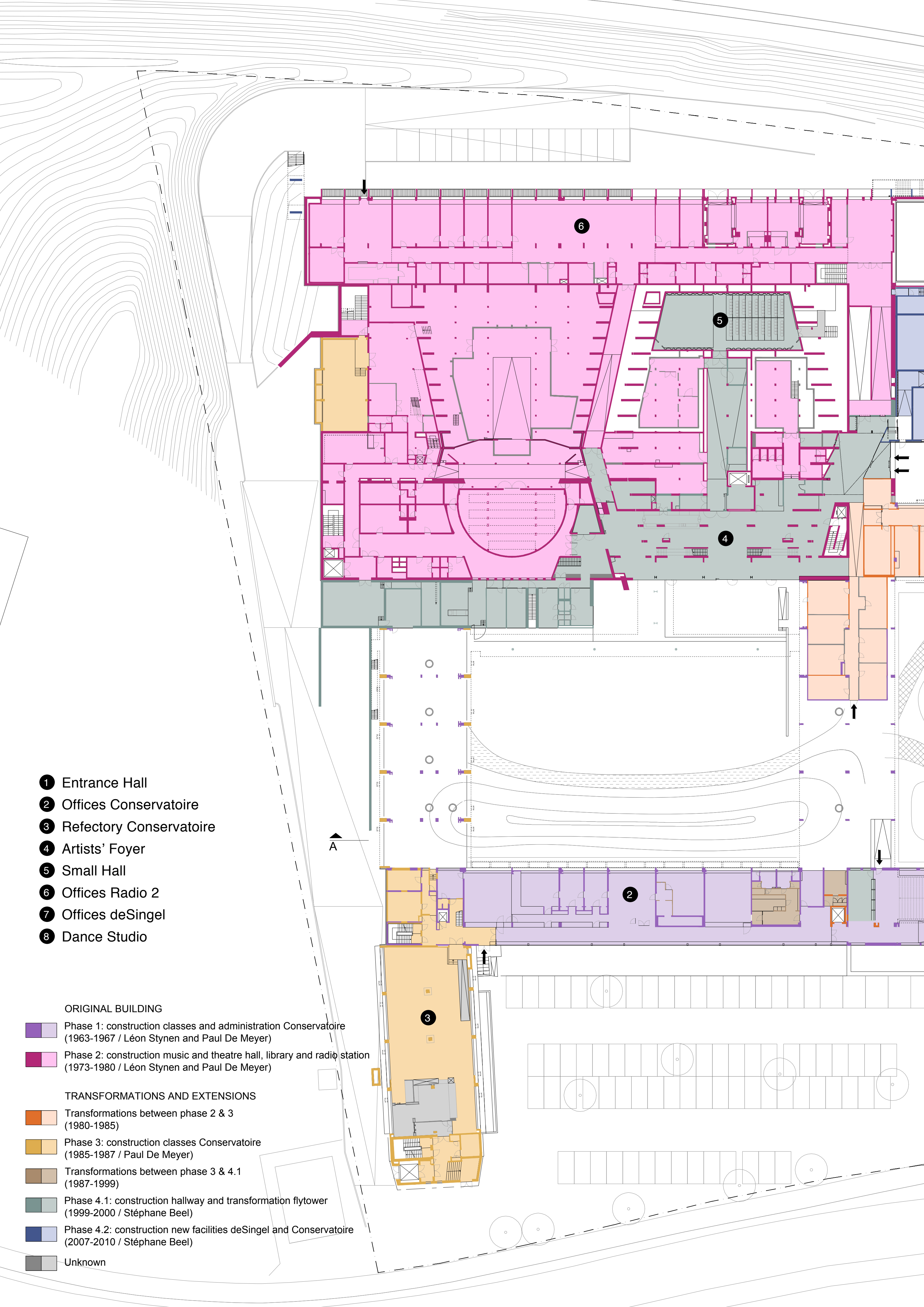
Figure I.1.37: Foundation in office (MH, 03/04/2015).



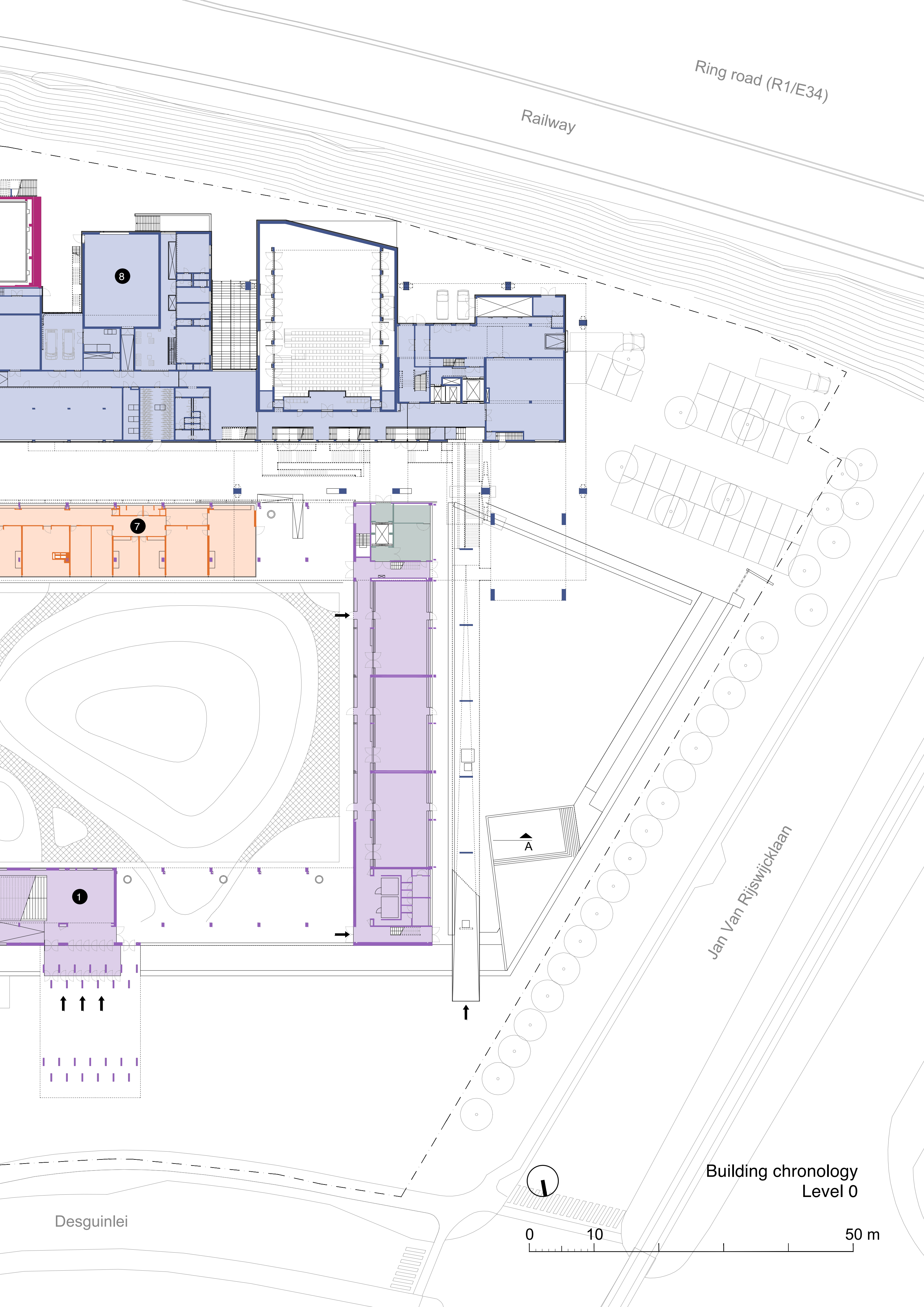
2
1
A
1 Heating Place
2 Heating Place
3 Theatre Studio
ORIGINAL BUILDING
Phase 1: construction classes and administration Conservatoire
(1963-1967 / Léon Stynen and Paul De Meyer)
Phase 2: construction music and theatre hall, library and radio station
(1973-1980 / Léon Stynen and Paul De Meyer)
TRANSFORMATIONS AND EXTENSIONS
Transformations between phase 2 & 3
(1980-1985)
Phase 3: construction classes Conservatoire
(1985-1987 / Paul De Meyer)
Transformations between phase 3 & 4.1
(1987-1999)
Phase 4.1: construction hallway and transformation flytower
(1999-2000 / Stéphane Beel)
Phase 4.2: construction new facilities deSingel and Conservatoire
(2007-2010 / Stéphane Beel)
Unknown



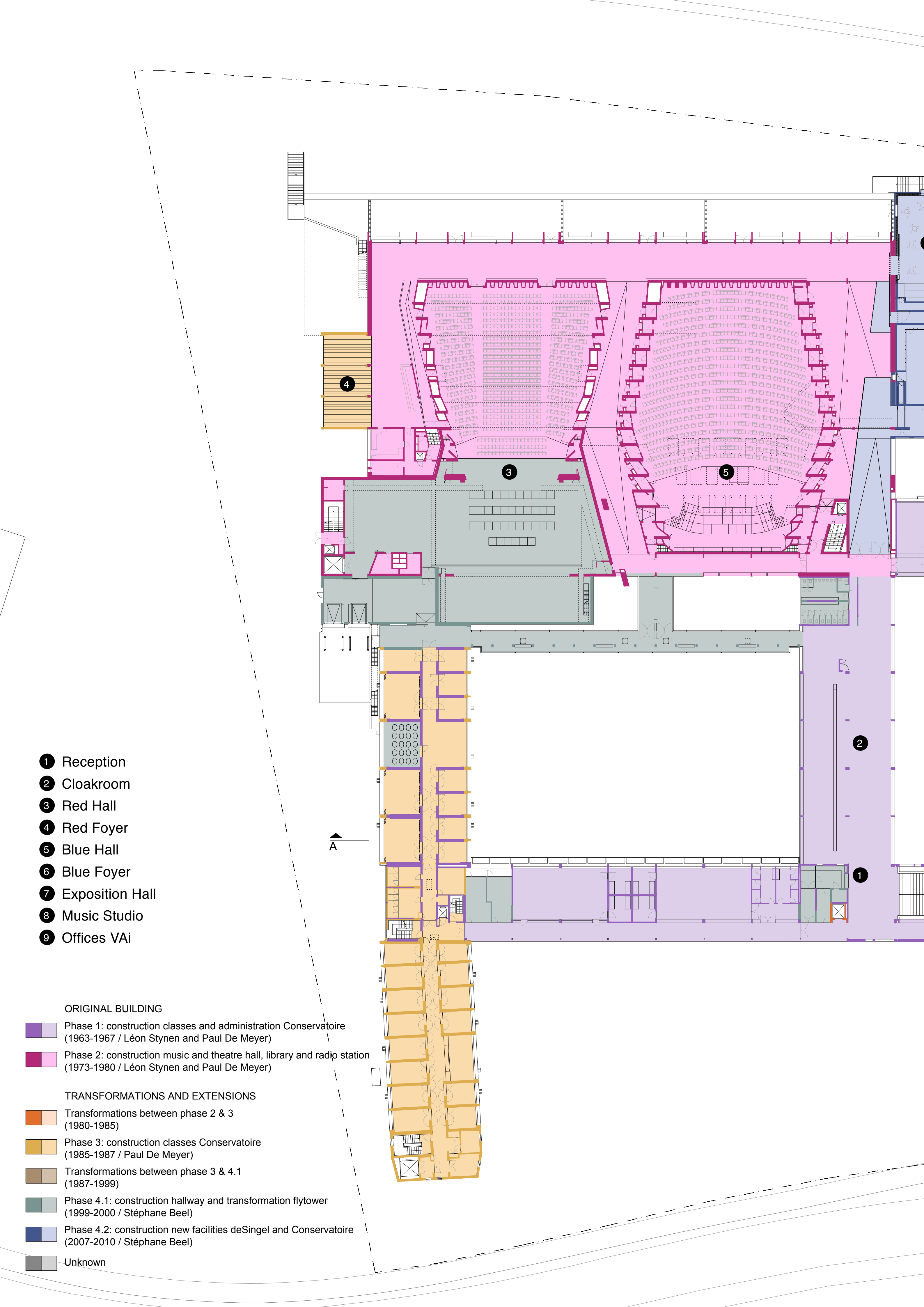
Building chronology
Level -1



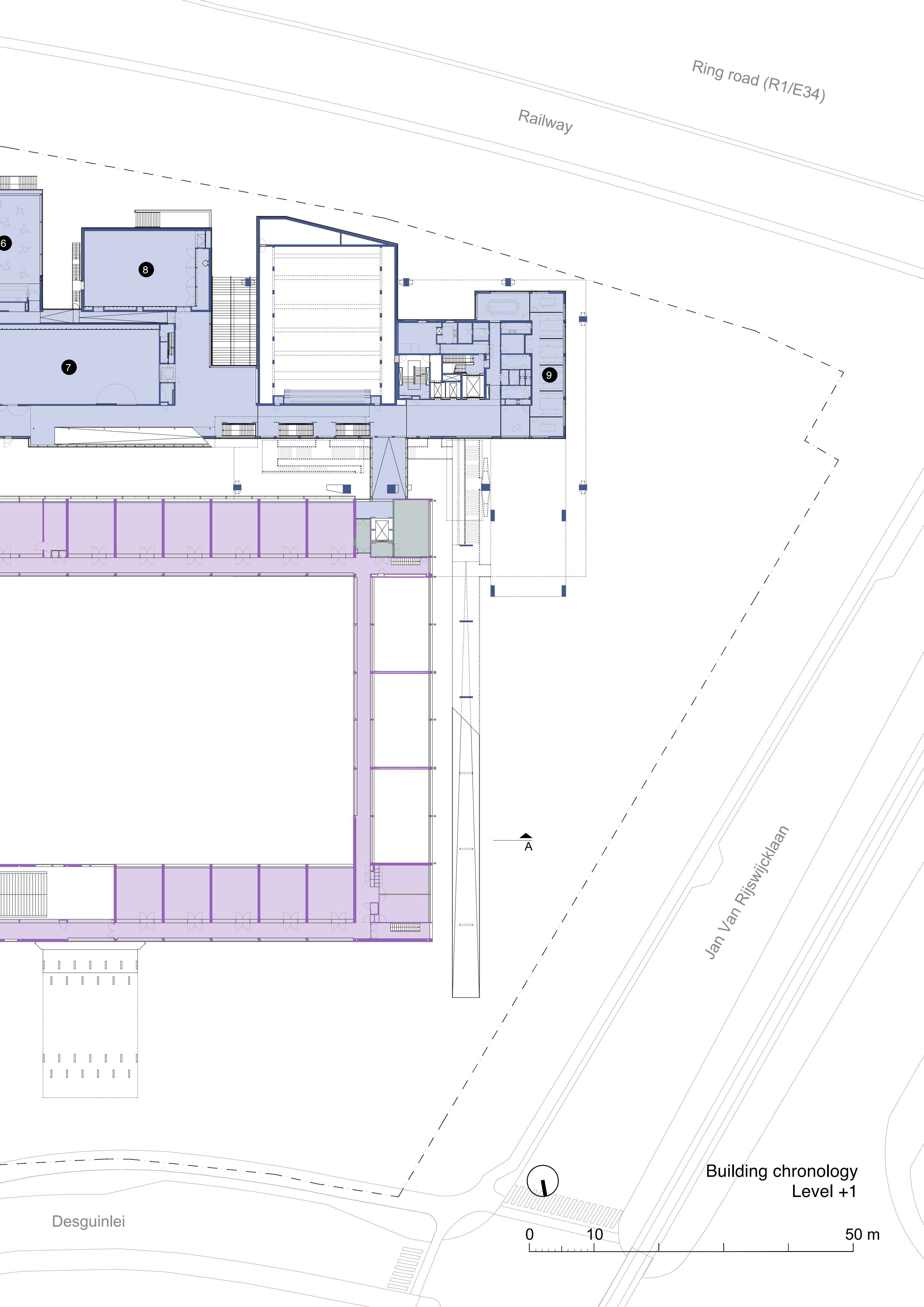
6
5
4
A
2
3
1 Entrance Hall
2 Offices Conservatoire
3 Refectory Conservatoire
4 Artists' Foyer
5 Small Hall
6 Offices Radio 2
7 Offices deSingel
8 Dance Studio
ORIGINAL BUILDING
Phase 1: construction classes and administration Conservatoire (1963-1967 / Léon Stynen and Paul De Meyer)
Phase 2: construction music and theatre hall, library and radio station (1973-1980 / Léon Stynen and Paul De Meyer)
TRANSFORMATIONS AND EXTENSIONS
Transformations between phase 2 & 3 (1980-1985)
Phase 3: construction classes Conservatoire (1985-1987 / Paul De Meyer)
Transformations between phase 3 & 4.1 (1987-1999)
Phase 4.1: construction hallway and transformation flytower (1999-2000 / Stéphane Beel)
Phase 4.2: construction new facilities deSingel and Conservatoire (2007-2010 / Stéphane Beel)
Unknown



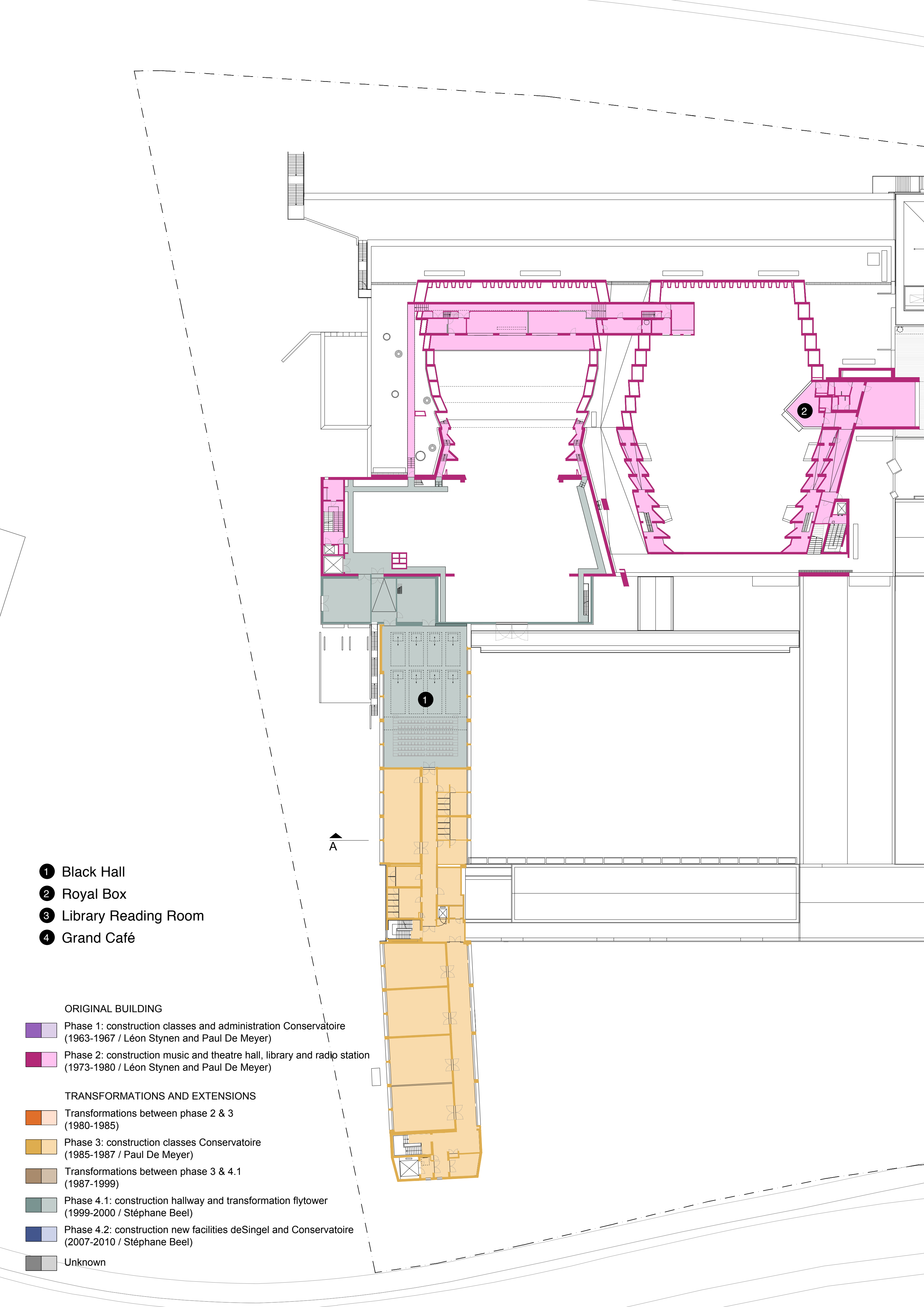
Building chronology
Level 0



1 Reception
2 Cloakroom
3 Red Hall
4 Red Foyer
5 Blue Hall
6 Blue Foyer
7 Exposition Hall
8 Music Studio
9 Offices VAi
A
ORIGINAL BUILDING
Phase 1: construction classes and administration Conservatoire (1963-1967 / Léon Stynen and Paul De Meyer)
Phase 2: construction music and theatre hall, library and radio station (1973-1980 / Léon Stynen and Paul De Meyer)
TRANSFORMATIONS AND EXTENSIONS
Transformations between phase 2 & 3 (1980-1985)
Phase 3: construction classes Conservatoire (1985-1987 / Paul De Meyer)
Transformations between phase 3 & 4.1 (1987-1999)
Phase 4.1: construction hallway and transformation flytower (1999-2000 / Stéphane Beel)
Phase 4.2: construction new facilities deSingel and Conservatoire (2007-2010 / Stéphane Beel)
Unknown



Building chronology
Level +1



1 Black Hall
2 Royal Box
3 Library Reading Room
4 Grand Café

ORIGINAL BUILDING

Phase 1: construction classes and administration Conservatoire (1963-1967 / Léon Stynen and Paul De Meyer)

Phase 2: construction music and theatre hall, library and radio station (1973-1980 / Léon Stynen and Paul De Meyer)

TRANSFORMATIONS AND EXTENSIONS

Transformations between phase 2 & 3 (1980-1985)

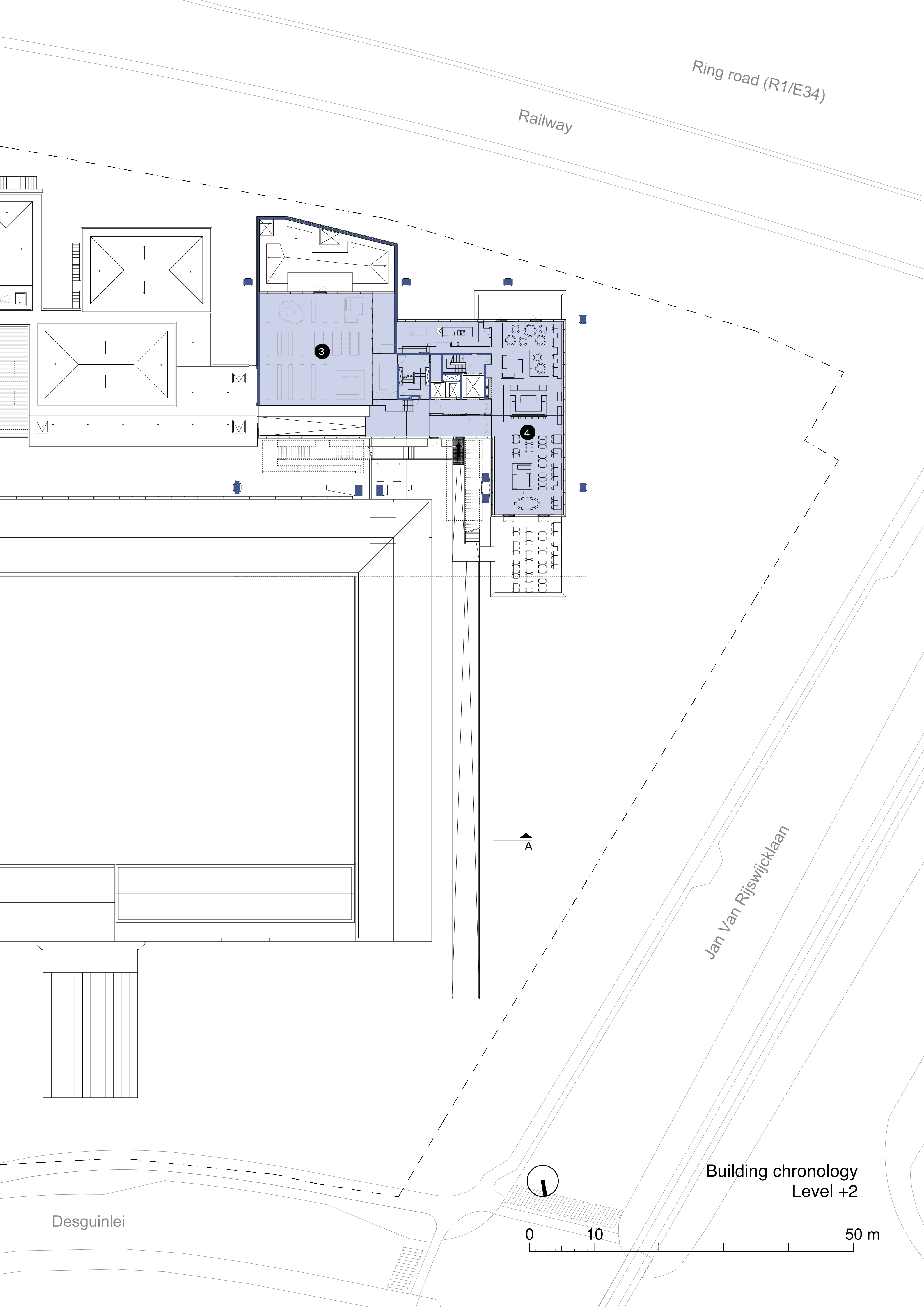
Phase 3: construction classes Conservatoire (1985-1987 / Paul De Meyer)

Transformations between phase 3 & 4.1 (1987-1999)

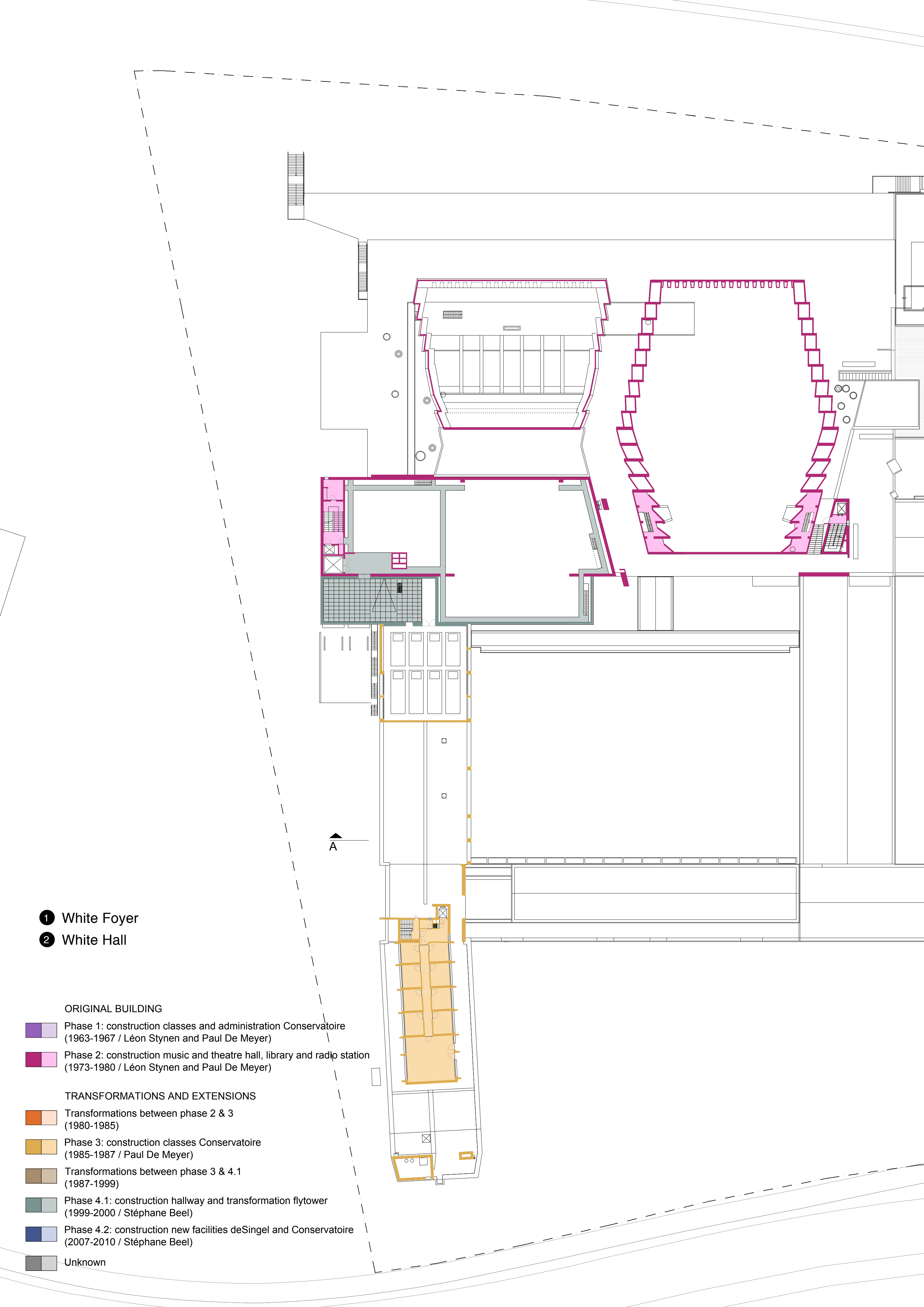
Phase 4.1: construction hallway and transformation flytower (1999-2000 / Stéphane Beel)

Phase 4.2: construction new facilities deSingel and Conservatoire (2007-2010 / Stéphane Beel)

Unknown



Building chronology
Level +2



1 White Foyer
2 White Hall

ORIGINAL BUILDING

Phase 1: construction classes and administration Conservatoire
(1963-1967 / Léon Stynen and Paul De Meyer)

Phase 2: construction music and theatre hall, library and radio station
(1973-1980 / Léon Stynen and Paul De Meyer)

TRANSFORMATIONS AND EXTENSIONS

Transformations between phase 2 & 3
(1980-1985)

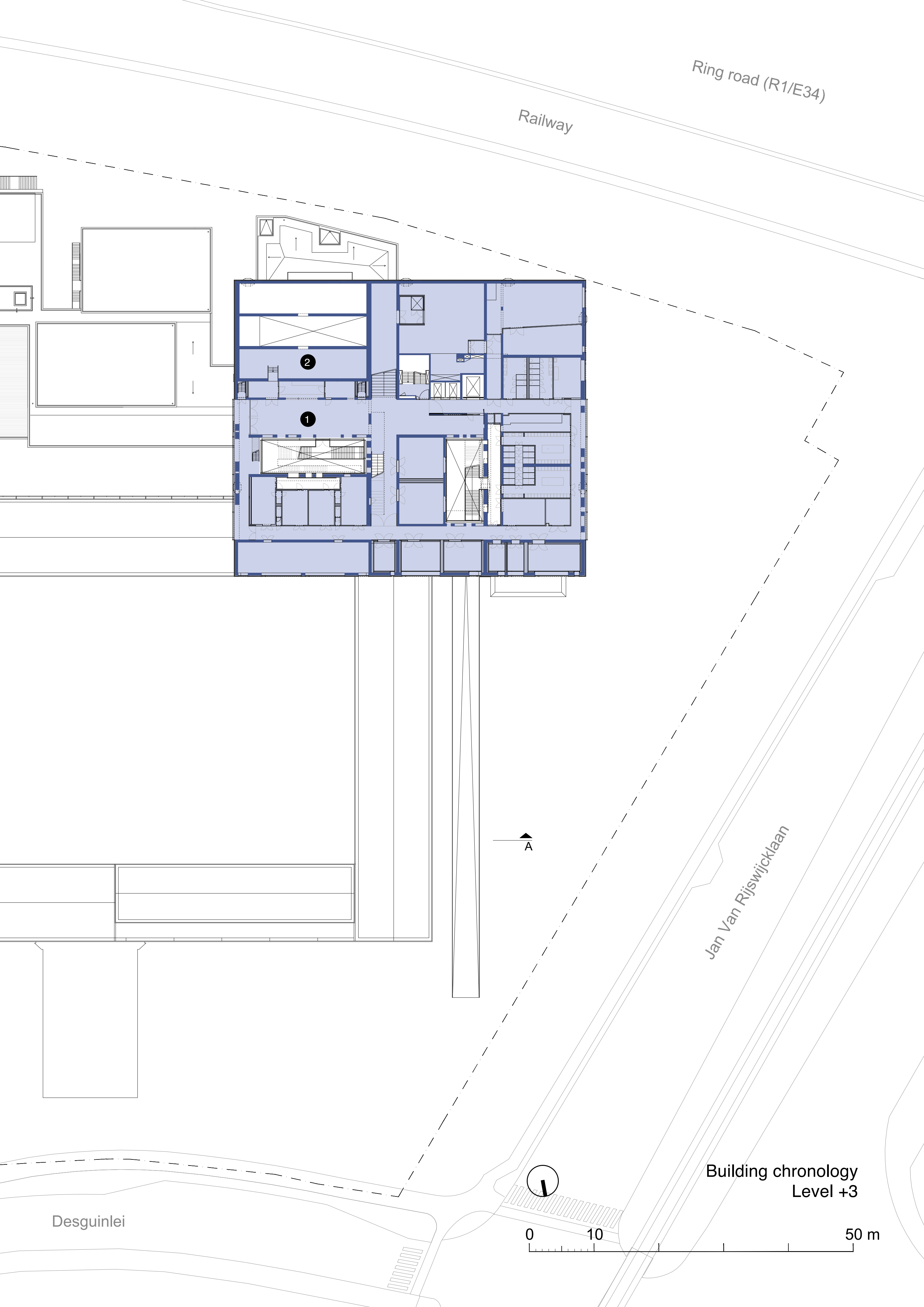
Phase 3: construction classes Conservatoire
(1985-1987 / Paul De Meyer)

Transformations between phase 3 & 4.1
(1987-1999)

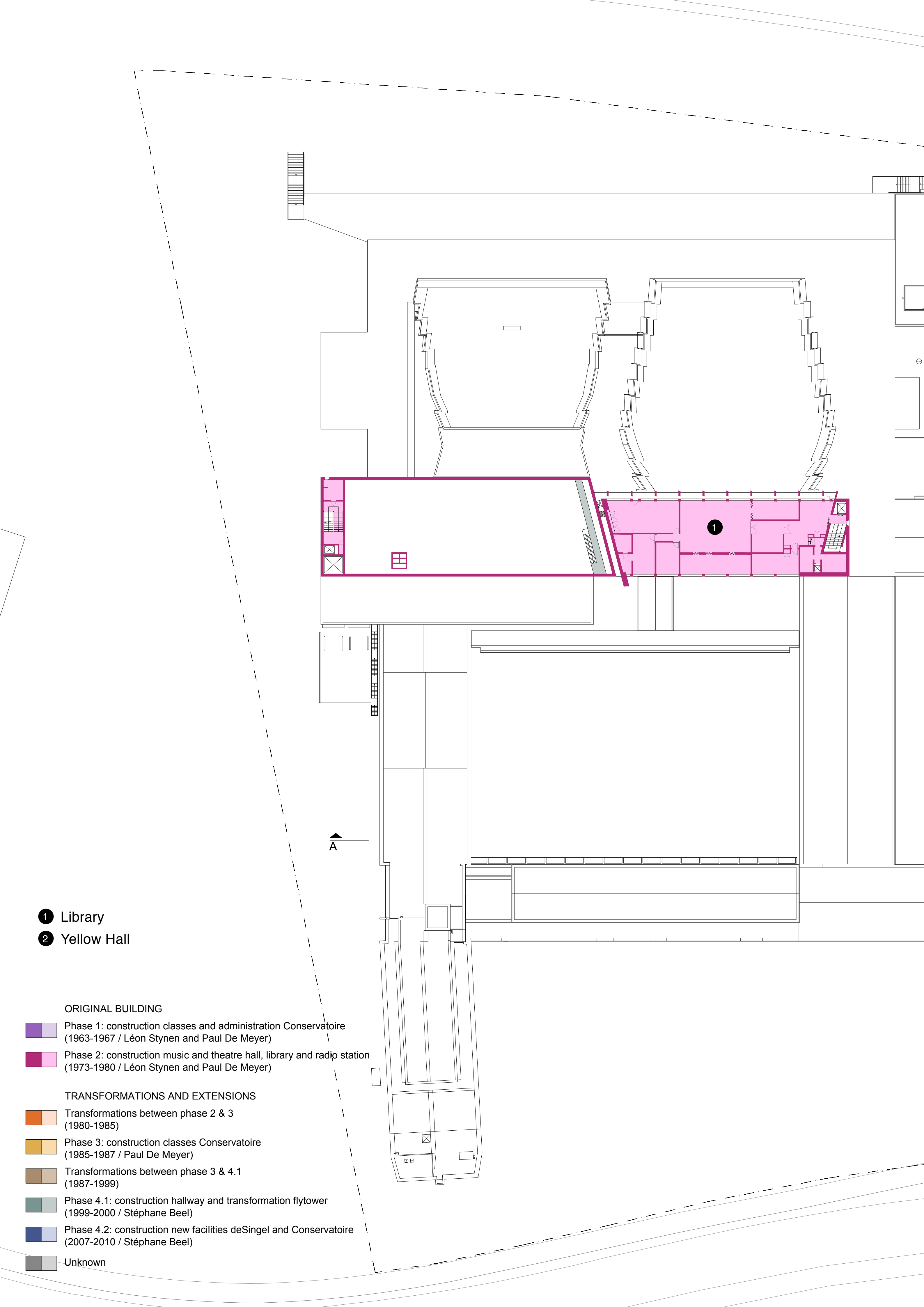
Phase 4.1: construction hallway and transformation flytower
(1999-2000 / Stéphane Beel)

Phase 4.2: construction new facilities deSingel and Conservatoire
(2007-2010 / Stéphane Beel)

Unknown



Building chronology
Level +3


1
A
1 Library
2 Yellow Hall
ORIGINAL BUILDING
Phase 1: construction classes and administration Conservatoire (1963-1967 / Léon Stynen and Paul De Meyer)
Phase 2: construction music and theatre hall, library and radio station (1973-1980 / Léon Stynen and Paul De Meyer)
TRANSFORMATIONS AND EXTENSIONS
Transformations between phase 2 & 3 (1980-1985)
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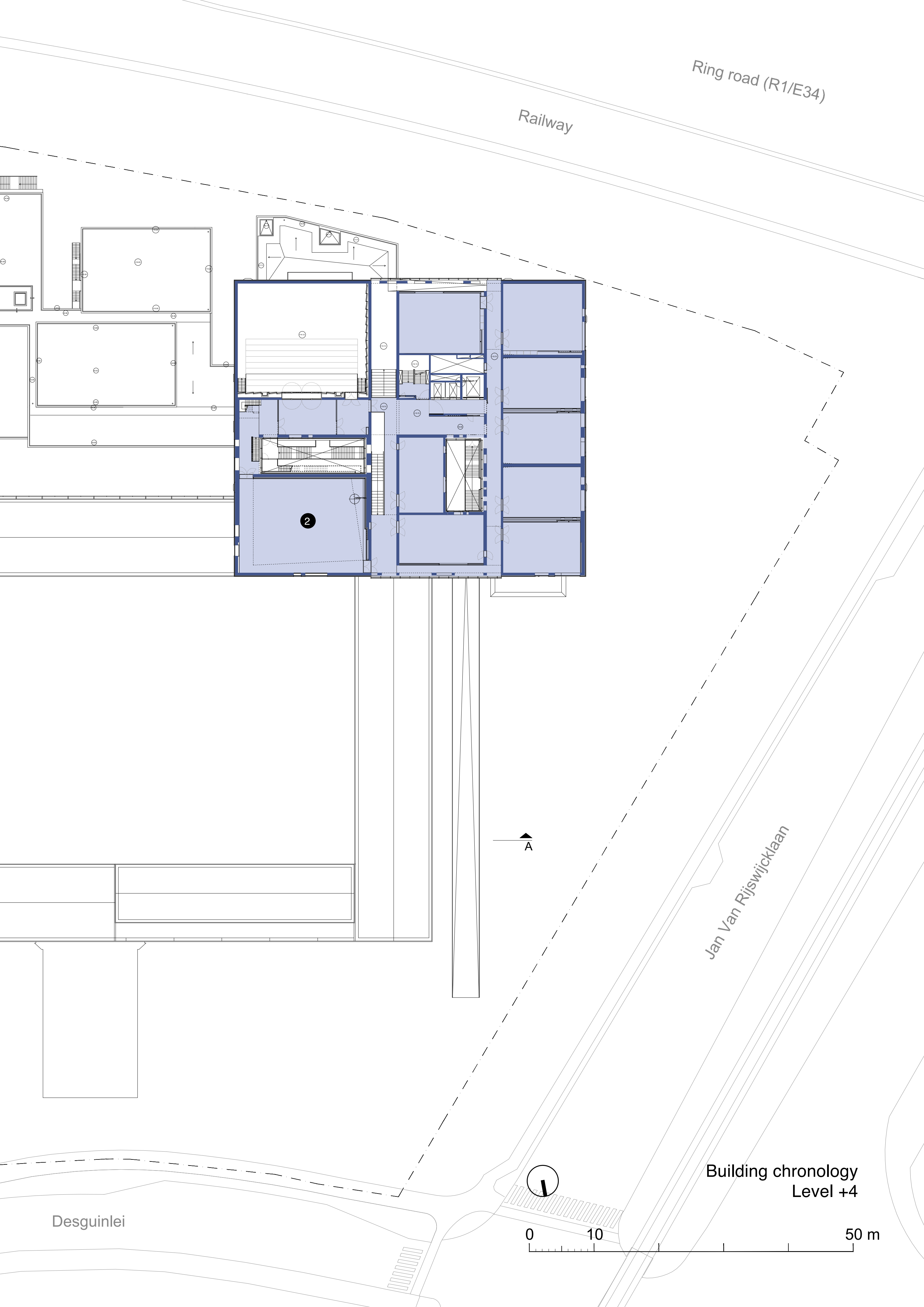
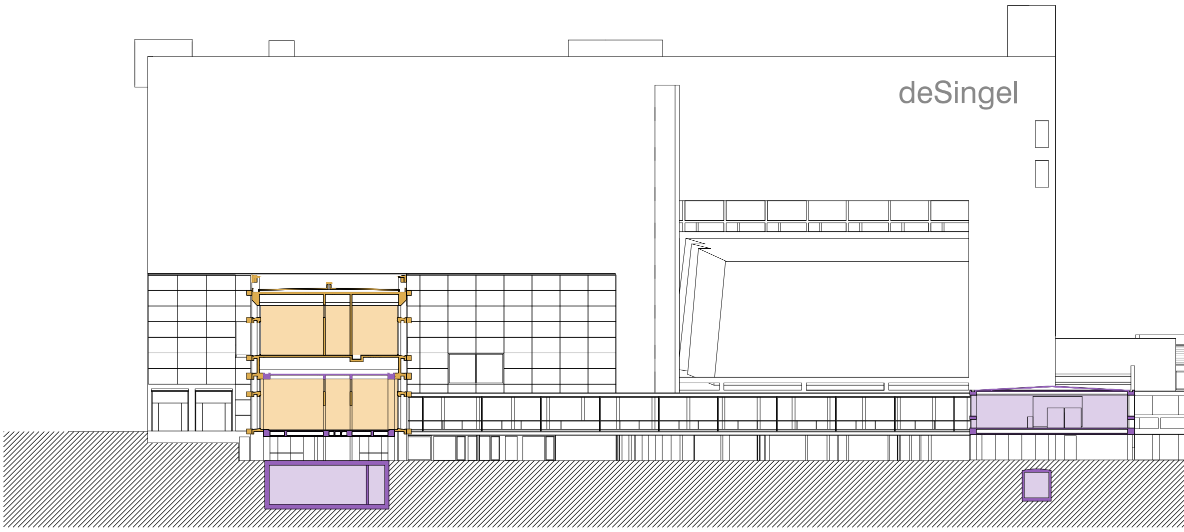
Phase 4.1: construction hallway and transformation flytower (1999-2000 / Stéphane Beel)
Phase 4.2: construction new facilities deSingel and Conservatoire (2007-2010 / Stéphane Beel)
Unknown



Building chronology
Level +4



ORIGINAL BUILDING

Phase 1: construction classes and administration Conservatoire
(1963-1967 / Léon Stynen and Paul De Meyer)

Phase 2: construction music and theatre hall, library and radio station
(1973-1980 / Léon Stynen and Paul De Meyer)

TRANSFORMATIONS AND EXTENSIONS

Transformations between phase 2 & 3
(1980-1985)

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(1985-1987 / Paul De Meyer)

Transformations between phase 3 & 4.1
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Phase 4.1: construction hallway and transformation flytower
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Phase 4.2: construction new facilities deSingel and Conservatoire
(2007-2010 / Stéphane Beel)

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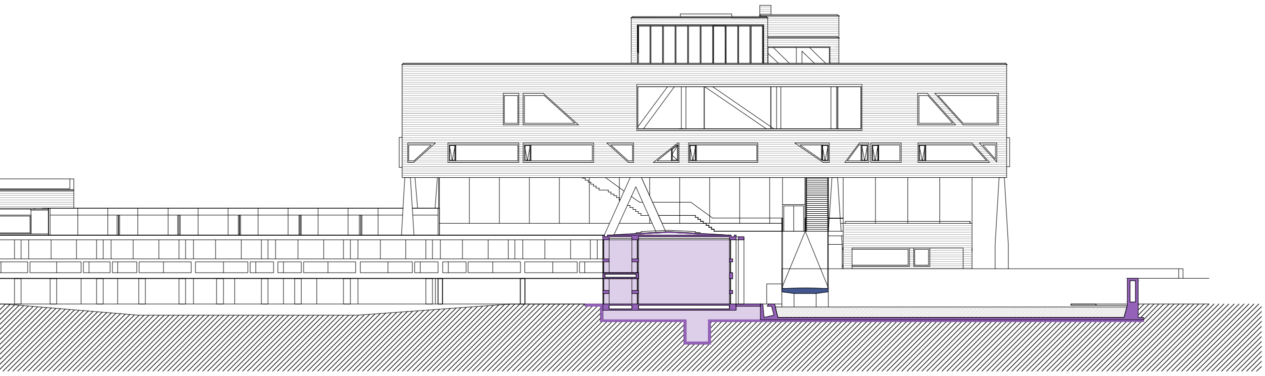


Building chronology
Section AA

KEY POINTS OF THE CHAPTER

- The original building is one of the latest works of Léon Stynen and an important example his oeuvre.

- The Royal Flemish Music Conservatory was founded in 1898 and originates from the Music School of the City of Antwerp (1843). The school was housed in the Antwerp city centre and moved to the new building in 1968.

- The building evolved from a Music Conservatoire to an International Arts Campus:
  - The building is initially designed exclusively as a Music Conservatoire
  - Radio 2 is integrated in the building to meet up with the budgetary resources
  - deSingel is established in 1983 to manage the building and to develop a public cultural programme

- This strong functional and programmatic evolution has forced the building to transform. The building is altered and extended in different phases.

- A recent, large-scale extension designed by Stéphane Beel gives an answer to the infrastructural needs of the three different users.

- The evolution and enrichment of functions confirms the initial aim of the building: a cultural climate with cross-pollination.

PART I
CHAPTER 2: A CHANGING URBAN CONTEXT

1. Introduction: Location of deSingel

deSingel International Arts Campus is located at the south edge of the city of Antwerp. The site is bordered in the north by the Desguinlei (R10 / De Singel –urban ring road), in the east by the swimming pool and sports complex Wezenberg, in the south by the railway and ring road (R1 / E34) and in the west by the Jan Van Rijswijcklaan. The site is accessible at the Desguinlei (main public entrance) and at the Jan Van Rijswijcklaan (logistic entrance).
Both because of its unique and divers program and its central and accessible location, deSingel has a supra local action radius. It is an arts centre for visitors who come from the city of Antwerp, the province of Antwerp, Flanders and even the Netherlands and Germany.

The urban setting of the complex today differs from the original context Stynen and De Meyer had in mind. This evolution is described in the following paragraphs. First the original context is represented. Afterwards the changes to this context and its influence on the site are summarised. Subsequently the urban visions that the architect, Stynen-De Meyer and Beel, developed for the site are illustrated and put into the right time frame. Next the general current urban visions on and developments of the wider surroundings of the site are examined. Finally a schematic overview of this evolution – complex and context – is made.

2. Selection of a Site: Wezenberg

In previous chapter is described that the plot

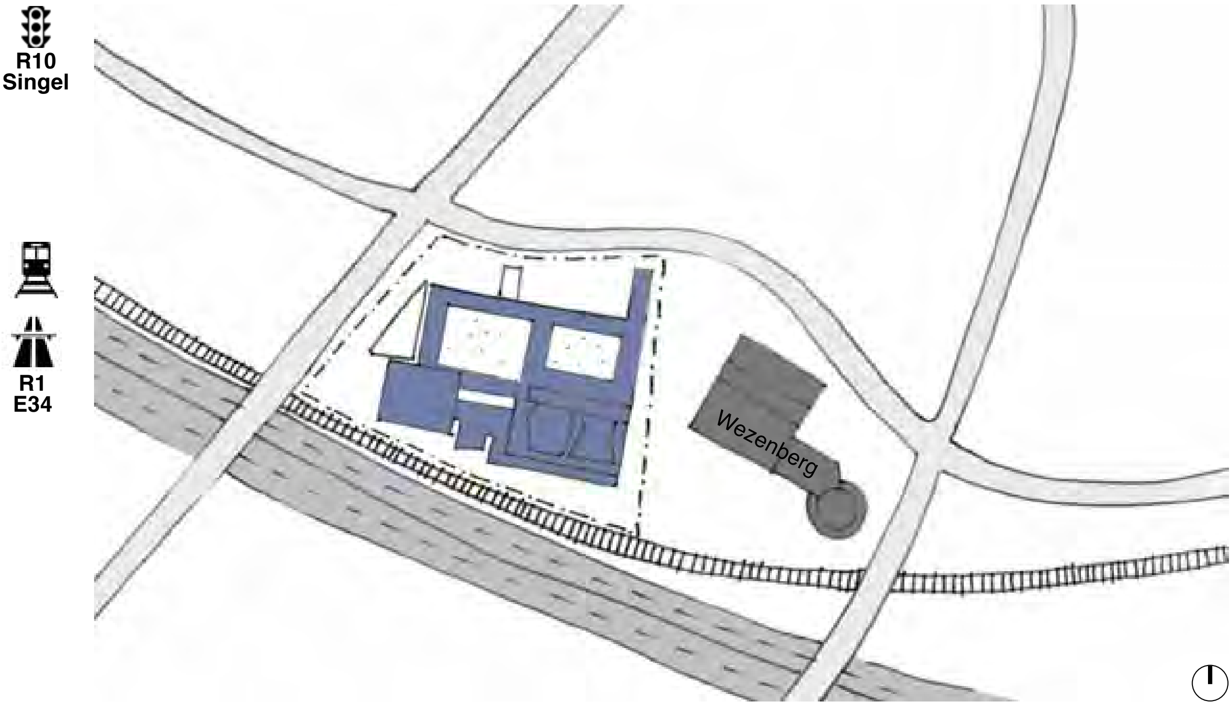


Figure I.2.1: Scheme of the site (MH)

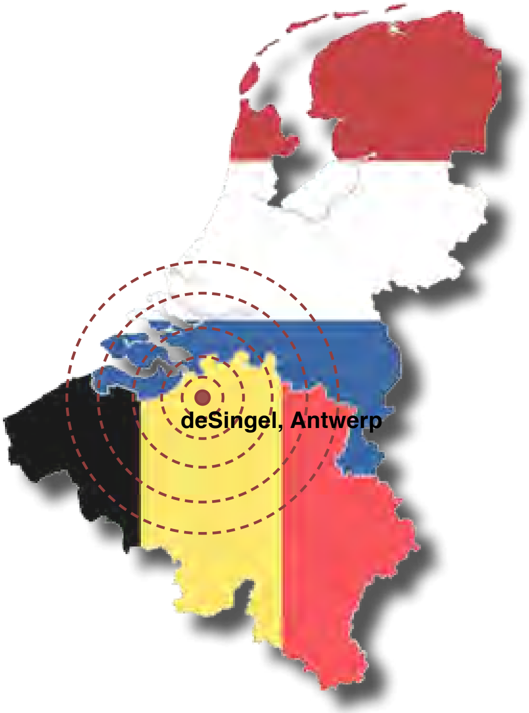


Figure I.2.2: Supra local (MH).

Figure I.2.3: 'Zwemdok Wezenberg', 1957 (DE BRUYN e.a. 2009, p. 133).

Figure I.2.4: 'Zwemdok Wezenberg', 1957 (seniorennet.be, 2014).

was provided by the city of Antwerp and that Léon Stynen himself selected this particular plot.[1] Stynen and De Meyer made a design for the Conservatoire that totally responded to the conditions of the site. The existing elements enclosing the site, like the hills and the water, were used to create a 'microclimate' for the school. The existing relief was used and altered together with the design of the complex. In other words, building and site were a unity.
Furthermore was the location of the plot excellent. Located at the edge of the city, the site was easily accessible for both students from the city centre and student form the surroundings of Antwerp. This position is until today a trump of the site (cfr. supra).
The selected plot was located on the former Brialmont wall. As in a lot of European cities the urban development and growth of Antwerp is indissolubly related to the military structures of the city and big strategic interventions. In 1860 the government decided to enlarge the city walls and to construct the Brialmont rampart with its parallel fortification belt. Due to new military technologies the rampart had become useless and was demolished in 1910. Following the example of other European cities, plans were made to make a ring boulevard with adjacent important buildings. Due to the war, the plans were put on hold until the 1960's. Despite many urban competitions and plans, this area developed unplanned and fragmented.[2]
Wezenberg was a site that had been used for temporary occasions but never got a final

1 Cfr. 'Chapter I.1 Building history / The design of Stynen and De Meyer (1958-1960)' for detailled information.

2 DE BRUYN Joeri, VAN ACKER Maarten, KLOOSTERBOER Saskia, *Groene Singel. Geschiedenis van de Antwerpse ringruimte. Plannen/Verhalen/Dromen. 1906-2009*, Antwerp: Ludion, 2009, p. 29.

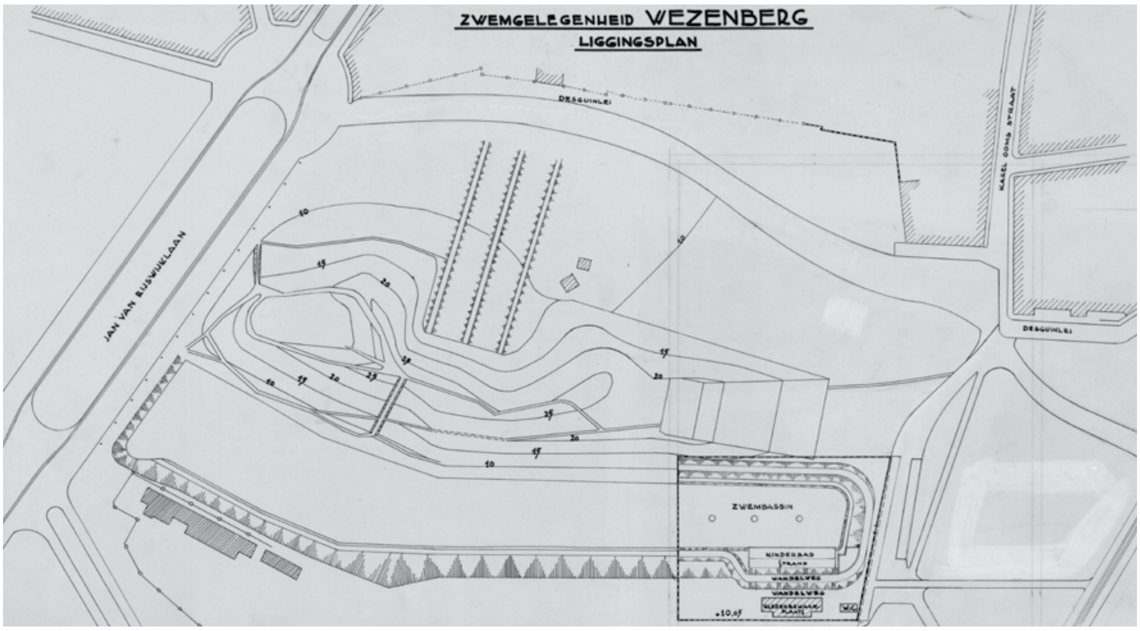


Figure I.2.5: Swimming Pool, 1950 (Antwerp: Felix)

Figure I.2.6: Map of Antwerp, 1910 (adapted from www.oldmapsonline.org, 2014).

occupation. The outdoor swimming competitions during the Summer Olympics in Antwerp in 1920 took place in the remains of the ramparts.[3] The city of Antwerp also installed an outdoor swimming pool in this pond during the 1950's.[4]

In 1957, a year before Stynen got the commission to design the Royal Music Conservatoire of Antwerp, a General Urban Plan ('*Algemeen Plan van Aanleg*') was approved. In this plan the mayors of the different sub-municipalities reached consensus concerning the future zoning and infrastructure of the Antwerp agglomeration. In this plan a **triple road system** was described:

- a railway and little local ring road in the channel of the former city wall (local traffic);
- a second big ring road at the edge of the Antwerp agglomeration (heavy and on-going traffic);
- and a ring avenue to connect the sub-municipalities in the zone between the little and big ring road.[5]

The site of the Conservatoire was located near the first bundle 'local ring road-railway'. The position of this bundle was situated at a certain distance of the site by which the site itself and its direct surroundings would remain untouched.

Figure I.2.7: Urban Plan Antwerp, 1957 (wegenforum.nl, 2014).

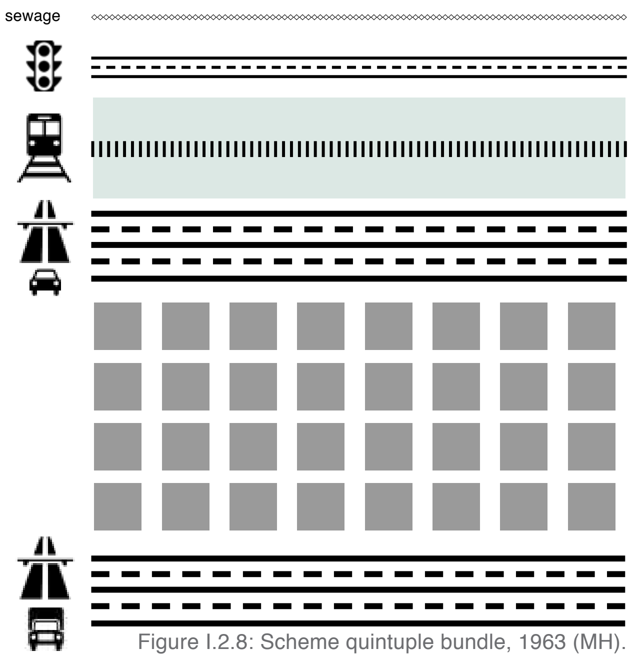


Figure I.2.8: Scheme quintuple bundle, 1963 (MH).

3 "Geschiedenis – Olympische plantrekkerij. De Antwerpse Spelen van 1920" in *Jan Lampo. Blog over literatuur, geschiedenis en Antwerpen*: http://janlampo.com/2012/08/06/olympische-plantrekkerij-de-antwerpse-spelen-van-1920/ (accessed 01/05/2014).
4 DE BRUYN Joeri, VAN ACKER Maarten, KLOOSTERBOER Saskia, *Groene Singel. Geschiedenis van de Antwerpse ringruimte. Plannen/Verhalen/Dromen. 1906-2009*, Antwerp: Ludion, 2009, p.133.
5 Ibidem, p. 27.

3. Changes to the original context

3.1. The elaboration of the ring road E3 [6]

In 1963 the 'Inter-Municipal Association E3' ('*Intercommunale Vereniging E3*') was founded. This association had to concretise the European Highway Programme E3, part of the Convention of Genève (1950)[7]. A double ring road around Antwerp was part of the E3, the highway connecting Lisbon with Stockholm.
The elaboration of the ring road E3 continued on the principles described in the General Urban Plan of Antwerp (1957, cfr. supra). The triple road system evolved to a **quintuple bundle**:

- a big ring road at the edge of the Antwerp agglomeration (heavy and on-going traffic);
- a little ring road in the channel of the former city wall (local traffic);
- an inner boulevard as traffic switch between traffic of the small ring road and urban traffic, called de Singel;
- a ring railway;
- and a sewage.

In 1965 the American engineering firm Harris designed the final trace of the little ring road, inner boulevard and ring railway.[8] In this plan the position of the ring road and railway differed from the initial position recorded in the General Urban Plan of 1957. The position was much more to the north. This meant for the site of the Conservatoire that the remains of the ramparts disappeared and that the railway would pas adjacent to the site. Furthermore the future noisy environment jeopardised the quiet setting this building needed. The Conservatoire and the highway-railway were juxtaposed as two rivals. This resulted in a first 'derogation' of the concept of Stynen and De Meyer.

3.2. Olympic swimming pool Wezenberg

A second attack on the concept of Stynen and De Meyer was the construction of an Olympic swimming pool on the eastern plot adjacent to the site of the Conservatoire (1974[9]). The hill between the Conservatoire and the swimming pool had to be reduced for the construction of this complex.[10] "Above and through the bushes, the profile of the ponderous and so to speak yawning swimming pool stands out against the sky, as if it symbolises the well-known Belgian mediocrity."[11]

Both the infrastructural works in the 1960's (ring road E3 and railway) as the construction of the swimming pool in the 1970's changed the surroundings of the Conservatoire in a drastic manner. Despite the endeavours of Stynen to minimise the damage[12], the building, designed as a refuge of peace and inspiration, became an enclave with amputated borders.

6 Unless mentioned, the source of this paragraph is DE BRUYN Joeri, VAN ACKER Maarten, KLOOSTERBOER Saskia, *Groene Singel. Geschiedenis van de Antwerpse ringruimte. Plannen/Verhalen/Dromen. 1906-2009*, Antwerp: Ludion, 2009, p. 52.

7 The Convention of Genève (1950) stipulates a plan for the European road network. More than 100 European roads connect industrial, touristic and urban centres of the European continent. The foundations of this system are two east-west connections – E1 and E2 – and two north-south connections E3 and E4. The E3 connects Stockholm with Lisbon.

8 The little ring was considered as a secondary and inferior road with a local and connecting function. It was the first phase of a complex system. The ring road and Kennedy tunnel were put into operation in 1969. The big ring road has never been realised.

9 DE BRUYN Joeri, VAN ACKER Maarten, KLOOSTERBOER Saskia, *Groene Singel. Geschiedenis van de Antwerpse ringruimte. Plannen/Verhalen/Dromen. 1906-2009*, Antwerp: Ludion, 2009, p. 133.

10 FLORQUIN Joos, *Ten huize van … 18*, Leuven: Davidsfonds, 1982, p. 133.

11 BONTRIDDER Albert, *Gevecht met de rede, Léon Stynen: Leven en werk*, Antwerpen: Comité Léon Stynen, 1979, p. 185,187.

12 D'HAEN Johan, *Koninklijk-Vlaams-Muziekconservatorium & De Singel*, unpublished thesis Sint-Lucas Gent (promotors DUBOIS Marc), academic year 1986-1987, pp. 12-14.

4. Masterplan Wezenberg by Léon Stynen[13]

When Stynen got the commission to design the new building for the Antwerp Conservatoire (1958) he got confronted with the lack of urban vision existing on that indefinite part of town. The General Urban Plan (1957) was in operation, but this plan only defined a two-dimension vision in terms of zoning and infrastructure. The arrival of the little ring road in this area was the most defining element.
The 'Wezenberg' Stynen discovered was a charming area that survived the brutal urban development. Stynen seized the opportunity to turn this area into an exemplary new part of town. In 1962, when the construction of the Conservatoire almost started and the BP-tower[14] was already under construction, he presented a master plan for a neighbourhood that responded to his vision on the modern city; a vision that continued on the principles of Le Corbusier. At a distance of the dilapidated city centre and accessible for modern transportation, he designed an autonomous enclave. A series of six high-rise buildings along the curve of the highway, defined a border in the south. The buildings are not placed orthogonal to the ring but are slightly twisted to create the impression of a wall.[15] In the north a string of low-rise building blocks created a boundary but also a transition to the old city centre. The Conservatoire was situated in the middle and was the 'raison d'être' of the site. All these modern elements were positioned in the twisting hilly landscape with ponds, the remains of the former city wall. The highway itself was an element of the landscape; a parkway for local traffic. This part of town was designed to create an intersection between city and surrounding areas, instead of the ring road being a hard border.
In 1970 Stynen retook this master plan Wezenberg within the context of a competition (1968-1972) organised by the city of Antwerp for a congress centre. Stynen designed a series of halls with divers dimensions organised around courtyards. [16] In the master plan high-rise buildings with administrative and commercial functions bordered the edge with the parkway. Only the hotel, Crowne Plaza (1969, former Crest Hotel), of this plan will be realised.

The master plan was never executed. Only the Conservatoire, the BP-tower (1961-1963) and the Crowne Plaza (1969) are a reminder of the ambitious plan. The isolated elements are a witness of the lack of urban vision and venture to turn this area into a coherent neighbourhood. Although the urban plan gave the Conservatoire a meaningful surrounding, the biggest derogation happened when the position of the ring road was changed (1965). This intervention literally wiped out the remains of the former military ramparts. The schemes (figure I.2.10 &11) show the impact of this change. On the first scheme illustrating the situation in 1962 the hills and ponds around the Conservatoire create a

13 Unless mentioned, the source of this paragraph is BEKAERT Geert, "Stynens lijdensweg", in: DE BRUYN Joeri, VAN ACKER Maarten, KLOOSTERBOER Saskia, *Groene Singel. Geschiedenis van de Antwerpse ringruimte. Plannen/Verhalen/Dromen. 1906-2009*, Antwerp: Ludion, 2009, p. 130.

14 Stynen and De Meyer were awarded the contract to design an office tower by the British Petroleum Company. The construction of the BP-tower lasted from 1961 until 1963, and was executed by Van Coillie, the same 'initial' contractor as the second phase of the Conservatoire. The building was classified as a monument in 2001.
("BP-building (ID: 6958)", in *Inventaris Onroerend Erfgoed*: https://inventaris.onroerenderfgoed.be/dibe/relict/6958 (accessed 04/05/2015).)

15 DE BIE Anne, Léon Stynen. Zijn ringachitectuur, unpublished seminar work Academie Antwerpen (prof. F. COMMERS), academic year 1990-1991, p. 85.

16 BONTRIDDER Albert, *Gevecht met de rede, Léon Stynen: Leven en werk*, Antwerpen: Comité Léon Stynen, 1979, p. 200.

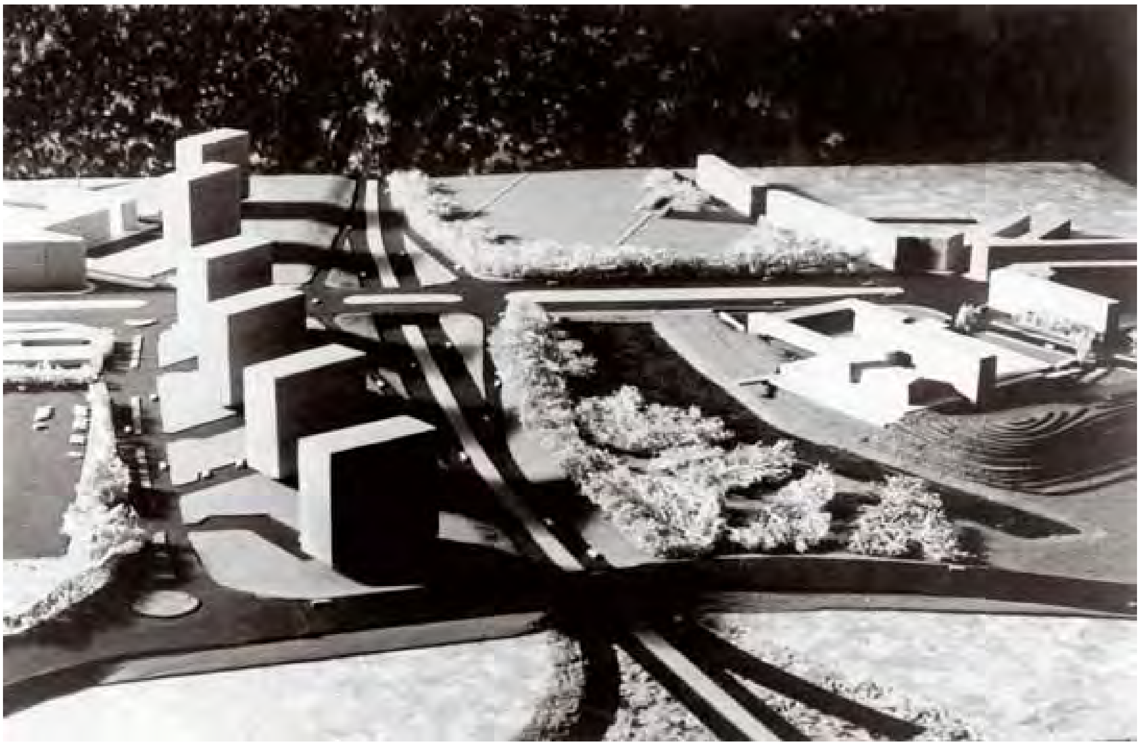


Figure I.2.9: Model masterplan Wezenberg 1962 (Antwerp: APA)

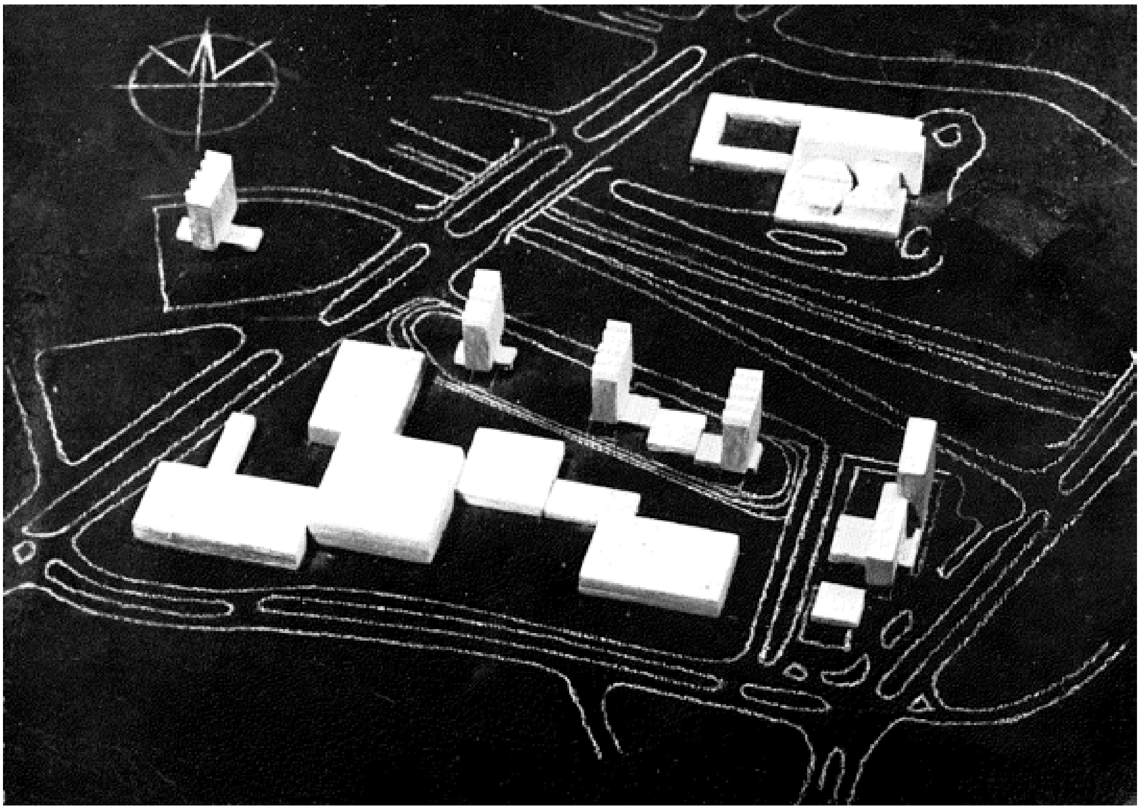


Figure I.2.10: Model masterplan Wezenberg 1970 (BEKAERT & DE MEYER 1990, p.21).

natural border between the complex and the ring road. The six high-rise buildings mark the border in the south. The second scheme of the situation in 1991 shows the impact of this relocation of the ring road. The pond disappeared and the ring road almost touches the building. The two realised high-rise buildings in the south are located at a certain distance from the ring road.

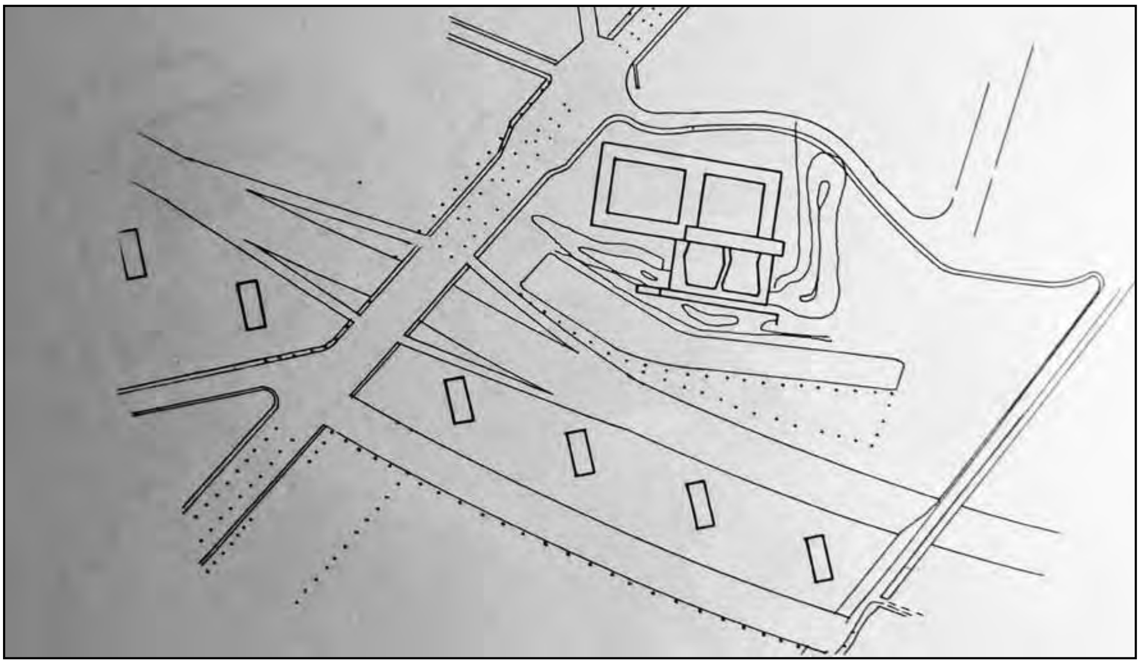


Figure I.2.11: Scheme Plan Wezenberg 1962 (DE BIE 1990-1991, p. 82).

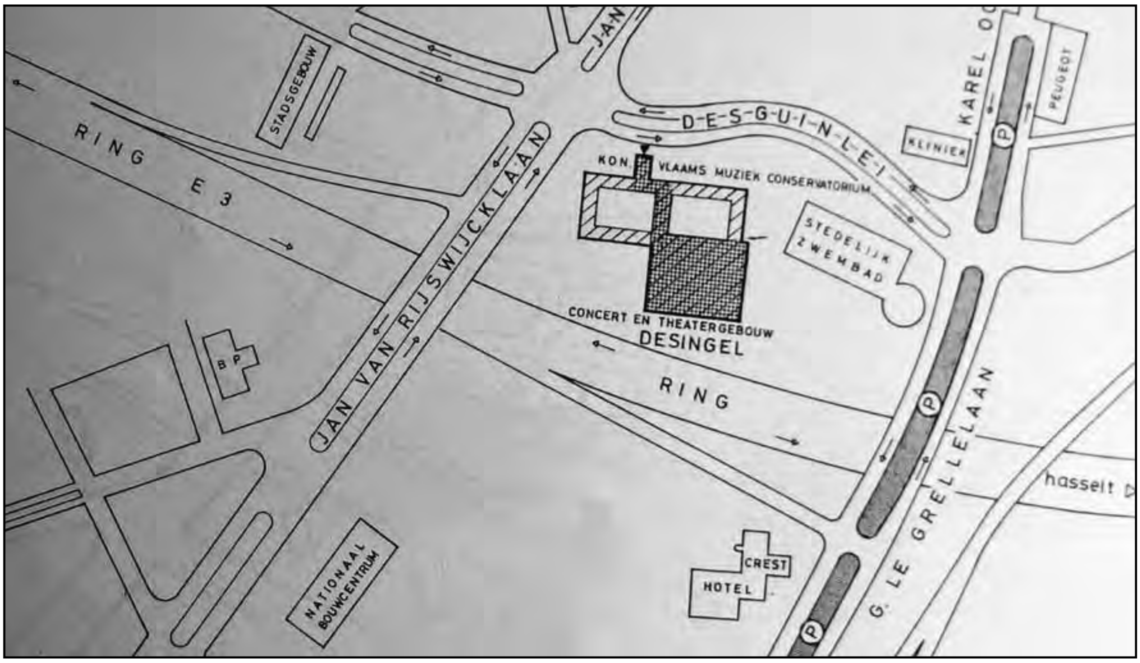


Figure I.2.12: Scheme situation 1991 (DE BIE 1990-1991, p. 81).

Figure I.2.13: Crowne Plaza (former Crest Hotel) (MH 23/05/2014)

Figure I.2.14: BP Building (MH 23/05/2014)

Figure I.2.15: Construction ring road, 1968 (adapted from DE BRUYN e.a. 2009, p. 50).

5. Masterplan 'four towers' Stéphane Beel

In the 1970's and 1980's the traffic and the buildings along the ring road increased and the qualities of the green parkway were lost.[17] Following international metropolitan visions Willem Jan Neutelings wrote in 1986 his manifesto '**Proclamation of the ring culture**'. This document is a case study on the Antwerp ring road looking for large places with infrastructure and functions that moved out of the city owing to the importance of the car. He made five programmatic typologies with buildings faced by big billboards that created a filmic experience from the car and bundled the functions that were expelled out of the historic centre.[18]
The vision of Neutelings was confirmed in 1990 by Rem Koolhaas' design for the international competition 'Stad aan de Stroom', were he makes a new city part in the empty space between the curves of a traffic junction, based on bigness, landmarks and the motion experience of the car driver.[19]
It is in that zeitgeist that the masterplan of Stéphane Beel has to be read.

While the borders of the site changed during the design and building process of Stynen's Conservatoire, Stéphane Beel had a well aligned plot and an existing building in operation to start his design process. One of the key features in 1996 was to extent the building with 16.000 m^2 without bothering the operation of the site.[20]

17 AERTS Bert, *Dromen van een groene singel. De invloed van Stad aan de Stroom op de latere ontwikkelingen van het Antwerpse Ringgebied*, unpublished thesis Antwerp Univeristy (promotor Prof. Dr.Ir.Arch.LOMBAERDE Piet), academic year 2013-2014, p. 28.
18 "De Ringcultuur", in *Neutelings Riedijk Architecten*: http://www.neutelings-riedijk.com/index.php?id=57,440,0,0,1,0 (accessed on 18/07/2015).

19 AERTS Bert, *Dromen van een groene singel. De invloed van Stad aan de Stroom op de latere ontwikkelingen van het Antwerpse Ringgebied*, unpublished thesis Antwerp Univeristy (promotor Prof. Dr.Ir.Arch. LOMBAERDE Piet), academic year 2013-2014, p. 28.
20 VERMEIR Paul, Fase van de toekomst: ontwerp van de vierde fase door architect Stéphane Beel", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 348.

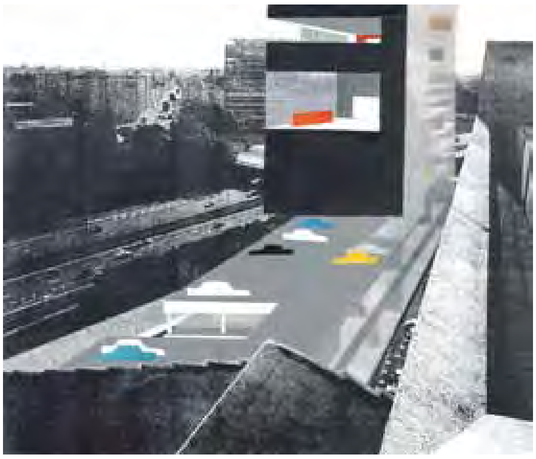


Figure I.2.16: Concept image (Ghent: SBA).

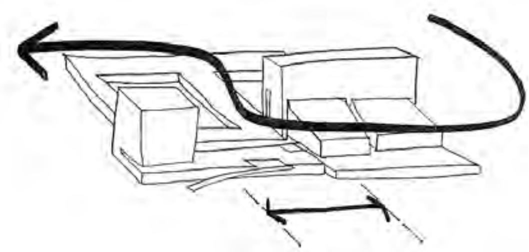


Figure I.2.17: Scheme unity - distance (Ghent: SBA).

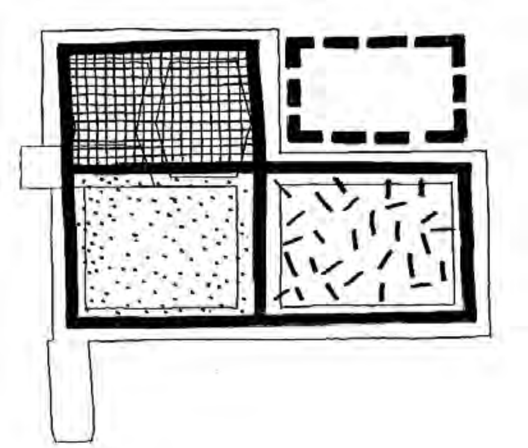


Figure I.2.18: Fourth quarter (Ghent: SBA).

A study was made to explore the possibilities of the site:
- could the extension fit in the northern part of the building following the extension of the third phase, blocking the view of the main entrance;
- could it fit in to the patio's, breaking the initial concept of the building
- or could the remaining plot between the railway and phase 1 be used to house the large extension?

The last option was selected and the mayor extension is to be found in the 'missing quarter' of the site, the quarter that was corrupted by the railway and ring road and was still open for construction.[21]

A new tower was introduced, standing up on a lower elongated volume. The tower would not only dialogue with Stynen's library tower but also be part of a dance with Stynen's existing towers on the other side of the ring road; a reminiscence of the unexecuted masterplan Wezenberg.[22]

The extension, a horizontal fourth tower facing a river of cars, exists next to the old building. It has its own character but takes a certain respectful distance. The individuality of the two buildings is strengthened by giving the extension a proper entry by a slope starting from the northern part next to the main entrance of Stynen's building. The slope takes the visitor to a height from were the city and the ring road can be observed from a podium.[23] The highway is not a problem anymore; it is part of the experience of the Art City, a billboard towards the ring road.

21 BEKAERT Geert, "Extension of deSingel International Arts Campus, Antwerp", in: BEKAERT Geert, CLEPPE Birgit, DE KOONING Mil, VAN GERREWEY Christophe, *Stéphane Beel Architects. New Works & Words*, Tielt: Lannoo, 2011, p. 72.

22 "De kunstcampus groeit +12.000m2", in *deSingel*: https://www.desingel.be/nl/gebouw/nieuwbouw-kunstcampus-desingel (accessed on 20/12/2014).

23 FLORE Fredie, NOTTEBOOM Bruno, "Centrum/Campus/City. De uitbreiding van deSingel en het Koninklijk Conservatorium in Antwerpen door Stéphane Beel Architecten", *De witte raaf*, 148, November-December 2010, p.1.

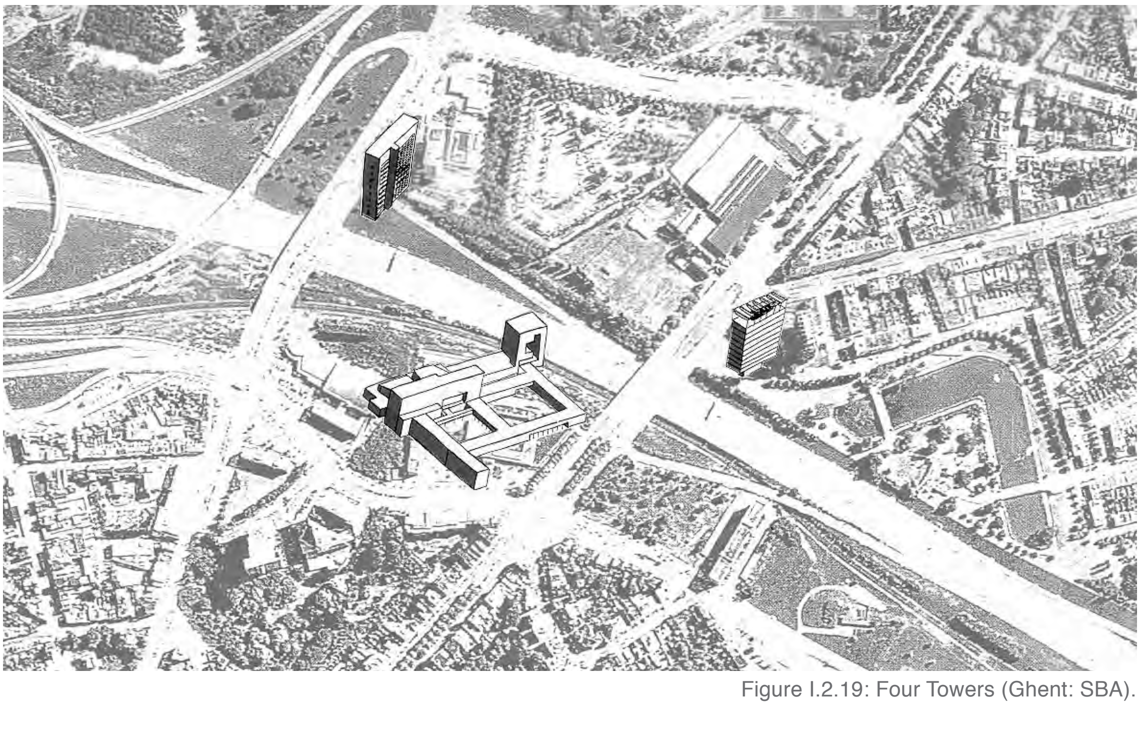


Figure I.2.19: Four Towers (Ghent: SBA).

6. Current urban visions

The ring road that in the late 1960's was seen as a concrete product of progression was soon to be seen as a Trojan Horse.[24] Due to financial problems and local protests the plan for the second ring road for on-going traffic (cfr. supra) was abandoned and the local ring road (De Singel) next to deSingle was a source of pollution and congestion.
Since the late 1990's several studies were made to close the ring road and solve the mobility problem. The two main options are:
- BAM-route, closing the ring road
- and Meccano-route, creating a by-pass.

The BAM-route was selected and a tunnel will close the ring road. The works will start in 2017.[25]

Figure I.2.20: BAM - Meccano(ademloos.be, 2015).

Apart from the mobility studies, the city presented in 2009 a vision note for the '**Green Single**' that was in 2012 translated in an approved image quality plan. It is based on eleven concepts and is a design manual with guidelines for new buildings and landscape design in and around the Singel, the belt between the city of Antwerp and the surroundings.
The starting point is that the Single is an ecologic valuable structure that is within walking

Figure I.2.21: Green Singel (antwerpenhogerop.be, 2013).

distance of the Antwerp city population, but is isolated between the Ring Road (R1) and the Singel ring road (R10).
The Single ring road is currently an obstacle for the connection between the city centre and the 'green river'. The goal of the image quality plan is to reduce the traffic on the Singel ring road and to turn it into a green boulevard, a gradual transition that connects the periphery buildings with the green single and is mainly designed for the bikers and pedestrians. The 'Green Single' will also be a connecting tool to the surrounding green parks. Buildings that are on the periphery and generate a lot of traffic such as office buildings will be gathered on strategic locations with public transport hubs. Other important features of the note are to improve the existing water ponds and to create a network of footpaths that improve the accessibility of the green area with connections that go beyond the ring road to other parks: green bridges.
In that green zone the existing buildings such as the Conservatoire and Wezenberg swimming pool are seen as pebbles in the green river. [26]

24 HAINE Kitty, *Durven dromen van een groene rivier,* Antwerpen: Autonoom Gemeentebedrijf Stadsplanning Antwerpen, 2009, p. 4.

25 "Werken Oosterweel in 2017 van start", in *De Standaard*: http://www.standaard.be/cnt/dmf20150302_01556730 (accessed 10/08/2015).

26 "Beeldkwaliteitplan Groene Singel. Principenota 13 juli 2012" in *AGVESPA*: www.agvespa.be/sites/default/files/attachments/project/20120713principenota beeldkwaliteitplan.pdf (accessed 01/08/2015).

The latest visions of several citizen organisations about the Antwerp ring road (R1) go beyond the 'Green Singel' and propose to cover the ring road: **Ringland**. The proposed system is based on the idea of separating local traffic and on-going traffic. Hence the covered ring road would provide a green area for both the city centre and the adjacent communities.[27] The idea however was based on the Meccano-route and is according to the designers not possible to adhere with the selected BAM-route (cfr. supra).
In may 2015 the minister of mobility, Ben Weyts, commissioned five firms to make a feasibility study on the solution of the mobility problem in combination with the covering of the ring road. Will this end the complex issue that started with the demolition of the Brialmont rampart?[28]

If the ring road will be covered, the surroundings of the site of deSingel will change again in a drastically manner. The covered context will refer though more to the initial context Stynen and De Meyer had in mind. However has the building evolved and positioned itself along the ring road. A new paradox will emerge.

27 "Ringland het plan" in *Ringland*: www.ringland.be/wp-content/uploads/2015/04/ringland-krant-2015.pdf (accessed 01/08/2015).

28 "Nieuwe horde genomen in zoektocht naar 'overkappingsintendant'" in *De Morgen*: www.demorgen.be/binnenland/nieuwe-horde-genomen-in-zoektocht-naar-overkappingsintendant-a2405398 (accessed 27/07/2015).

Figure I.2.22: Ringland (nieuwsblad.be, 2014).

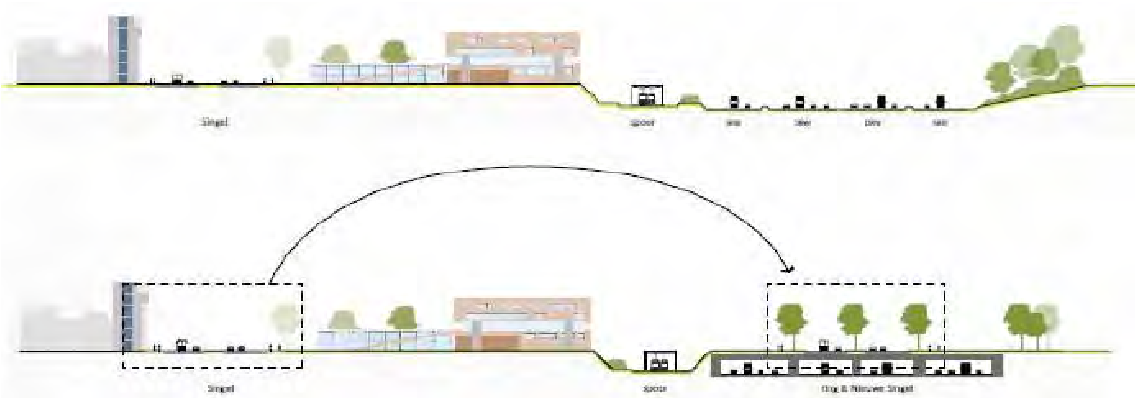


Figure I.2.23: Ringland (ademloos.be, 2014).

7. Evolution of the building and the site

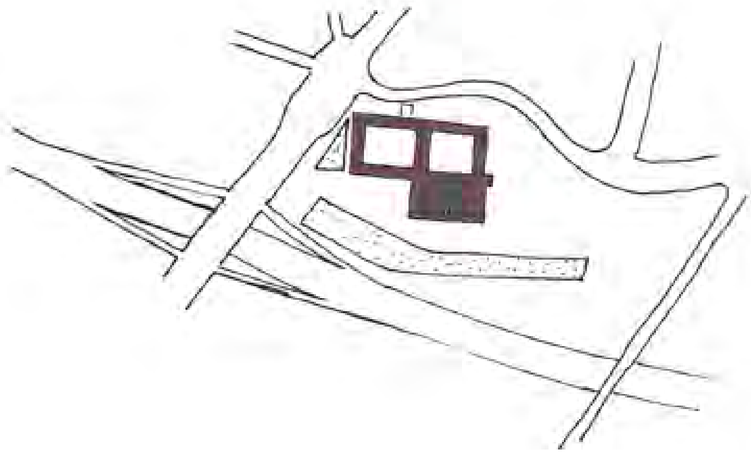


Figure I.2.24: Designed situation, 1959 (MH).

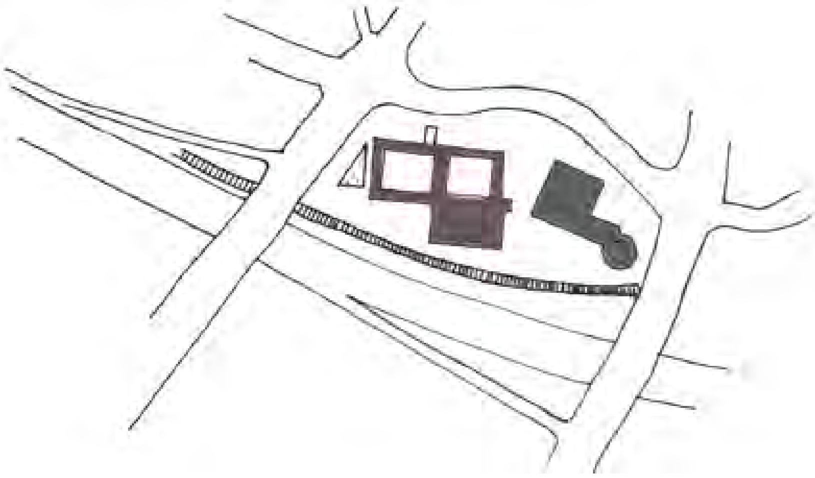


Figure I.2.25: Original design with changed context, 1980 (MH).

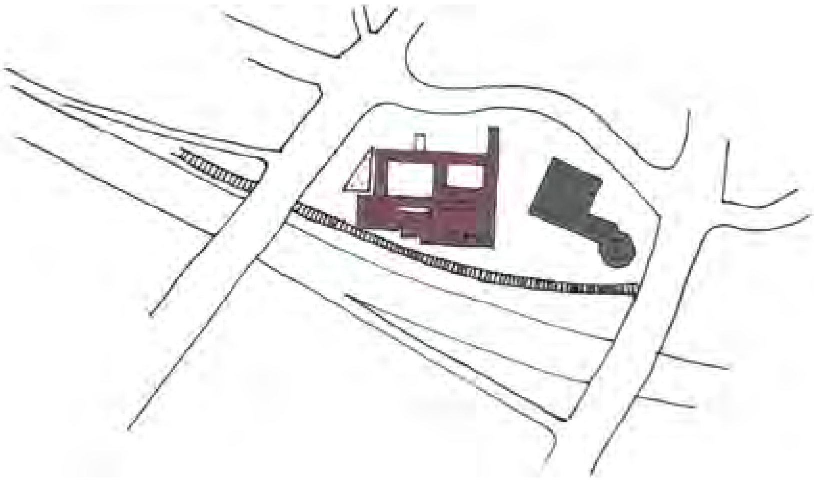


Figure I.2.26: Current situation, 2015 (MH).

KEY POINTS OF THE CHAPTER

- The site is located at the edge of the Antwerp city centre, adjacent to the ring road and a railway.
- The site is a remnant of the former city wall, the Brialmont wall. Stynen selected this site because of its scenic landscape qualities and its good position in terms of accessibility.
- The construction of the ring road, railway and swimming pool changed the surroundings of the site drastically.
- Stynen designed a master plan for the site and its surroundings because no urban vision existed on this indefinite part of town. Only fragments of this plan were realised: the Conservatoire, the BP-tower and Crowne Plaza.
- Beel oriented the new building to the ring road: a beacon along the river of cars.
- Current visions, the Green Singel and Ringland, propose a systems to improve the urban quality by creating accessible green space.

PART I
CHAPTER 3: ARCHITECTURAL AND FUNCTIONAL ANALYSIS

1. Drawings of the current state

The office 'Stéphane Beel Architecten' provided the basic drawings. These drawings have been made for the design and elaboration of the master plan (1995-1996). A selection of plans is made and these plans serve as reference drawings. The acquired drawings have been altered in order to make them visible and readable within the format of this thesis. The drawings also served as a basis for the draw-up of the different synthesis plans such as the building chronology (cfr. chapter I.1), evaluation plan and intervention plan (cfr. chapter II.2).

2. The architectural concept

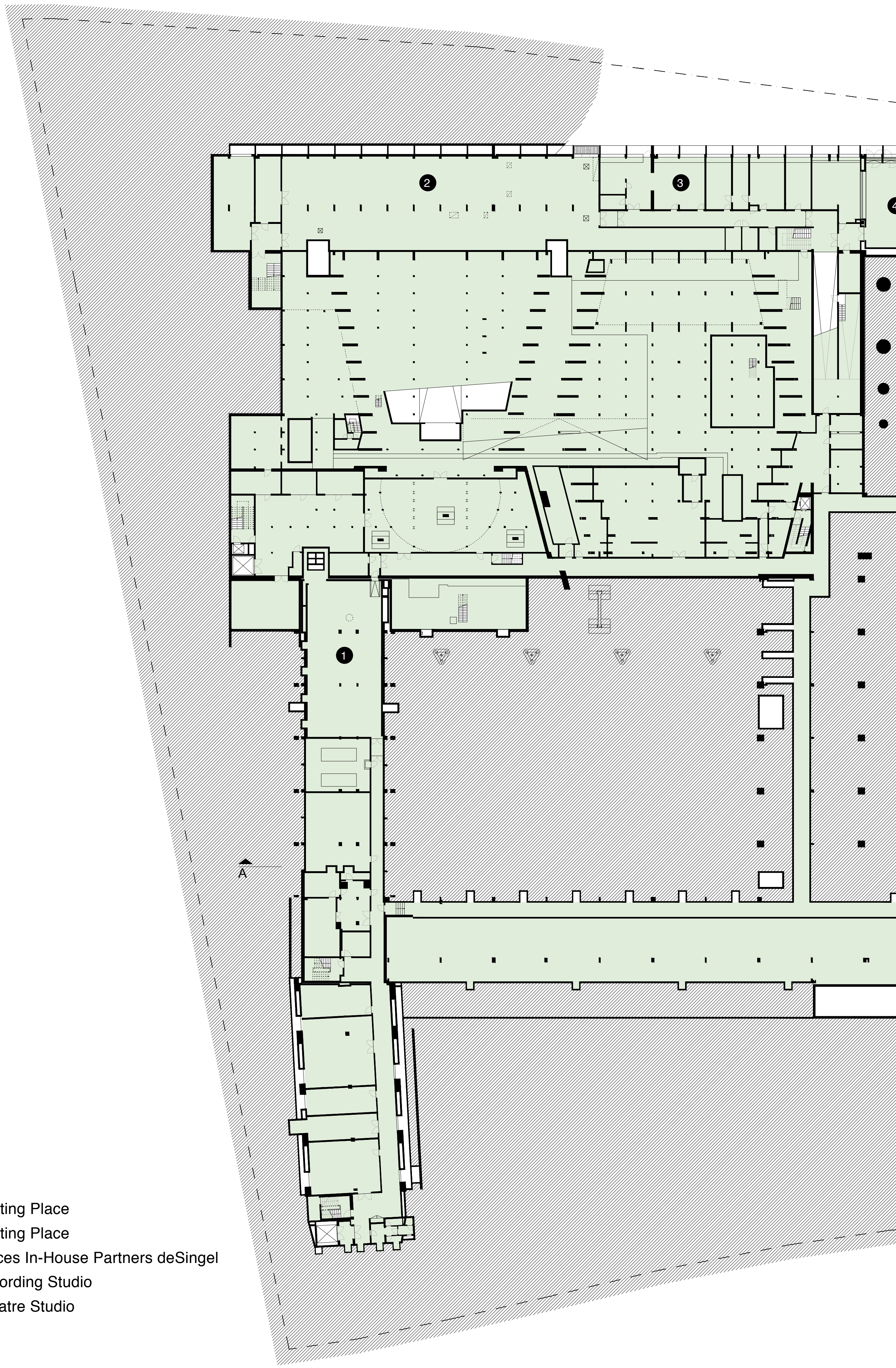
In the chapter 'Building History' is explained how the building evolved from Conservatoire to an International Arts Campus. The complex expanded in different phases according to designs of different architects. These layers of time are visible in the total complex.
The architectural concept is analysed in the following paragraphs. The structure of this description follows the different phases of construction. First the concept of the original building by Stynen and De Meyers is analysed (phase 1 and 2). Subsequently the building of phase 3 by De Meyer is described. Finally the extensions designed by Beel are examined (phase 4.1 and 4.2).
In the description of the alterations and extensions to the original building (phase 3 and phase 4), the relations with the original building are emphasised. The investigation is made if those extensions 'underline' the qualities of the original building. Do they try to be coherent and continuous or rather to be a new entity?

2.1. Léon Stynen and Paul De Meyer: a podium to nature (phase 1&2)

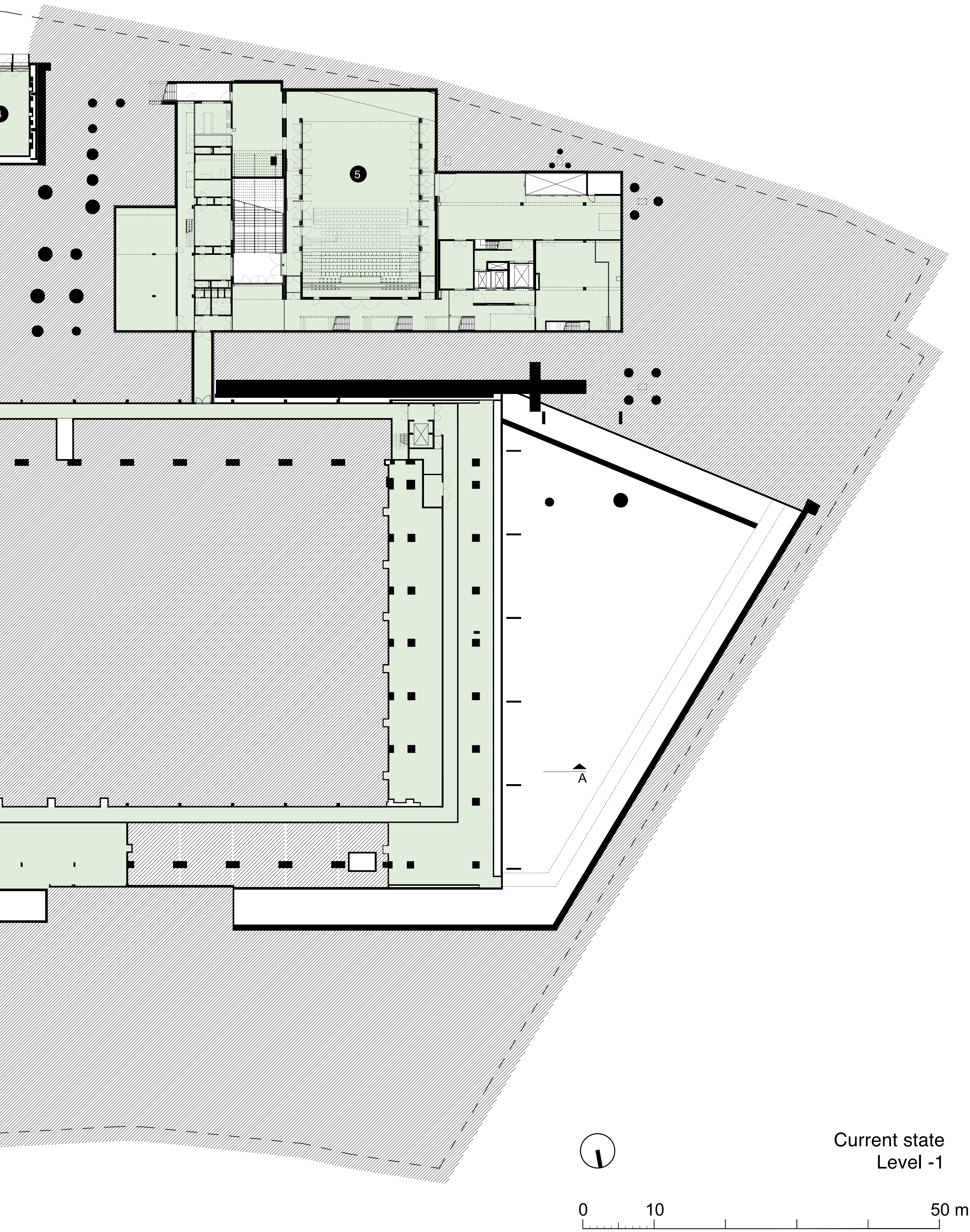
Stynen and De Meyer strived to design a complex particularly suited for this program. In a letter to mister A. de Graeve of the national Buildings Agency, Stynen expresses this concern:
"*Het is niet overbodig te herinneren dat een Conservatorium niet alleen een cultureel gebouw, maar vooral een cultureel milieu moet zijn. Ik bedoel dat de economie van het vraagstuk niet alleen in de bouw berust, maar ook in het doel dat nagestreefd wordt. Wij zouden aan onze plicht verzaken indien het gebouw alleen op gebied van materiële spaarzaamheid zou voldoen, en het milieu de vereiste schoonheid niet zou hebben. Schoonheid gaat gepaard met verhoudingen en rythme.. zoals de hoop gepaard gaat met geloof en menslievendheid. Hoop- geloof en menslievendheid, Architectuur-verhoudingen en rythme, zijn aan de jonge kunstenaar broodnodig voor zijn kultuur en tot de verfijning van zijn gevoel.*"[1]

Free translation: "*It's not unnecessary to remind the fact that a Conservatoire is not just a cultural building, but above all has to be a cultural environment. I mean that the effectiveness of the assignment is not merely based on the realisation of the building, but also derives from the goal pursued. We would neglect or duty if the building would only meet the standards concerning material economy and the environment would not have the required beauty.*
Beauty is accompanied by proportion and rhythm… like hope is accompanied by belief and humanity. Hope – belief and humanity', architecture- proportions an rhythm, are indispensable to the young artist for his culture and his refinement of emotion."

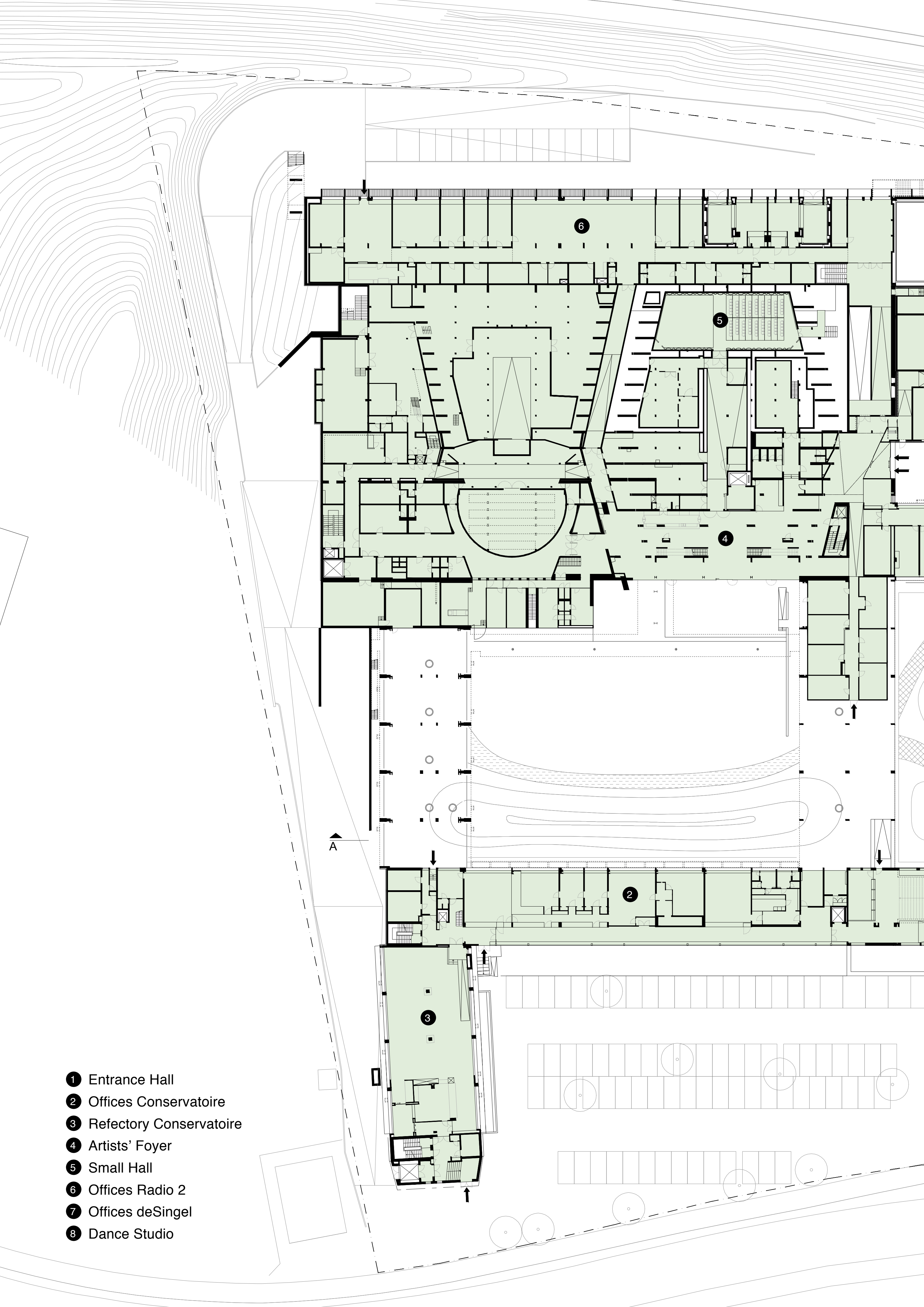
1 Archive Buildings Agency province of Antwerp: Antwerpen – KVMC – P3[1]/ BG5/11611 – 1e schijf: overeenkomst (STYNEN Léon, *LS/VH/838. Nieuw muziekconservatorium te Antwerpen* , 17/07/1959).



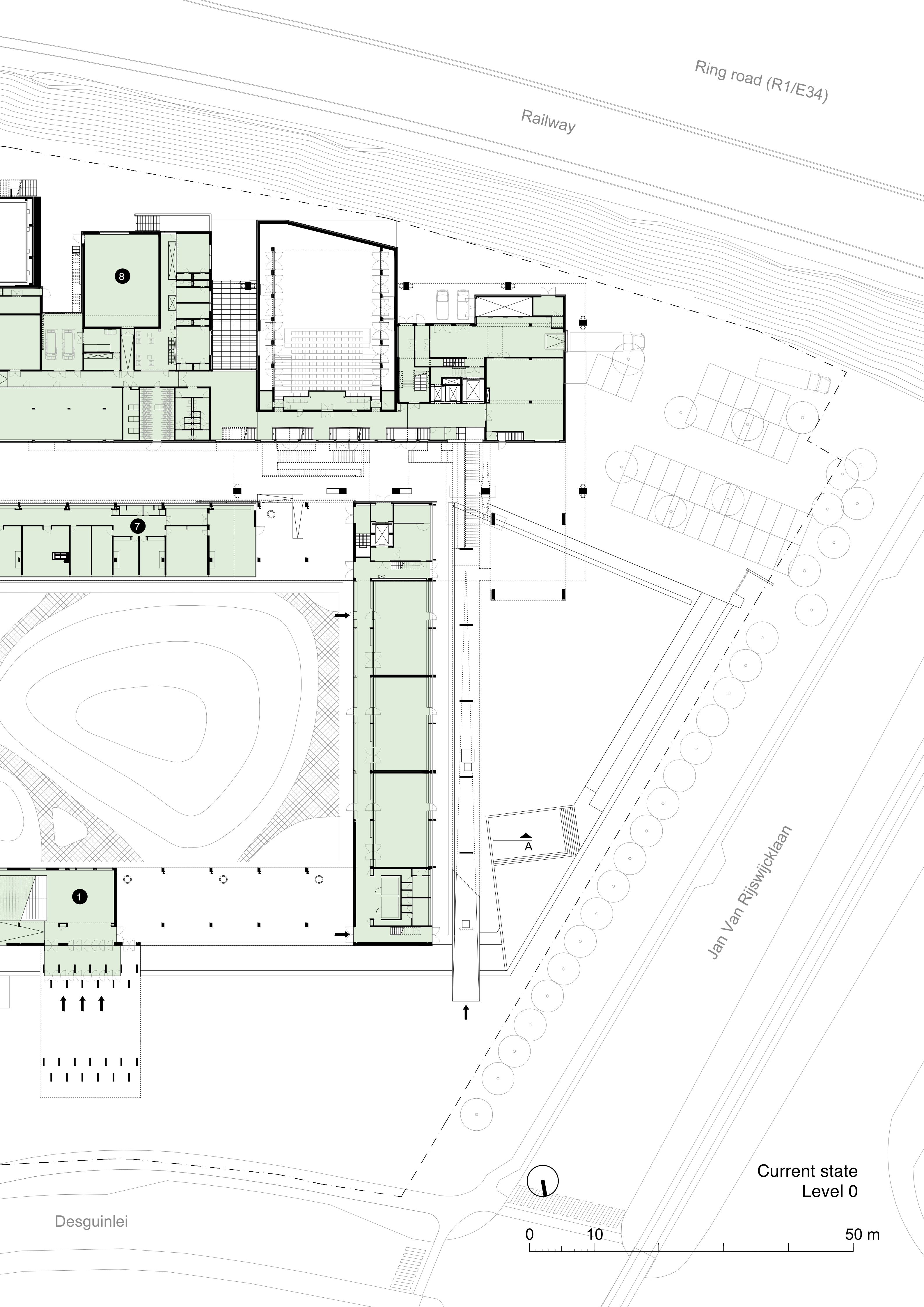
1 Heating Place
2 Heating Place
3 Offices In-House Partners deSingel
4 Recording Studio
5 Theatre Studio



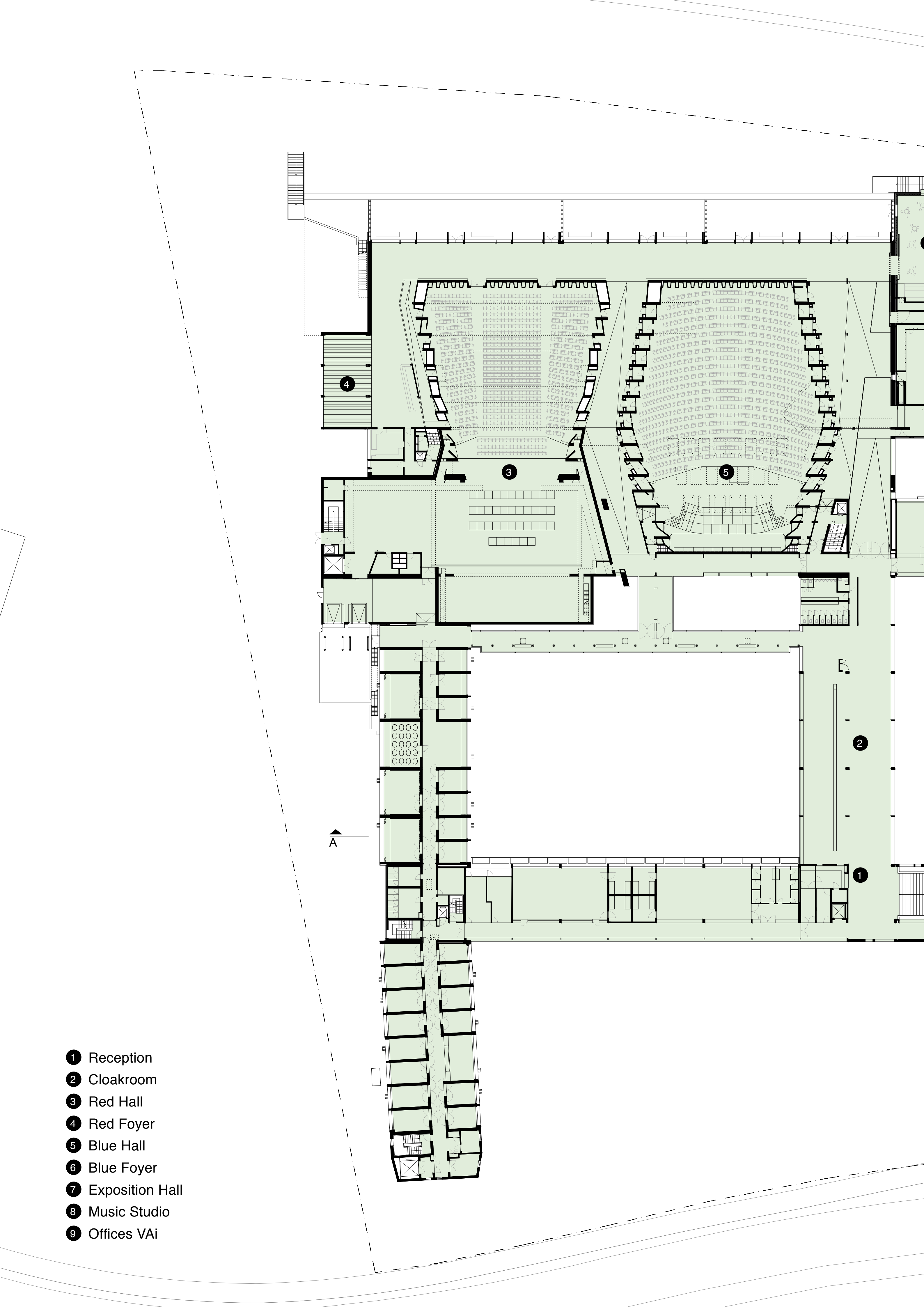
Current state
Level -1



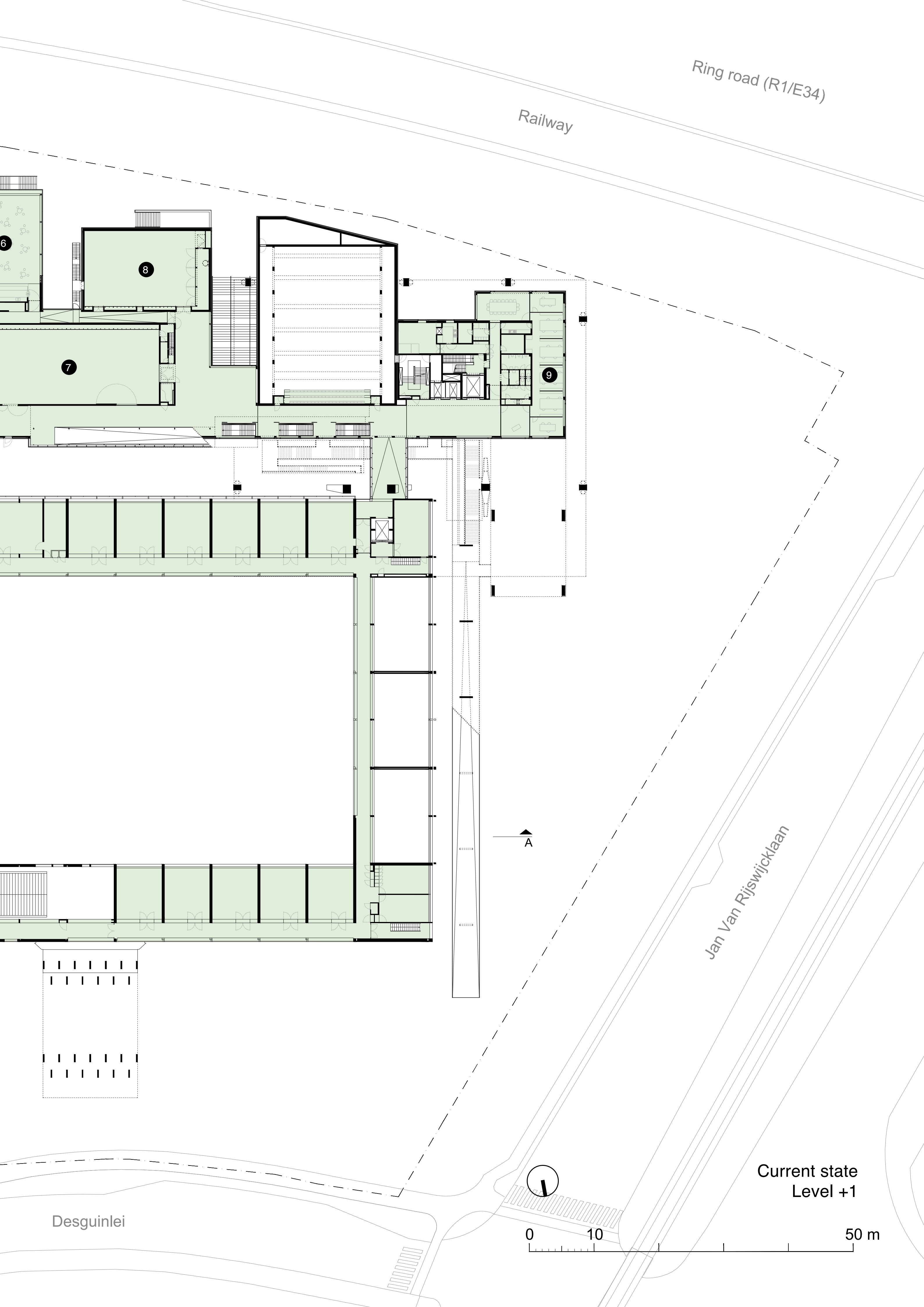
1. Entrance Hall
2. Offices Conservatoire
3. Refectory Conservatoire
4. Artists' Foyer
5. Small Hall
6. Offices Radio 2
7. Offices deSingel
8. Dance Studio

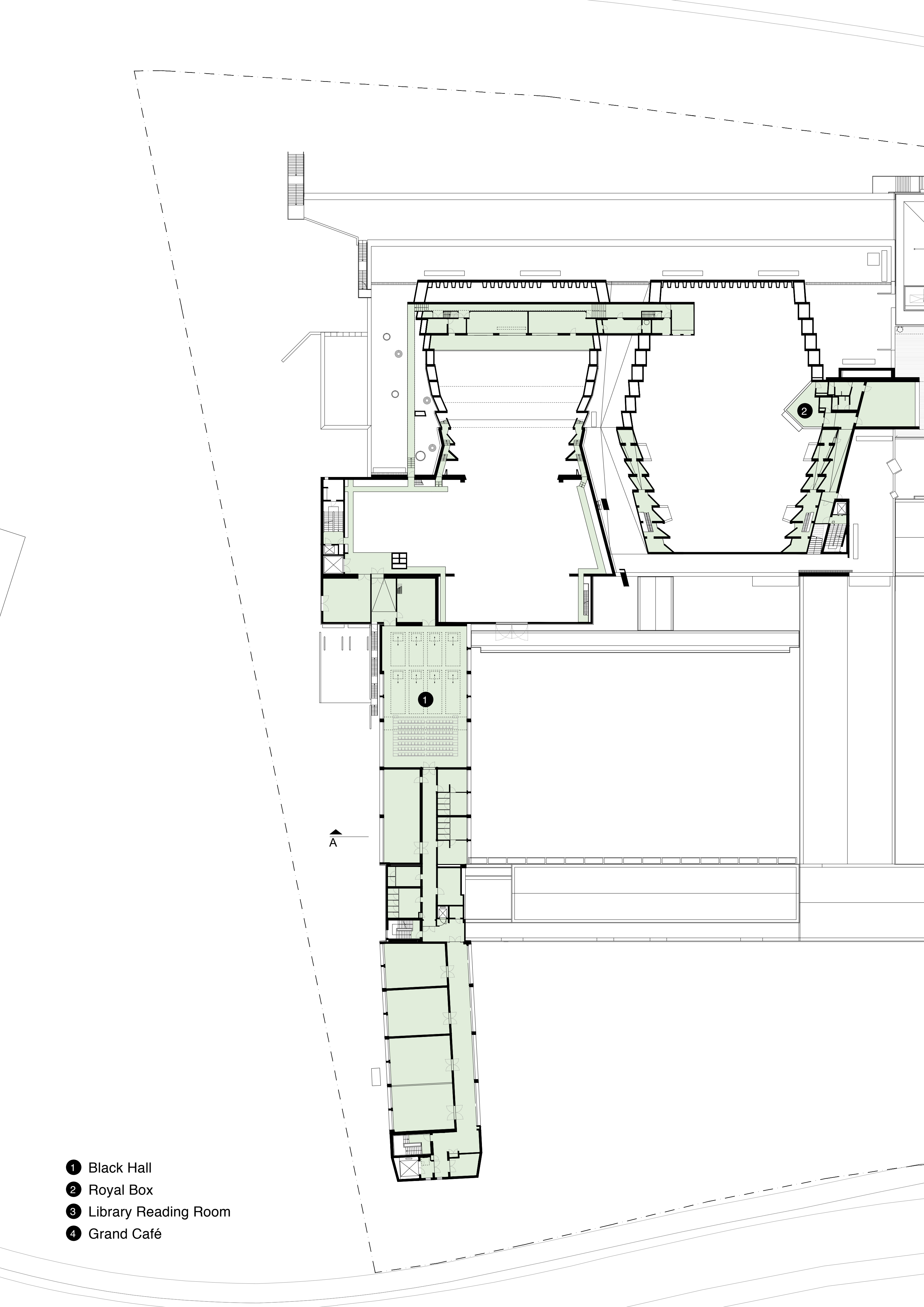


Current state
Level 0

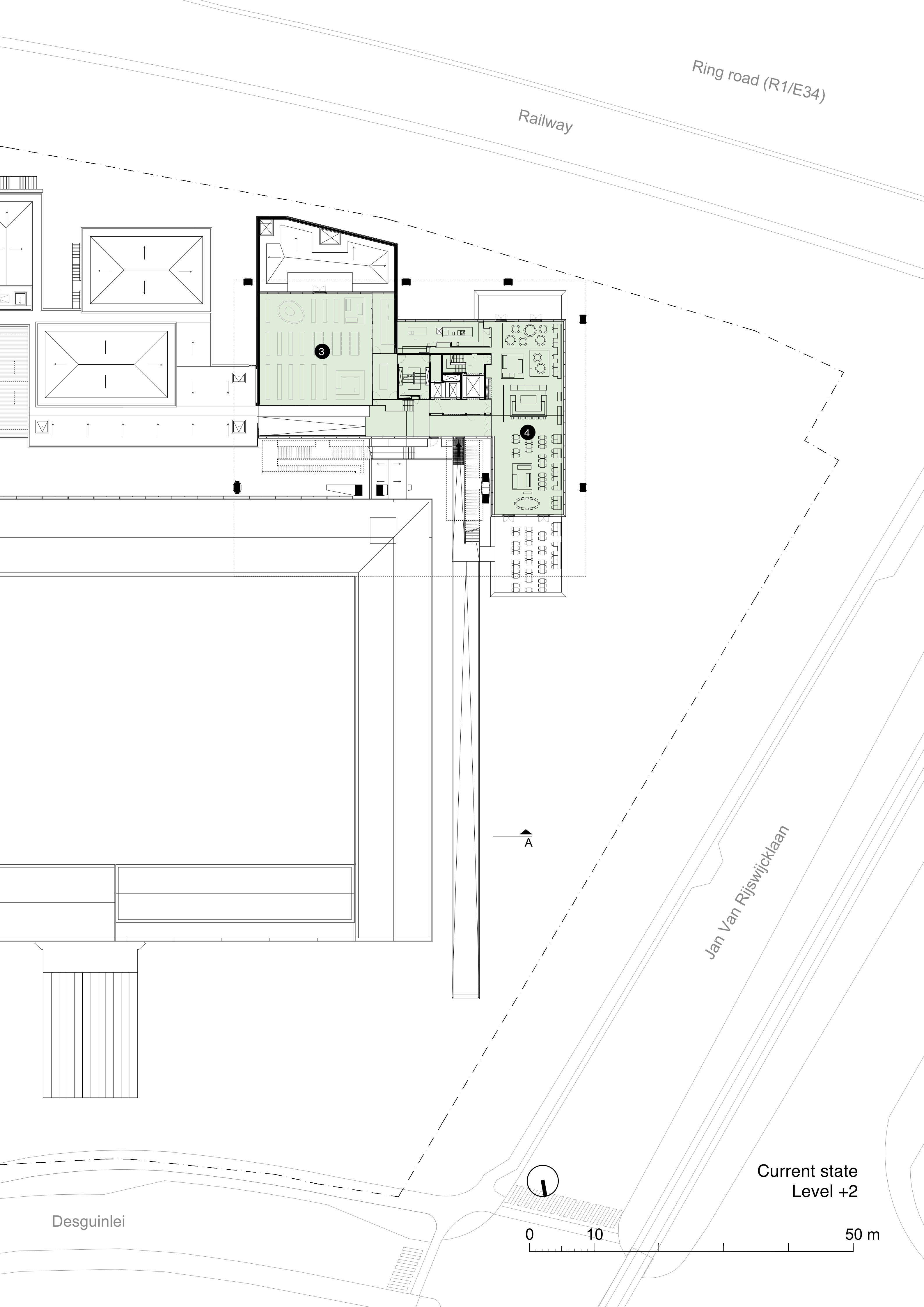


1 Reception
2 Cloakroom
3 Red Hall
4 Red Foyer
5 Blue Hall
6 Blue Foyer
7 Exposition Hall
8 Music Studio
9 Offices VAi

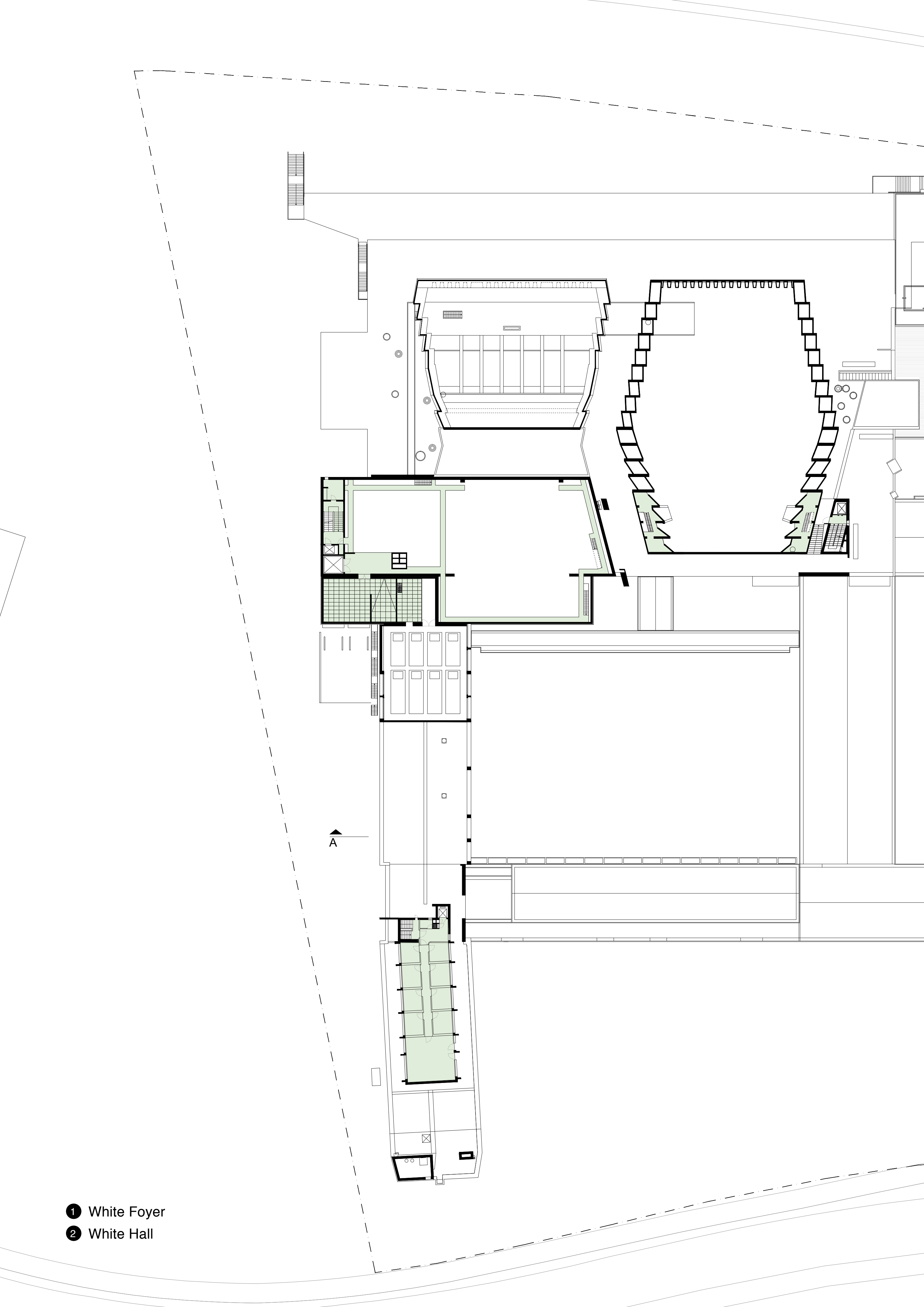

Ring road (R1/E34)
Railway
6
8
7
9
A
Jan Van Rijswijcklaan
Desguinlei
Current state
Level +1
0
10
50 m



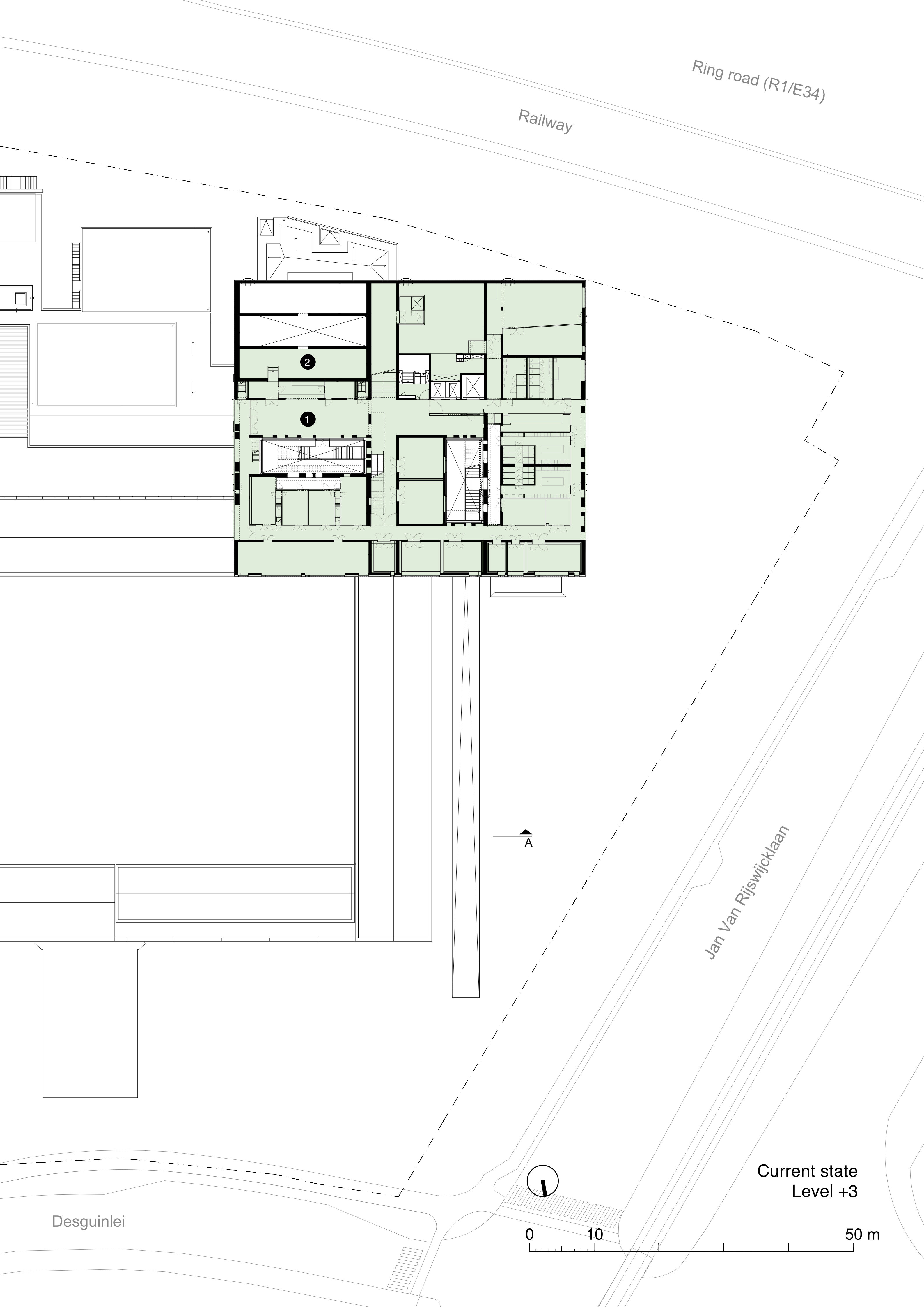
1. Black Hall
2. Royal Box
3. Library Reading Room
4. Grand Café



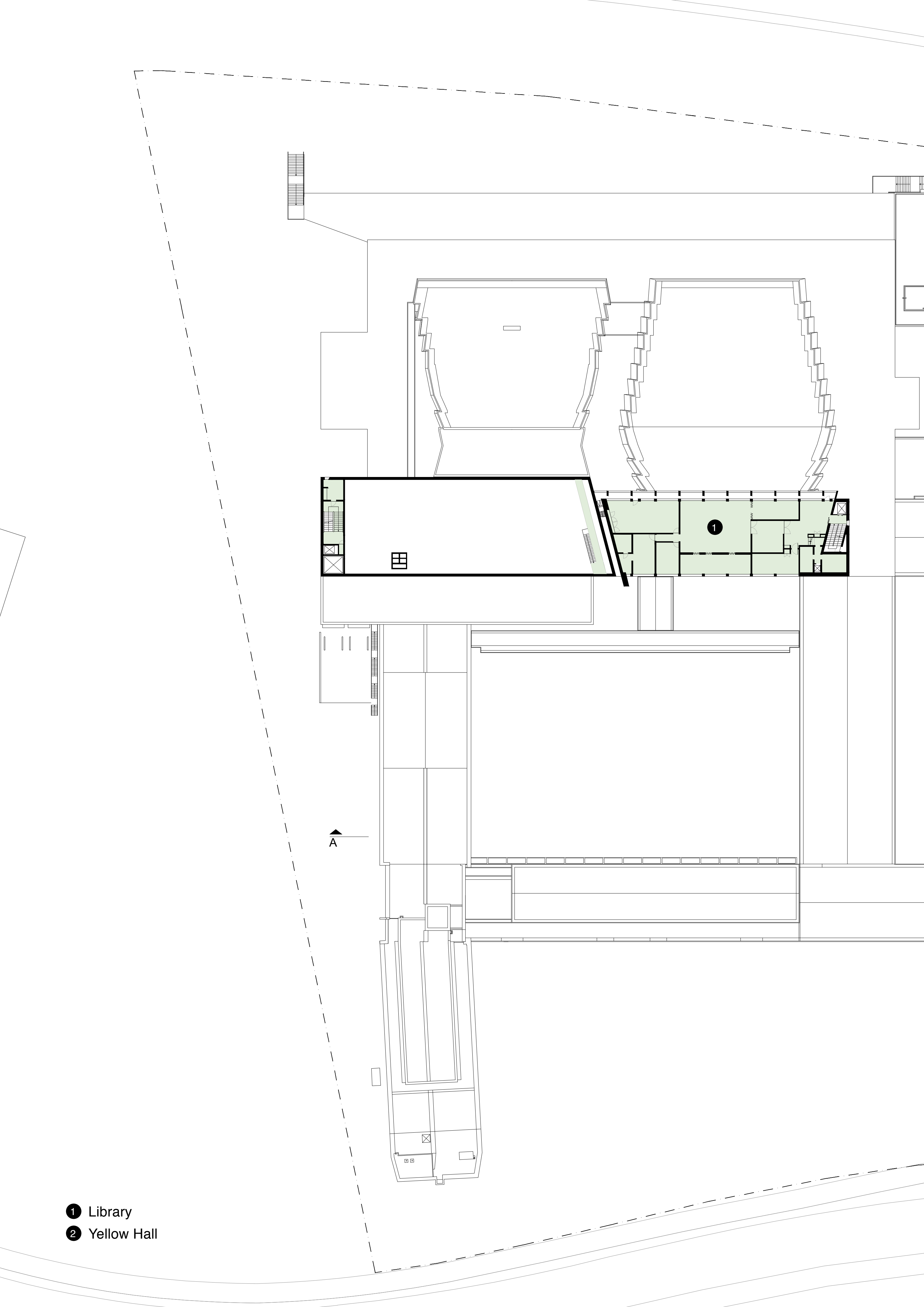
Current state
Level +2

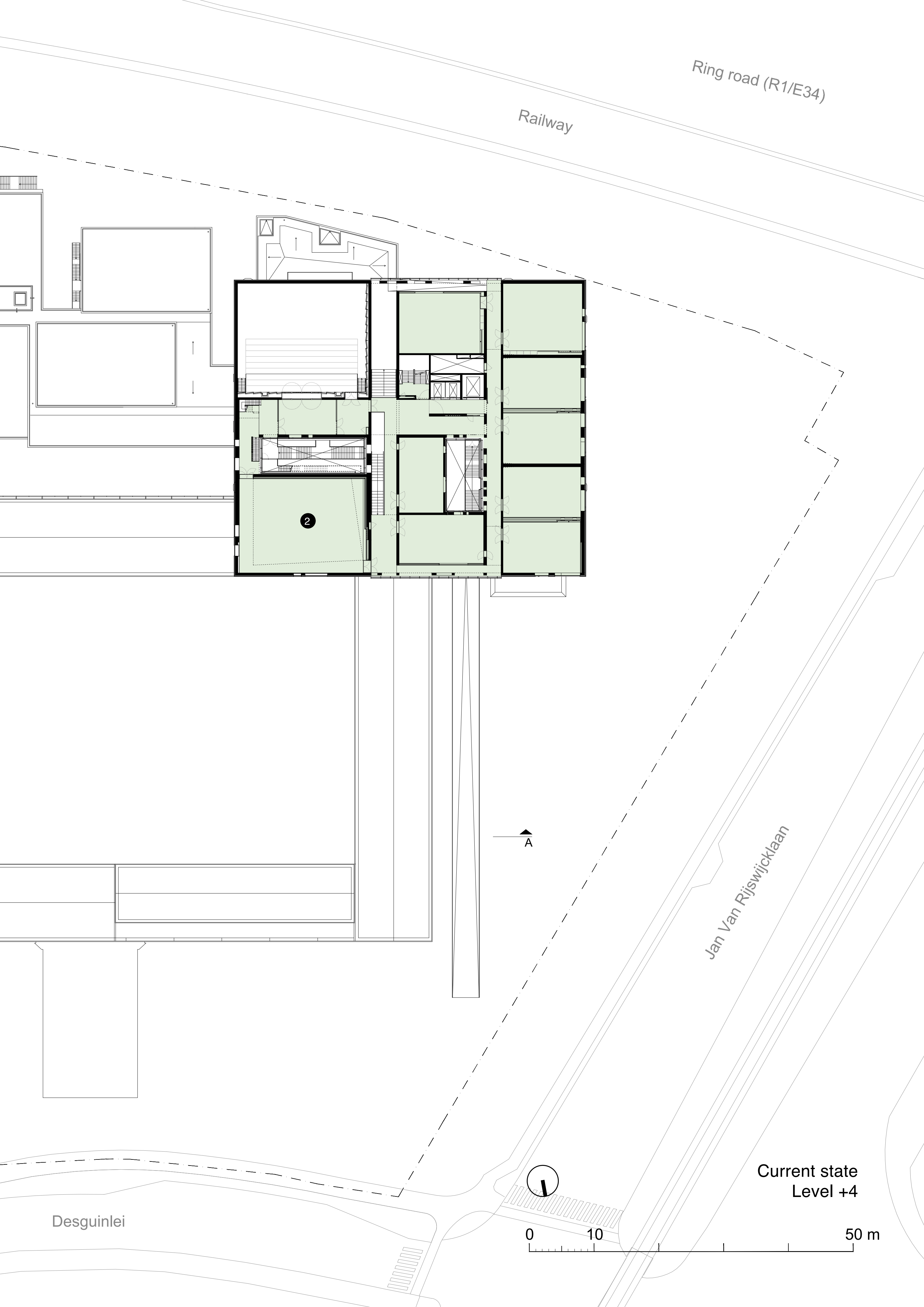


1 White Foyer
2 White Hall

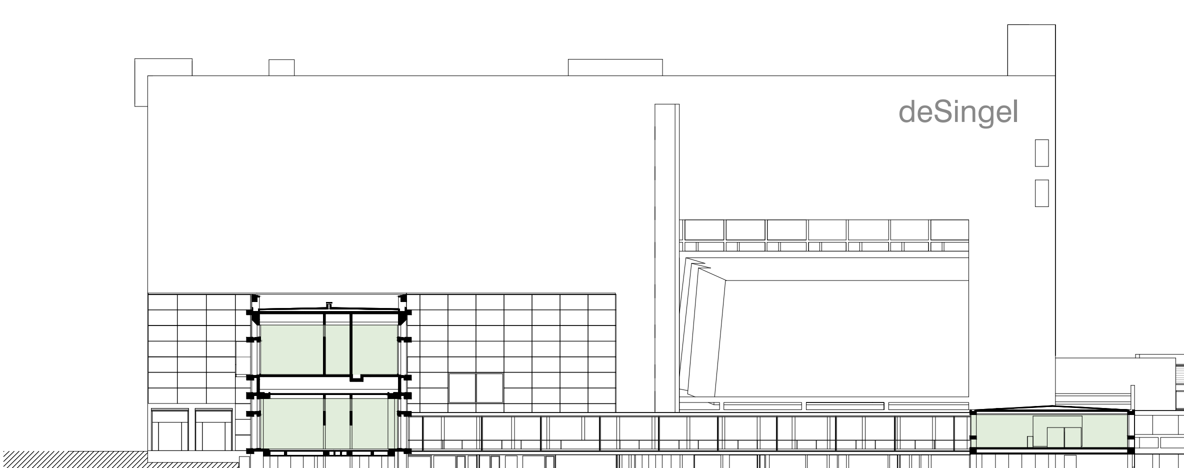


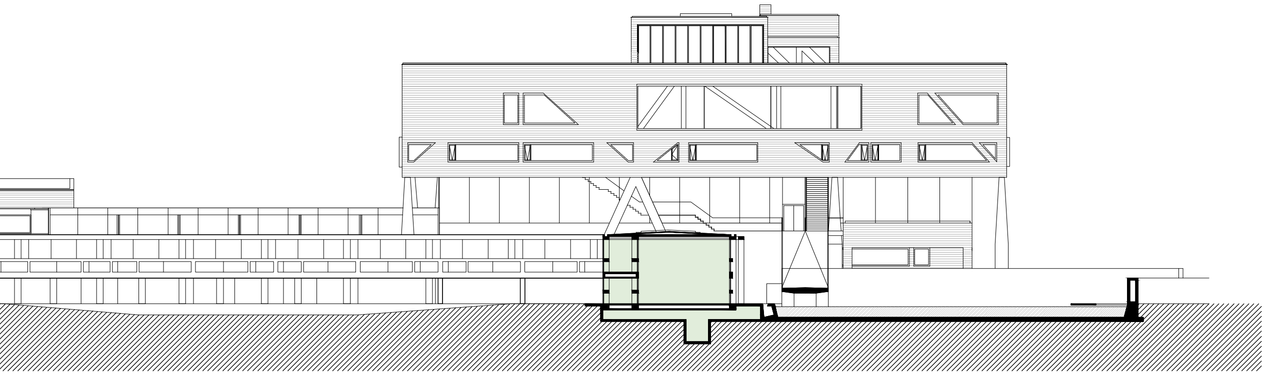
Current state
Level +3


1
A
1 Library
2 Yellow Hall



Current state
Level +4


deSingel



Current state
Section AA

The buildings arose from its function. The composition of the building consists out of a light and transparent low-rise building (classes) and a contrasting massive element (halls). The tower of this massive element confirms this duality.
The **low-rise building (phase 1)** contains the school: classrooms and administrative rooms. Those rooms are organised around two big courtyards, one with a convex and one with a concave profile. All classes are situated on one level due to acoustic reasons. This main level is +2m80 above street level. Only the administrative rooms (wing A) and the big auditoria (wing E) touch the ground. The low-rise building is constructed on pilotis to maintain the continuity of the landscape.

The **massive element (phase 2)** contains the concert hall, theatre hall, library and facilities for Radio 2. The main functional components concern different entities and are visible in the composition of this part of the building.
The total building takes a distance from the ground level and offers wide perspectives on the surroundings. The analogy with Le Corbusier's villa "Les heures claires" in Poissy can be made.[2] The building is an instrument to enjoy nature without the disadvantages as wet grass or rotting vegetation.

2 BEKAERT Geert, DE MEYER Ronny, *Léon Stynen, een architect. Antwerpen 1899-1990*, Antwerpen: deSingel, 1990, p. 30.

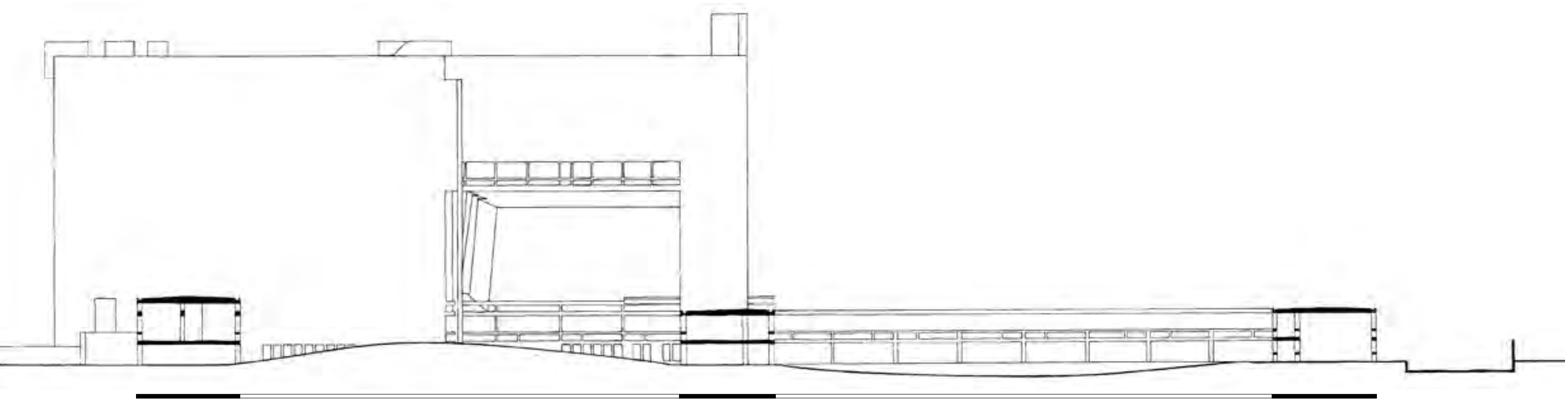


Figure I.3.1: Section patio's (adapted from BEKAERT & DE MEYER, 1990, p. 49).

Figure I.3.2: Courtyard East (MH, 23/05/2014).

Figure I.3.3: Courtyard West (MH, 23/05/2014).

The main materials of the overall construction are concrete and glass. The building was conceptualised in concrete. The concrete elements are not cladded but are left visible. The possibilities of concrete are fully explored and used as architectural expression. The egg-shaped walls of the entrance hall and the walls of the concert and theatre hall are an example of this.

In the subsequent description of the building, phase 1 and phase 2 are discussed separately as they differ in function and spatial layout. Still the building is a unity and therefore the link between phase 1 and phase 2 is made during the analysis.

2.1.1. Phase 1: low rise building containing school

The hallways are a continuous element through the low-rise building. The **width of the hallways** is in compliance with its use. A Conservatoire has a different nature than a normal school building; it is an artistic process in which the students are guided by the teachers and inspired by the other students. During the personal teaching of a student, other students can observe, wait or walk around. The hallways are more than functional connections; they are a meeting place, a waiting room, a rehearsal room, a place for stress release or a place of inspiration. Besides students have to carry big instruments. Hence the hallways have a width of 2m30. This width was a substantial quality for Stynen. During the design process he had to convince the authorities to differ from the regulations for school buildings.[3] Furthermore are the corridors a "**promenade architecturale**". The corridors have varying relations to the surroundings; they pass along the courtyards but also switch to the street side at the north side of the building (Desguinlei). By this the classes are never opposed (no vis-à-vis) and always have perspective on a peaceful setting.

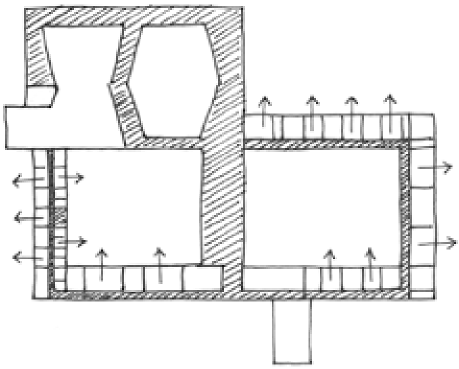


Figure I.3.4: Scheme hallway-classes (MH).

This search for **light and sight** is also elaborated in the section of the wings. Every wing has a different section emerging from the required spatial relation and orientation. In order to let north light enter from a higher window the roof is locally higher in the north wings (wings A and F), The west wing (wing E) contains auditoria, located at ground level. The hallway on level +2,80 (main level) continues along the auditoria and provides a view in the auditoria but also through the room to the surroundings.

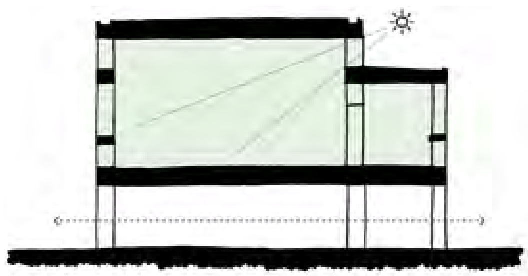


Figure I.3.5: Scheme section class (MH).

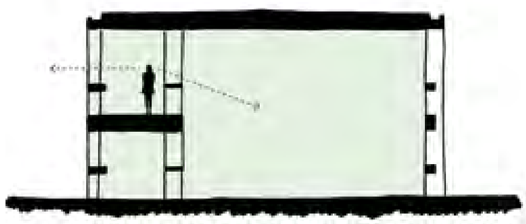


Figure I.3.6: Scheme section auditorium (MH).

3 Antwerpen, RdGA: Antwerpen – KVMC – P3¹/ BG5/11611 – 1e schijf: overeenkomst (STYNEN Léon, *LS/VH/838. Nieuw muziekconservatorium te Antwerpen* , 17/07/1959).

In the façades the continuous parapet and Corbusian "**fenêtre en longeur**" accentuates the horizontal character of the building. The horizontal lines continue in every façade and the vertical elements follows the same rhythm. The total complex (phase 1 and phase 2) has a strong coherence due to the continuity of an exemplary module of the façade; the corridors around the halls have the same façade and proportions. This results in an overall coherence, both inside and outside the building.

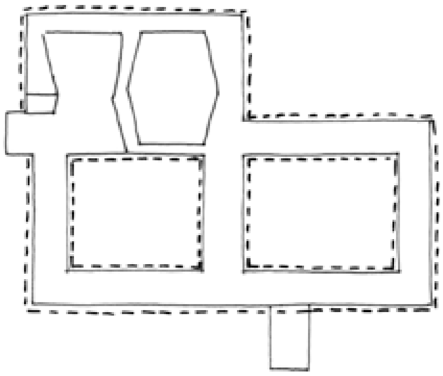


Figure I.3.7: Coherence façade (MH).

The closed wall with egg-shaped perforations[4] breaks this continuity to accentuate the **entrance** and stresses its difference in function. The canopy at the north façade enforces this signal. The gentle stair inside the entrance hall makes a natural transition from street level to the main level where the classes and halls are located. The stair is sometimes experienced as too slow, too little inclination, but the stair was designed that way it could serve as an auditorium when the second phase was not realised yet. Every tread is deep enough to install a chair.

The dimensions and proportions of the low-rise building are entirely based on the **golden ratio and Modulor[5]**. Stynen used this tool in addition

4 The egg-shaped perforations are a direct reference to the Palace of Assembly in Chandigarh (1953-1963) by Le Corbusier.
("Palace of Assembly", in *Great Buildings*: http://www.greatbuildings.com/buildings/Palace_of_Assembly.html (accessed 21/07/2015).)
5 The Modulor is a scale of proportions devised by Le Corbusier in1948. It derives from human proportions and proportions according to the golden ratio.

Figure I.3.8: Courtyard west (MH, 23/05/2014).

to the functional design.[6] The plan (of the total complex, phase 1 and phase 2) is based on a **grid** of 7m40 x 7m40 (cfr. figure I.3.9). These squares are subdivided in smaller squares of 1m20 x 1m20 (cfr. figure I.3.10). The main square consists out of 6x6 small squares and a strip of 20cm for the columns. The width of a classroom corresponds with the width of one module. Bigger classrooms are a multiple of the module.
The width of the wings, 12m, is related to the width of the module, 7m40, by the golden ration: 7m40 x 1,618 ≈ 12m. The width of the wing is divided in two zones: the classes and the hallway. Between both zones a strip of 60cm is reserved for columns and cabinets. Also at both façades a strip of 60cm is reserved for columns and/or windowsill (cfr. figure I.3.10).
The vertical measurements, both inside and outside, are based on the Moldulor. The measurements between brackets refer to the measurements of the Modulor. The height of the parapets is 1m10 (≈ 1m13). The height between the parapet and the ceiling is 1m85 (≈ 1m83). The total height of the hallway is 2m95 (1m83*1,618 ≈ 2m96). The height underneath the wings is 2m31 (≈ 2m26).

6 D'HAEN Johan, *Koninklijk-Vlaams-Muziekconservatorium & De Singel*, unpublished thesis Sint-Lucas Gent (promotors DUBOIS Marc), açademic year 1986-1987, p. 33.

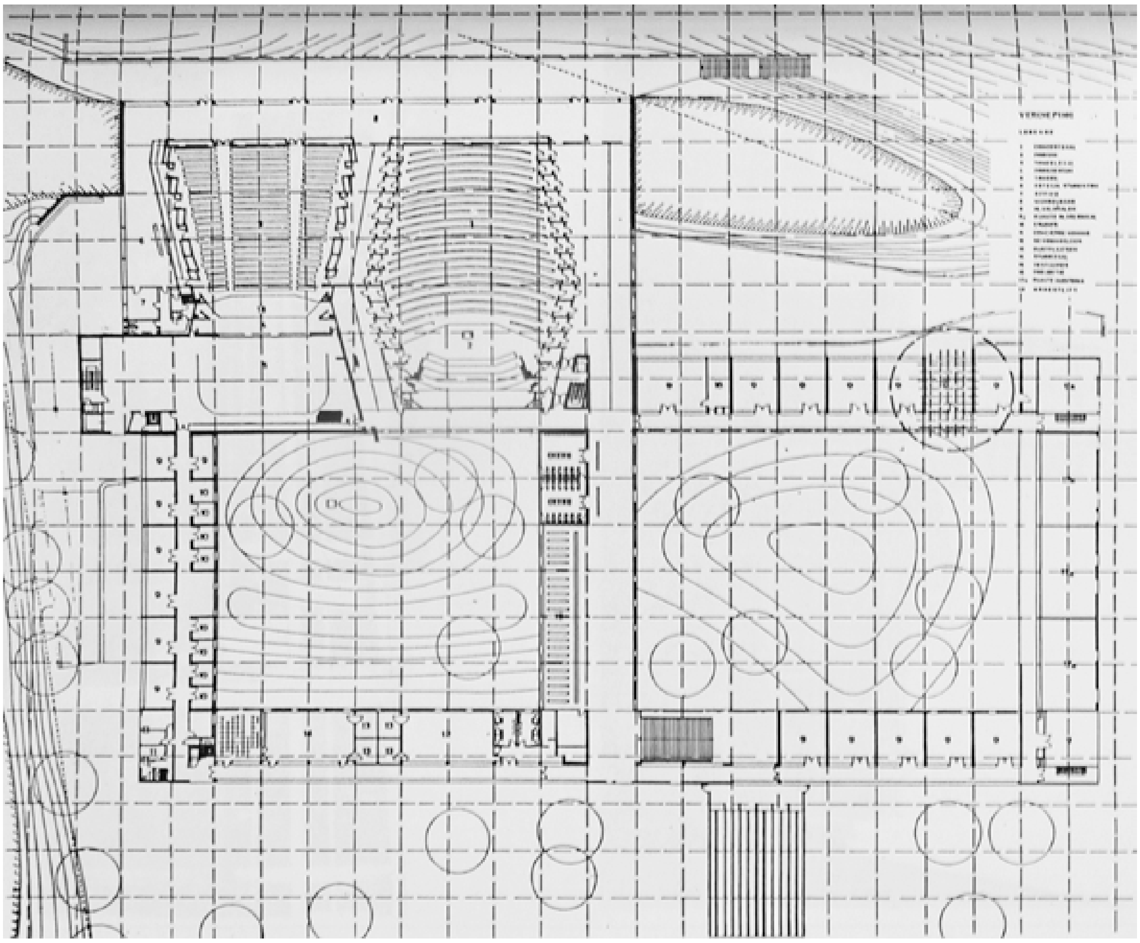


Figure I.3.9: Grid 7,40 x 7,40 (D'HAEN 1986-1987, p.35).

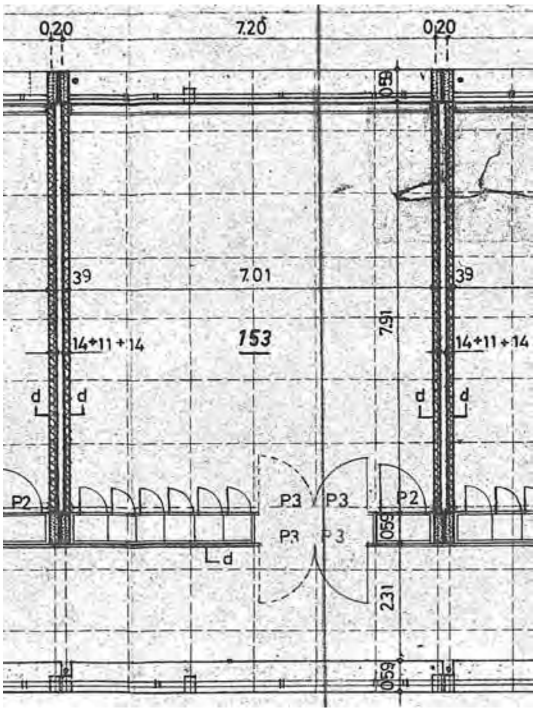


Figure I.3.10: Modules classroom (Antwerp: deSingel).


Figure I.3.11: Blue Hall with 'royal balcony' (MH 23/05/2014).

2.1.2. Phase 2: volume containing halls

Phase 2 consists out of three main elements: the 'horizontal' socle, the two halls and the 'vertical' tower. The **socle** contains the facilities for Radio 2 and the backstage facilities for the artists. The volume serves a solid base for the public functions. The distinct volumes on top of the socle are the concert hall (Blue Hall), and the theatre hall (Red Hall). Stynen designed **two independent halls** because he stated that the requirements of a concert hall are totally different than those of a theatre hall. This opinion was initially not accepted by the authorities. The department of Fine Arts of the Ministry proposed one multifunctional hall for both concerts and theatre performances. Stynen had to convince the authorities and succeeded after a long discussion.[7]

7 BONTRIDDER Albert, *Gevecht met de rede, Léon Stynen: Leven en werk*, Antwerpen: Comité Léon Stynen, 1979, p. 181.

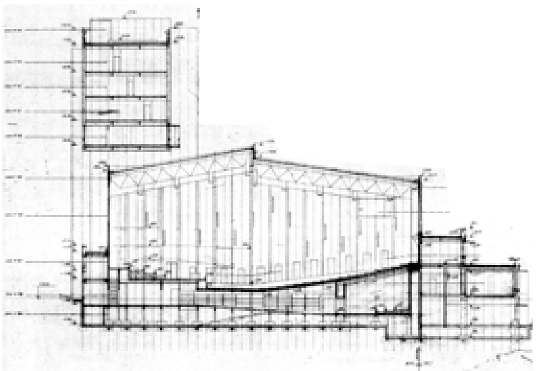


Figure I.3.12: Section Blue Hall and Library (Antwerp: deSingel).

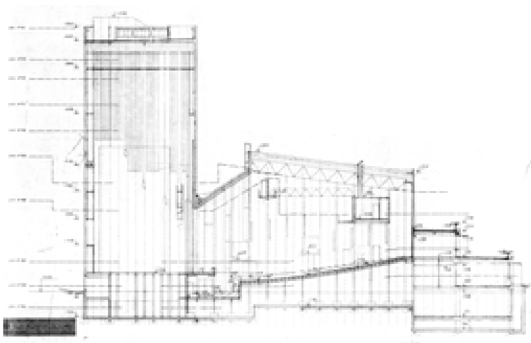


Figure I.3.13: Section Red Hall and Theatre Tower (Antwerp: deSingel).

Figure I.3.14: Red Hall (© Jan Kempenaers, Antwerp: deSingel).

Figure I.3.15: Independent volumes (adapted from © Jan Kempenaers , Antwerp: deSingel).

The concert hall or Blue Hall has a hexagonal shape and is accessible from both longitudinal sides. The 900 seats are organised in continuous rows. The entrance to the hall happens by double doors, to improve acoustic insulation, but also to give latecomers the chance to entre quietly. A balcony attached to the west wall serves as the 'royal balcony' and is connected to a private salon on the first level.
The theatre hall or Red Hall is located next to the concert hall. The hall has twelve different configurations in order to make every type of performance possible. The capacity ranges from 235 to 800.
The shape of the halls derives from their function and is a direct result of the parameters: acoustics and visibility of the stage. This form is both visible inside as outside. Due to the convex shape of the concert hall and concave shape of the theatre hall a dialogue between both halls exists. The two halls form a coherent whole with interesting intersecting spaces. Wide corridors following the inclination of the floor of the halls are present around the halls. At the south side, this corridor gives access to the roof terraces. A public '**promenade architecturale'** exists on the roofs of the corridors around the halls.
The third element, the 'vertical' tower, is related to the two halls. The part of the tower near the theatre hall serves as a flytower and can be seen as a functional element of this hall. The part of the tower near the concert hall contains the library and the archive. This library is conceived as a bridge above the concert hall and is clearly independent from it. This articulation is most visible in the north façade of the tower. The window openings of the public part of the library are in contrast with the closed façades of the logistic parts.

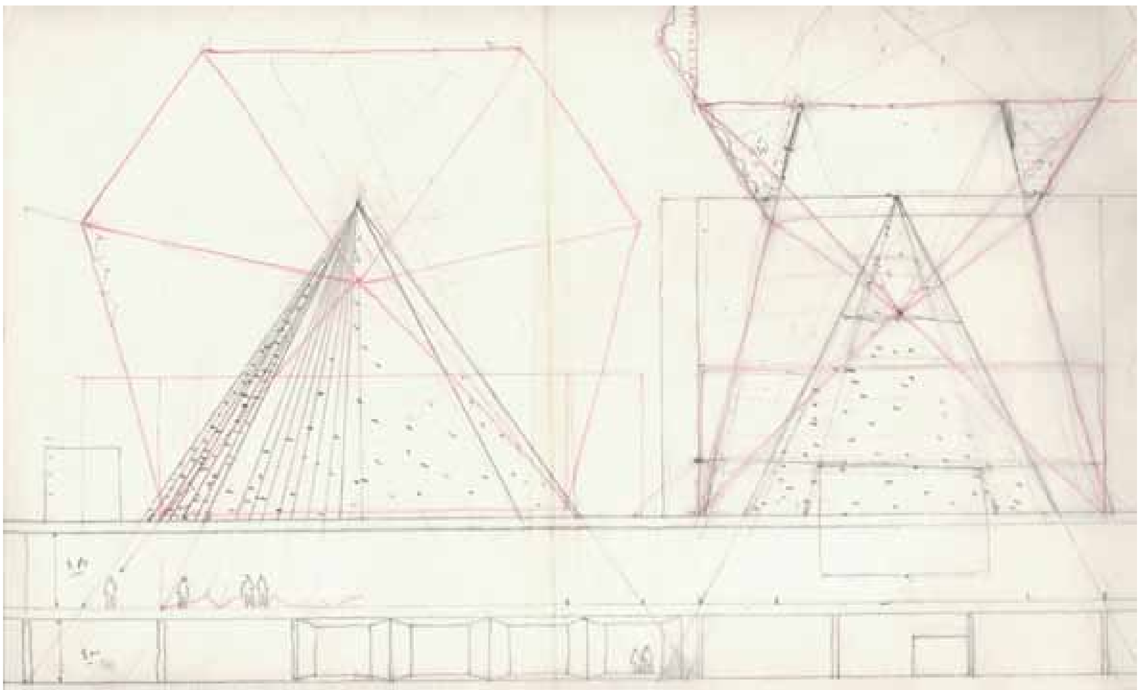


Figure I.3.16: Design sketch halls (Antwerp: deSingel).

2.1.3. *Integration of arts*

In addition to the naked structure and the absence of ornaments, Stynen incorporates, within the spirit of Le Corbusier, visual arts in the building. A drawing of 1961 shows the position of eight works of art; three sculptures and five mural paintings.[8] A sketch of the sculptures in the courtyards shows their integration in the building and the landscape. Finally two mural paintings are integrated in the building: "Wanklank" by René Guiette and "Samenklank" by Pierre Vlerick.[9] The painting by Guiette used to be located at the end of hallway E (level +1), but is relocated due to creating of the connection to the new building. The other painting by Vlerick is still present at its original location: end of hallway E (level 0).

8 "De Maat" by Jespers, "Het Rytme" by Kricke, "Harmonie" by Pan, "Ruimte" by Ubac, "Schepping" by Dudant, "Wanklank" by Guiette, "De Tijd" by Ubac, "Samenklank" by Vlerick.
(Antwerpen, APA: Archive Léon Stynen.)

9 D'HAEN Johan, *Koninklijk-Vlaams-Muziekconservatorium & De Singel*, unpublished thesis Sint-Lucas Gent (promotors DUBOIS Marc), açademic year 1986-1987, p. 22.

2.1.4. *Landscape design and surroundings*

The new Conservatoire has been built on an artificial levelled out ground and the hill (Wezenberg) was slightly relocated.[10] Stynen altered and controlled the existing landscape to create a dialogue between the building and the landscape. The low-rise building, light and transparent, floats above the landscape. The volume containing the halls is more massive and is party absorbed in the landscape. The slanting landscape flows underneath and around the building and the exterior paths follow this relief. The functional roads around the complex create incisions in the landscape but don't interrupt the continuity.

10 BUYSSENS Marie-Thérèse, *75 Jaar Koninklijk Vlaams Muziekconservatorium 1898-1973*, Antwerpen: KVMC, 1973, p. 12.

Figure I.3.17: Painting Guiette (MH, 06/06/2015).

Figure I.3.17: Painting Vlerick (MH, 06/03/2015).

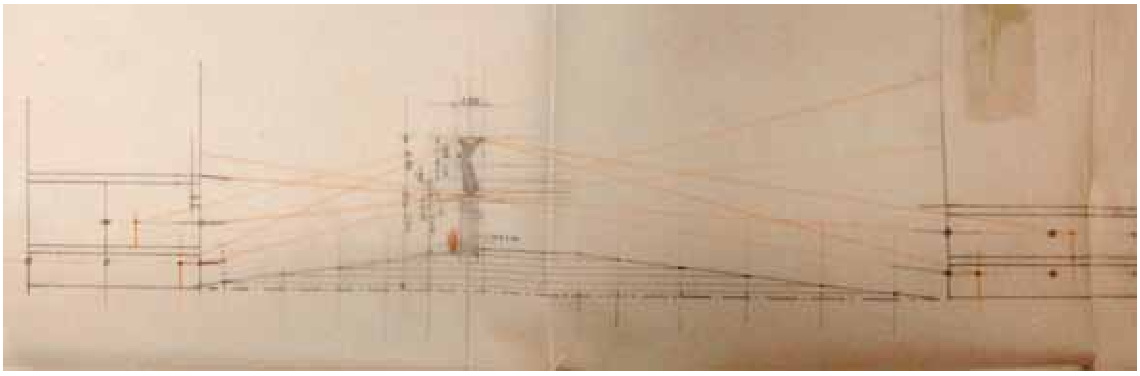


Figure I.3.18: Sketch sculpture in east courtyard (Antwerp: APA).


Joëlle Tuerlinckx - Terrasse sur Terrasse (since 2006)


w


Dominique Gonzalez-Foerster - Tropicalisation (since 2004)


D


Walter Swennen - The Face (2008)


Richard Venlet - Untitled (2003-20

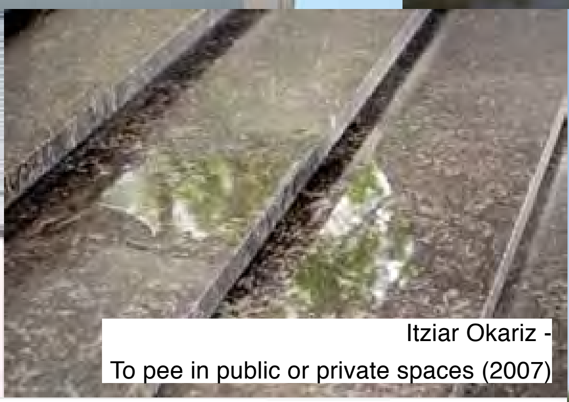
Rémy Zaugg - Maar ik / de
ereld / ik zie / jou (since 2005)

Pierre Bismuth - From hot to something else (since 2006)

Jan Fabre -
e man die de wolken meet (since 2001)


Dominique Gonzalez-Foerster - Ballard Garden (since 2014)


09


Itziar Okariz -
To pee in public or private spaces (2007)


Christophe Terlinden -
Proposal for a New European Flag (since 2009)

Moritz Küng, then curator at deSingel, initiated in 2004 '**Curating the Campus**'. The project wants to give visual art a permanent place on the campus alongside architecture, dance, music and theatre. Each year an artist is invited to conceive a new work or a site-specific work is retained after the end of an exhibition. The project gradually expanded into a collection of permanent works created by eleven artists from Belgium, France, Spain, Switzerland, the United Kingdom and the United States.
(images: www.flickr.com)

Matt Mullican - The highway is the audience

2.2. Paul De Meyer: pragmatic bridge (phase 3)

Phase 3 concerns the extension of the Conservatoire in the 1980's and is an alteration and extension of the east wing (wing B). [11] An extra level is constructed on top of the existing wing and a three story high extension is added in line with wing B. This extension has a little deviation due to the logistic lorry entrance next to the building.
Because the foundations of the existing building were not sufficient to carry extra loads, the extra level is a bridge construction over the existing wing.[12] A structural façade is put in front of the existing façade. Heavy beams bear from façade to façade to support the second floor. This structural zone leaves a blind line in the façade. The circulation cores are closed elements. This approach results is a massive impression and a wider wing (14m) than the original (12m). The original proportions are vanished.
The façade is a recall of the façades of phase 1, though the horizontal lines have no other function than being a visual division; they don't correspond with a windowsill at the inside and are thus nothing more than a formal ornament. The extension differs from the original concept, as the wing is higher, wider, more massive and partly constructed outside the contours of the original building.
It should be noted that the extension was realised with less financial recourses than phase 1 and phase 2 and was very urgent.[13]

11 As Léon Stynen stopped his activities as an architect in 1977, the design of the third phase can totally be ascribed to Paul De Meyer. Cfr. Chapter I.1: Building History.
12 VERMEIR Paul, "Nieuw conservatoriumgebouw aan de Desguinlei – eerste tot derde schijf door architect Leon Stynen met architect Paul De Meyer als medewerker", in: PERSOONS Guido (ed.), *Koninklijk Vlaams Conservatorium Antwerpen. 1898 – school conservatorium hogeschool – 1998. Traditie en vernieuwing*, Antwerpen: Hogeschool Antwerpen, Departement Dramatische Kunst, Muziek en Dans, 1998, p. 339, 344.

2.3. Stéphane Beel

The master plan made by Stéphane Beel (1995-1996) starts from the existing situation in 1996 and the needs of the users defined a global plan

13 QUADVLIEG Roger, 27th of March 2015, interview concerning the Conservatoire.

Figure I.3.19: View on phase 3 from parking (MH, 23/05/2014).

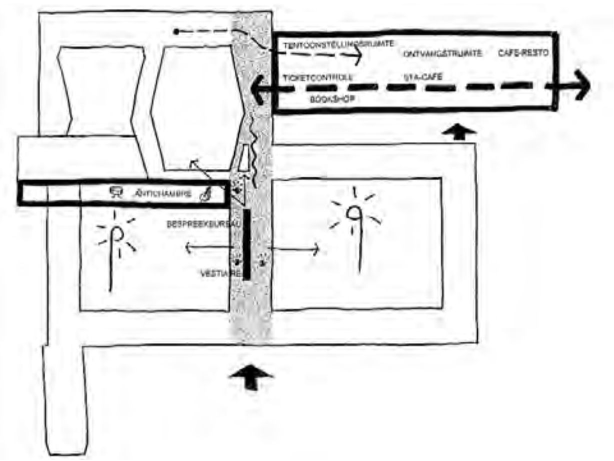


Figure I.3.20: Masterplan, 1996 (Ghent: SBA).

of infrastructure. [14] The plan has basically a functional approach.
The existing main hall (wing C) is defined as central axis and is used as anchor point for the new interventions. On the one hand, the plan solves logistic problems in the existing building, on the other hand it investigates the spatial possibility of the addition of the required new functions.
The master plan is realised in two phases: phase 4.1 (1999-2000) and phase 4.2 (2007-2010). As they have a different location on the site and have a different function, they are discussed separately in the following paragraphs.

14 Cfr. Chapter I.1: Building History.

2.3.1. Phase 4.1: modest effectiveness

Phase 4.1 concerns an intervention on the existing complex, exact at the intersection between phase 1, phase 2 and phase 3. A **passerelle** defines the zone of intervention.
The new corridor at level +2m80 finishes the route around the east courtyard. This connection initially existed in the plan of Stynen and De Meyer but got suppressed during the elaboration of phase 2 and the integration of Radio 2.
The hallway is used the way Stynen conceptualised the hallways of the Conservatoire: a waiting room, a rehearsal room and as a part of the 'promenade architecturale'.
The hallway is a direct reference to the hallways of the original building: it has the same proportions and the façade elements are reprocessed; the parapets are positioned at the inside and are made of steel.
Behind the passerelle a **volume** and a void are present. The volume is attached to the north façade of the tower. It enlarges the stage of the theatre hall and creates a loading quay for both the concert and theatre hall. The ground level of this volume contains new artists' rooms. The volume has the width of one module (7m40, cfr. supra) and the height corresponds to the height of phase 3. The length of the volume is less than

Figure I.3.21: Model design Stynen and De Meyer, 1959 (Antwerp: APA).

Figure I.3.22: View on phase 4.1 from east courtyard (MH, 23/05/2014).

the length of the flytower by which the volume is secondary to the original tower.
The void concerns a **terrace** of the artists' foyer, a lowered zone of the courtyard. This intervention creates a visual and physical link between the artists' foyer and the courtyard. The intervention was limited to the strictly required surface and the materials were limited to glass. The extension touches the Conservatoire but is distinguished by its materials.

2.3.2. Phase 4.2: contrast [15]

The position of the new building is the result of a search for a sufficient surface, good functional connections with the existing program and the possibility to keep the right distance to the original building (cfr. figure I.3.33). Beel defined the 'fourth quadrant' as a supplement to the three existing quadrants.
The new building is located between the ring road and the south wing of the Conservatoire (wing D) and contains three main components: a closed socle with supporting function of deSingel, a 'horizontal tower' with the facilities of the Conservatoire and a public layer in between.
The **closed socle** is a fragmented volume. The different boxes, seen from the ring road, refer to the volumes of the concert hall. At the side of the original building, the distance between the socle and the south wing of the Conservatoire (wing D) amounts 8m and mainly meets up with the fire regulations.
The '**horizontal tower**' floats above the existing and new low-rise building and profiles itself as a landmark along the ring road.[16] The volume of this tower is aligned with contours of the

15 Unless mentioned, the source of this paragraph is "deSingel", in *Stéphane Beel Architecten*: http://www.stephanebeel.com/projects/cultural-buildings/desingel-antwerpen-fase-4-1-en-fase-4-2/#1 (accessed 27/12/2013).

16 Cfr. Chaper I.2: A Changing Urban Context.

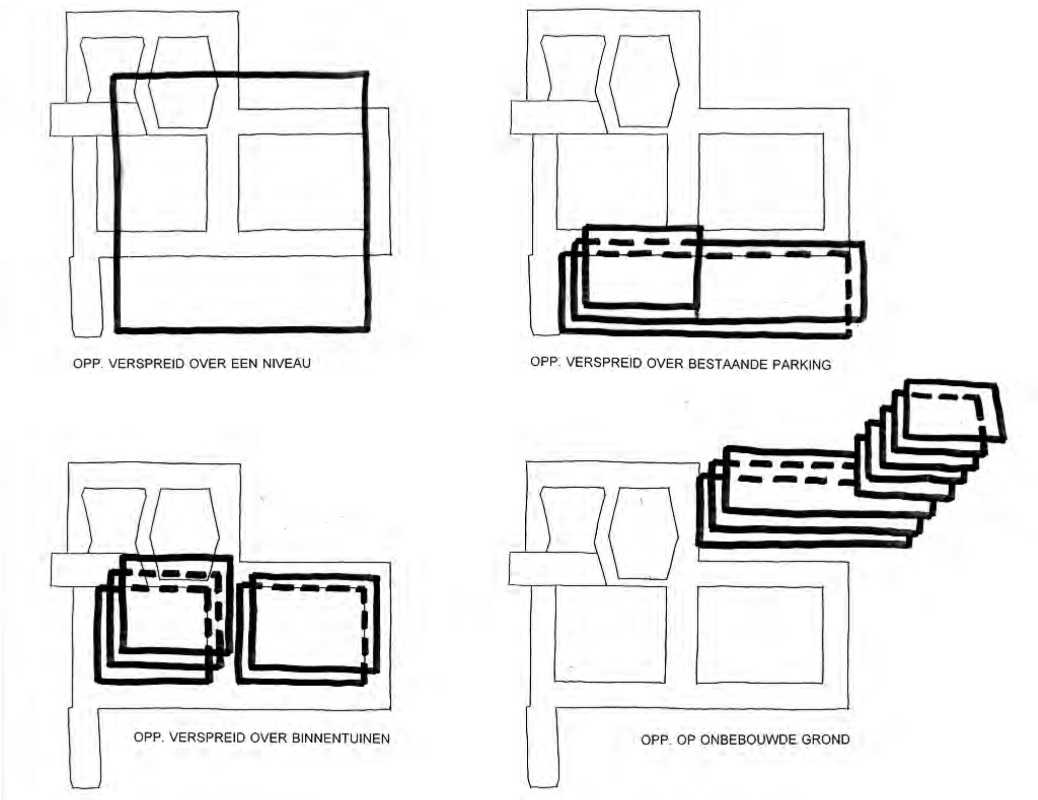


Figure I.3.22: Investigation position new building (Ghent: SBA).

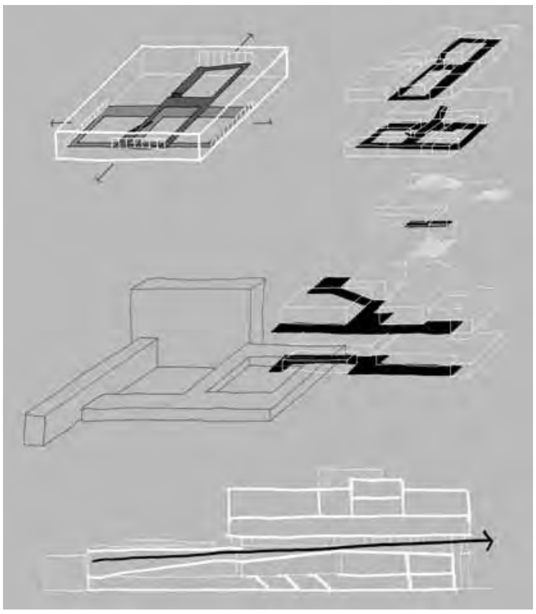


Figure I.3.23: Scheme circulation new building (Ghent: SBA).

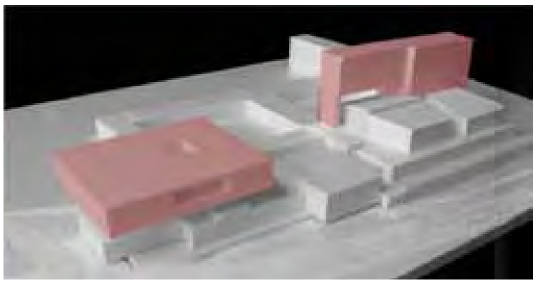


Figure I.3.24: Horizontal and vertical tower (desingel.be, 2015).

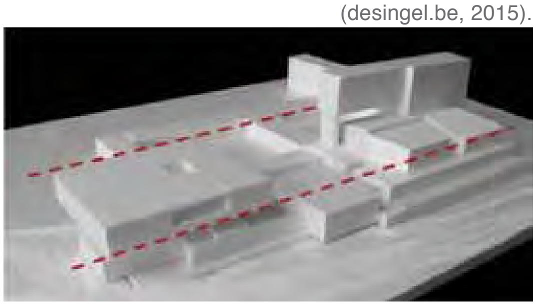


Figure I.3.24: Aligned volumes (desingel.be, 2015).

unity ‘concert hall-theatre hall-tower’ (cfr. figure I.3.24). Because it houses the auditoria and classrooms of the Conservatoire, it has a totally independent structure due to acoustic reasons. Tall freestanding columns support the volume. Inside the truss structure with straight and inclined elements manifests itself.[17]
The transparent box in between, the **public layer,** is an interlocking area between the old and new building. Among other things this layer contains a reading room and a café-restaurant. On the main level (+2m80) the building has two connections to the original building: one near the corridor along the concert hall [18] and one on the corner of wing D and E. An interior rampart connects the main level of the existing building with the level of the café-restaurant. An exterior rampart makes a direct connection between this public level and the street level. The wide corridor and ramparts continue the ‘**promenade architectural’**.
The entire new structure is clad in horizontal strips of larch. The irregular window openings frame views on the city and its surroundings. This approach contrasts with the original building where the concrete structure is the façade and the openings provide wide perspectives. The use of interior materials follows the same logic: the interior materials are in colour and texture contrasting with the original materials.
This aspect of ‘contrast’ can be extrapolated for the whole building. The serenity and proportions of the original building are in contrast with the visual diversity and large-scale architectural elements. Geert Bekaert states in the monograph on Stéphane Beel: *“As it turns out, the extension is actually a completion. More than that, is a revelation of the existing building, whose isolation has been broken in full acknowledgement of its surroundings. Not only does the extension do justice to Stynen’s design, it also enhances it, without either subjecting to it or assimilating its morphology. It is entirely thanks to the striking and daring contrast, to the unequivocal singularity of the new section, that the extension draws attention to the richness of the old building.”*[19]

Beel founded a new entity. The building is both in contrast and in dialogue with the existing building. Seen from inside the original building and the courtyards, the floating horizontal tower is harmonious and calm. The image from the ring road is capricious and grotesque. It manifests itself, more than the building of Stynen and De Meyer, as a beacon along the road.

17 The structural engineer was the office Laurent Ney and Partners.
18 For this connection the original inclination of the corridor along the concert hall has been altered.
19 BEKAERT Geert, “Extension of deSingel International Arts Campus, Antwerp”, in: BEKAERT Geert, CLEPPE Birgit, DE KOONING Mil, VAN GERREWEY Christophe, *Stéphane Beel Architects. New Works & Words*, Tielt: Lannoo, 2011, p. 64.

Figure I.3.35: Exterior rampart (© Luca Beel, SBA).


Figure I.3.36: Interior rampart (© Luca Beel, SBA).

Figure I.3.37: ‘Horizontal Tower’ (© Johnny Umans, johnnyumans.wordpress.com).

Figure I.3.38: Beacon at the ring road (© Luca Beel, SBA).

Figure I.3.39: Arts Campus (© Jan Kempenaers, SBA).

Figure I.3.40: Interspace (© Luca Beel, SBA).

3. Analysis of the different users and circulation

3.1. Ownership and building management [20]

3.1.1. Ground

A plot was provided by the city of Antwerp and transferred to the state in 1958. However this plot was too small for the building programme. An agreement with the city was made to attach an additional piece of land, but the official transfer of this part of the ground lasted until 2003. The initial ground of 1958 is called part 1; the additional piece is called part 2.
Part 1 has a surface of 1ha 75a and was acquired by the state in 1958. In 1991 the ground of the Conservatoire is transferred to the Flemish Community. This ground is subsequently transferred to Artesis Plantijn University College. The ground of deSingel was transferred to the Flemish Community in 2000.
Part 2 has a surface 1ha53a and was transferred from the city of Antwerp to the Flemish Community in 2003. The renouncement of the part of the Conservatoire never took place.

Radio 2 had a **leasehold estate** contract with the Belgian state for 50 years for the usufructuary of the ground. The agreement started when the ground was provided. According to the contract, this was 11/09/1978.[21] This contract is transferred to the Flemish Community as a consequence of the ground transfer in 2003 (cfr. supra). Radio 2 pays a rent for the use of the ground.

20 Unless mentioned, the source of this paragraph is Antwerpen, Dienst Gebouwenonderhoud deSingel: VERMEIR Paul, *Eigendomssituatie deSingel-Conservatorium-Radio 2*, 04/12/2013.
21 Antwerpen, RdGA: Antwerpen – KVMC – 334/ 110703: grondeigendom.

The total plot has a shared owner: the Flemish Community and Artesis Plantijn University College. The buildings of the Conservatoire are both located on ground owned by the Flemish Community and Artesis Plantijn University College. The buildings of deSingel and Radio 2 are located on ground owned by the Flemish Community.

3.1.2. Buildings

Initially the buildings of the **Conservatoire (phase 1 and phase 3)** were property of the Belgian state. The buildings were transferred to the Flemish Community in 1991 and subsequently to Artesis Plantijn University College.
deSingel (phase 2) was primarily owned by the Belgian state and in 2000 transferred to the Flemish Community.
The facilities of **Radio 2** were built by the Belgian state with the financial means of the VRT. The building of Radio 2 is property of VRT, but the ground is property of the Flemish Community (leasehold estate, cfr. supra).
The **new building (phase 4.2)** with both facilities for the Conservatoire and deSingel has a shared ownership: the Flemish Community owns 65%, Artesis Plantijn University College owns 35%.

Three owners are present: the Flemish Community (deSingel), Artesis Plantijn University College (the Conservatoire) and VRT (Radio 2). A complex structure of ownership exists as different agreements were made in the past for the original building (phase 1 and 2). Furthermore, due to the evolution of programme and use, many parts of the building, such as main circulation and logistic facilities, became mutual between different users. An internal agreement makes the management unambiguous, as far as possible. The new building (phase 4.2) has a different structure of ownership: a distribution code.

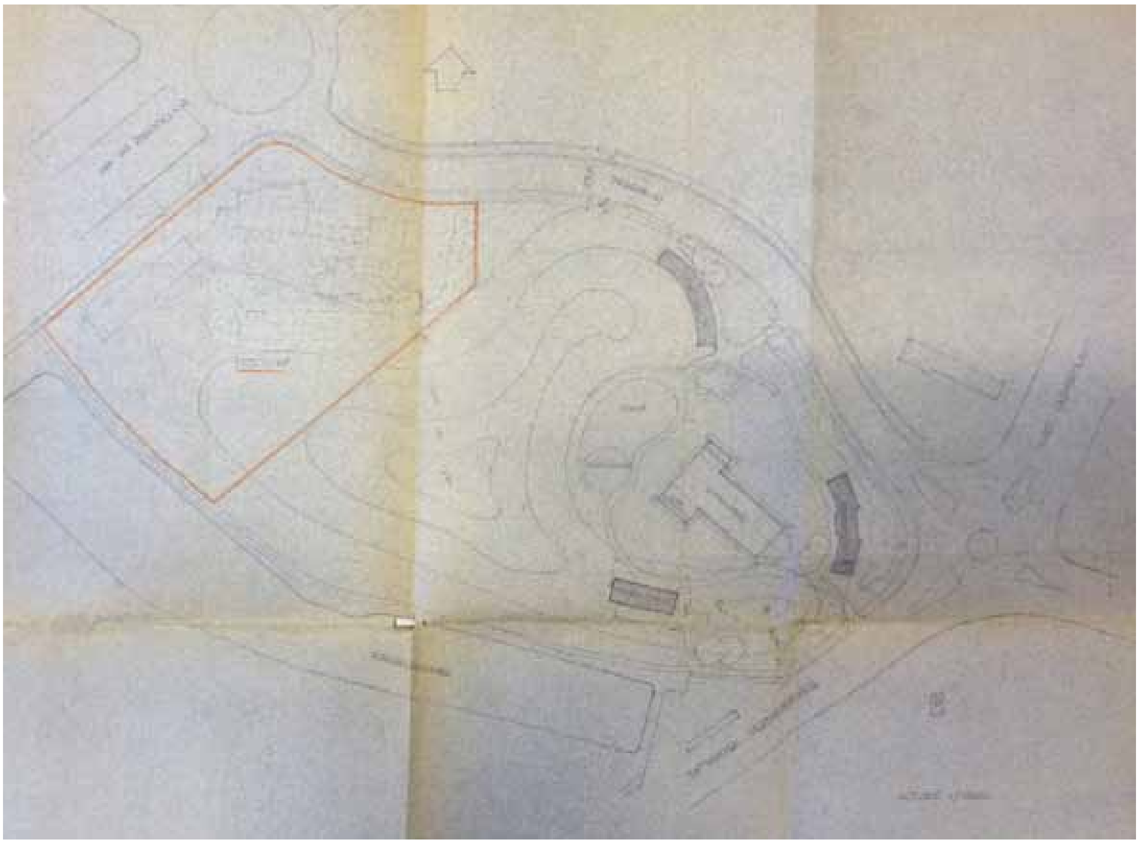


Figure I.3.41: drawing of the ground transferred from the city of Antwerp to the state in 1958 (Antwerp: RdGA).

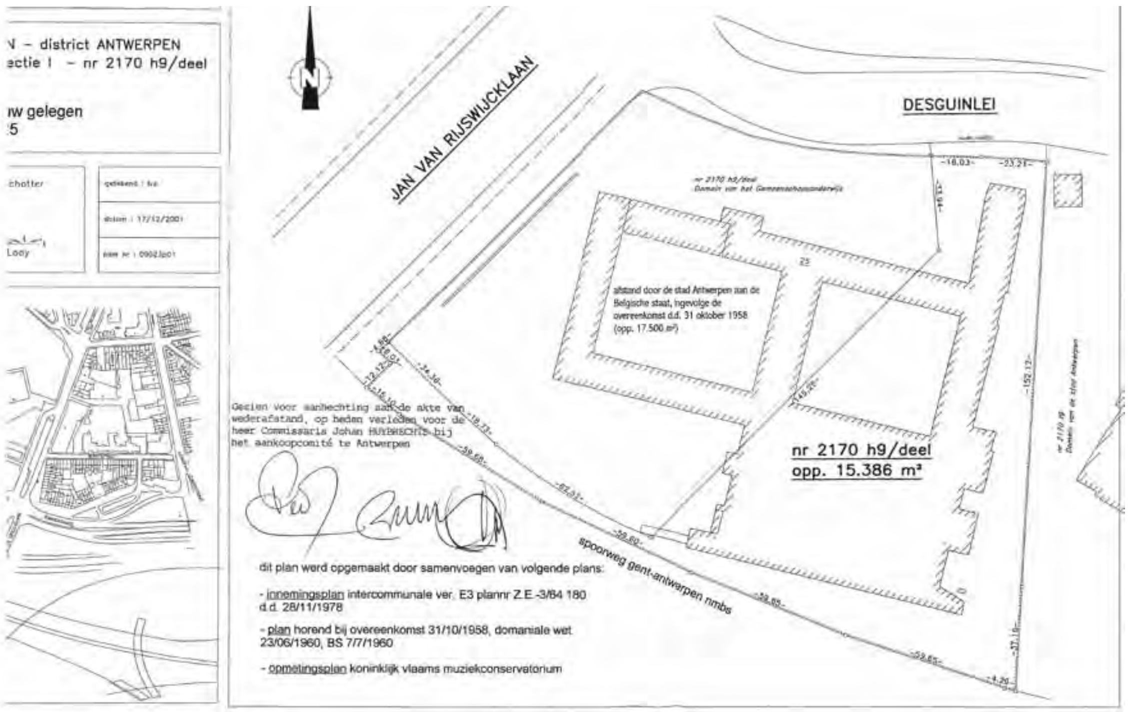


Figure I.3.42: drawing of the additional ground transferred in 2003 (Antwerp: deSingel).

3.2. Three main users: Conservatoire-deSingel-Radio 2

deSingel International Arts Campus has three owners (cfr. infra). The main users correspond with the three owners: the Royal Conservatoire Antwerp – deSingel – Radio 2 Antwerp.

The ‘Royal **Conservatoire** Antwerp’ is part of the Artesis Plantijn University College and offers courses in the three performing arts (music, drama and dance) and teacher training programmes. The Conservatoire educates 600 students. A quarter of the students comes from abroad.[22]

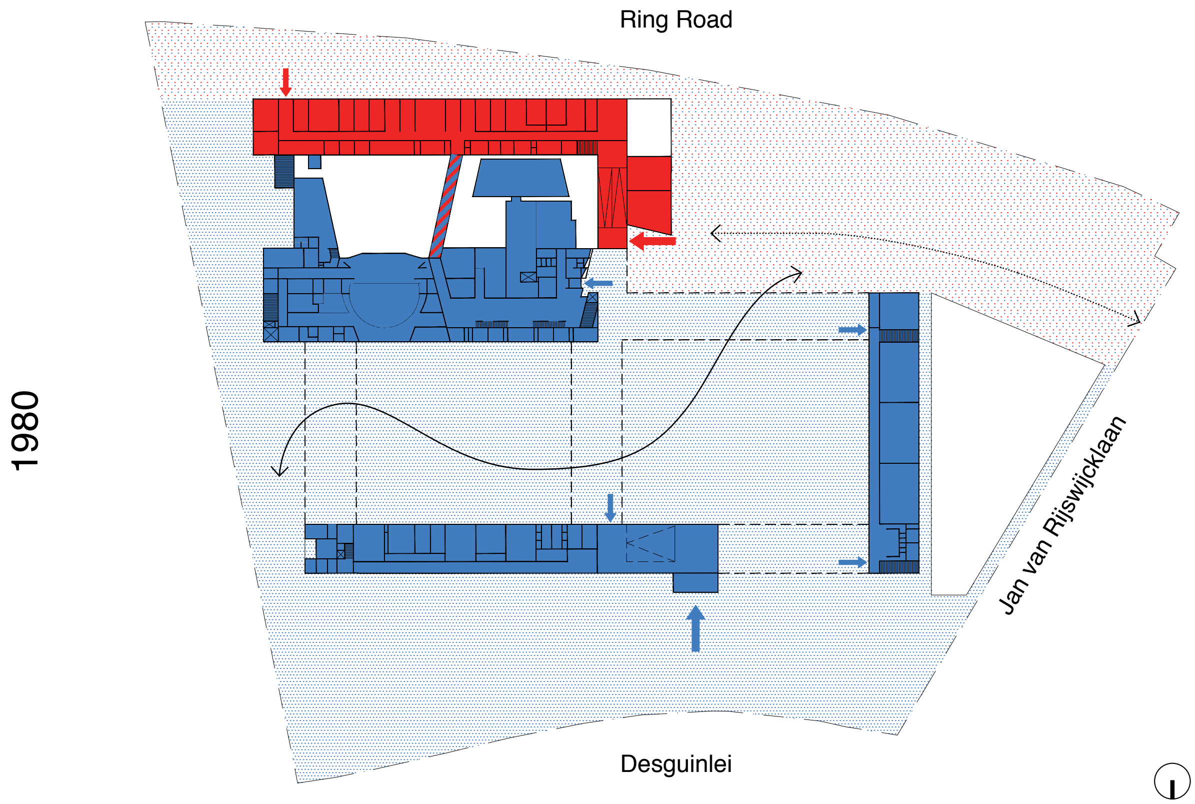
“Every artist should be able to connect with other art disciplines. This demands time, practice, and sometimes a bit of courage. Young artists gain a tremendous advantage if they can make this connection while studying.”[23]

deSingel is an autonomous organisation established by the Flemish Community. Its core tasks are the management of the building, the development of a cultural programme and the leasing of the facilities. Its intention is to bring (aspiring) performing artists and audiences together in a climate of reflection and creativity. deSingel offers a challenging international programme in a variety of arts. The Flanders Architecture Institute is an important co-partner of deSingel.

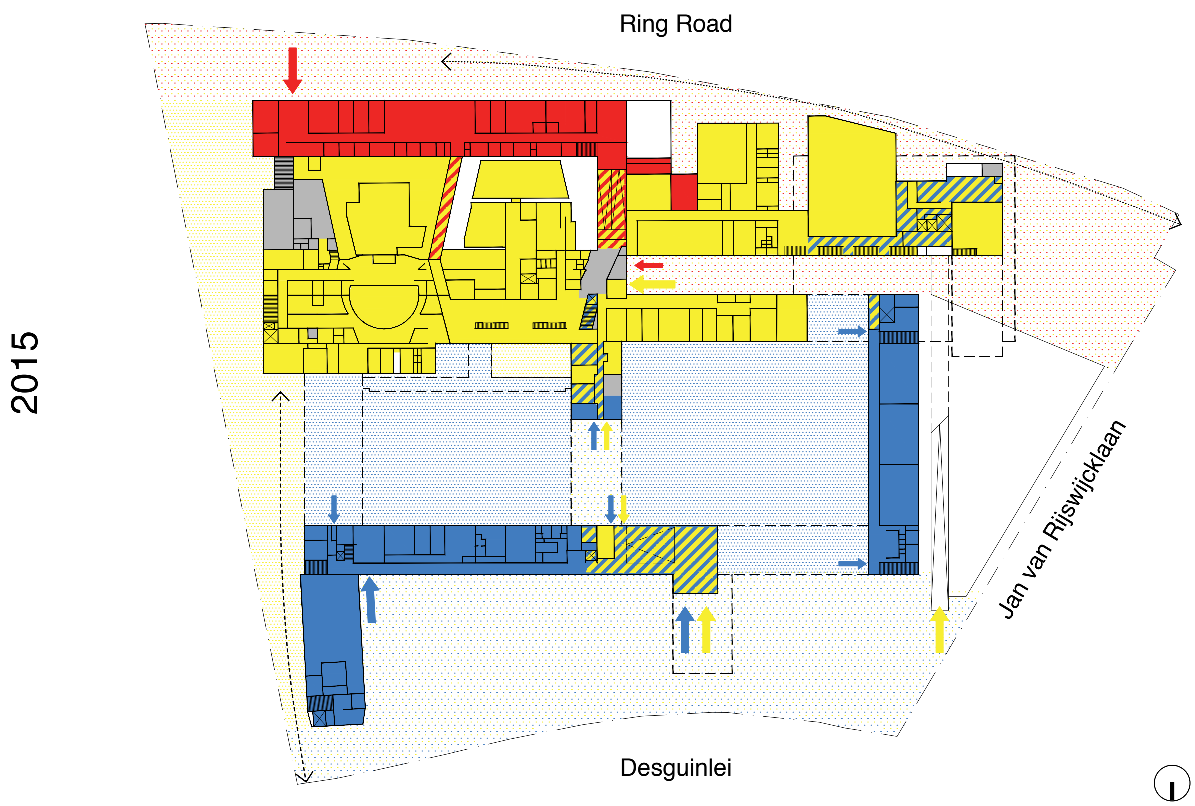
Radio 2 Antwerp is the regional division of Radio 2 and is part of the Flemish Radio and Television Broadcasting Organisation (*Vlaamse Radio- en Televisieomroeporganisatie VRT*). Radio 2 has a close relation with the listener and focuses on regional news. Radio 2 has a regional department in every province of Flanders.

The following schemes give an overview of the position of the different users in the building. A scheme is made for every reference level, each time for both the situation in 1980 (after completion of the original building) and the situation today. The information in the schemes of 1980 derives from the drawings and descriptions of the design made by Stynen and De Meyer. The schemes of the situation today are based on drawings with the indication of the structure of ownership made by deSingel and Stéphane Beel Architecten.

22 “Introduction”, in *Royal Conservatoire Antwerp*: https://www.ap.be/royal-conservatoire/introduction/1431 (accessed 26/07/2015).
23 Freddy Marien, Head School of Arts, Royal Conservatoire of Antwerp, Ibidem.


Ring Road
1980
Jan van Rijswijcklaan
Desguinlei

Level 0


Ring Road
2015
Jan van Rijswijcklaan
Desguinlei

Conservatory

Radio 2

Level 0 – 1980

The main entrance of the Conservatoire is located in the north at the Desguinlei. Secondary entrances are present on this level and make outside connections possible between the facilities located at ground level. This connection can be made across the courtyards or 'covered' underneath the wings of level +1.

The facilities of Radio 2 are situated in the south area of the building, adjacent to the ring road. The main entrance is located at the west side and is accessible by the van Rijswijcklaan. A secondary entrance is present at the south façade.

The area of Radio 2 has besides a logistic connection and the heating place (level -1) no intersection with the Conservatoire. The facilities for both users are designed independently.

The outdoor space is fully used by the Conservatoire. The south area is shared with Radio 2 due to logistic needs.

Conservatory

deSingel

Radio 2

Common

Level 0 – 2015

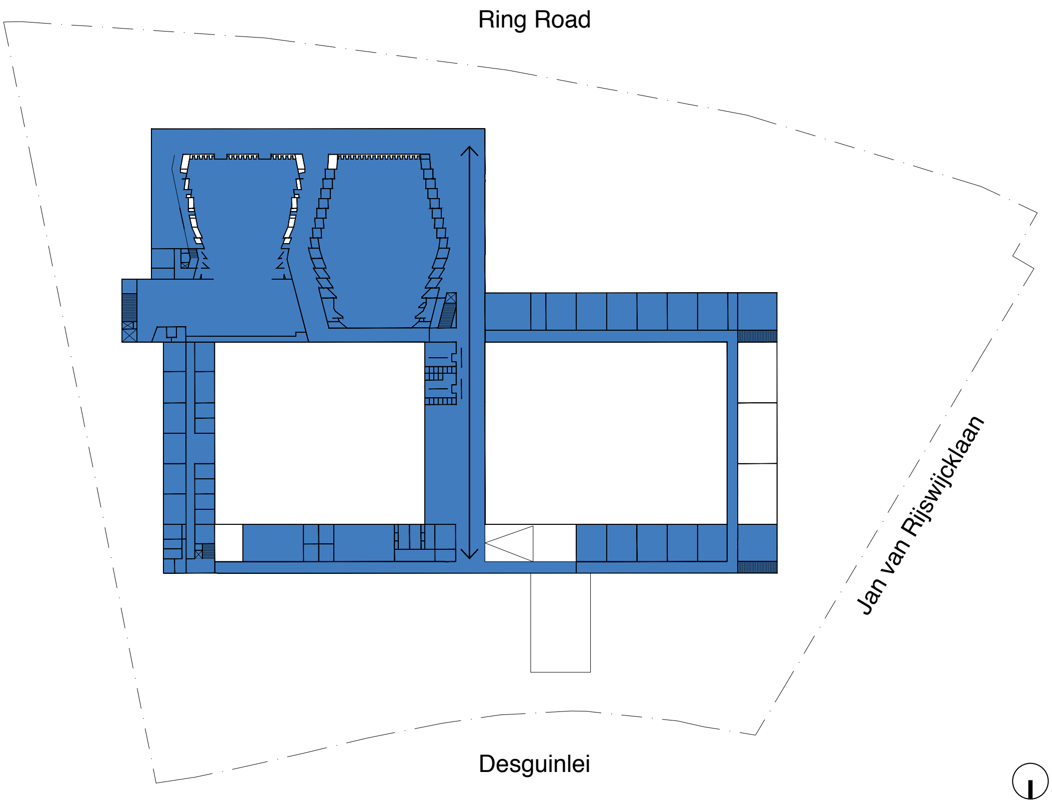
The facilities of the three users are present at the ground level. The official entrance of the Conservatoire is still located at the Desguinlei but now shared with deSingel. The practical main entrance of the Conservatoire is located at the intersection of wing A and wing G (close to the refectory). The outside connections are still present but not covered anymore due to the volumes added underneath the wings of level +1.

The central zone of the building is occupied by deSingel. The main entrance for staff and artists is situated in the west, between the old and the new building. This is also the address of deSingel. The main horizontal and vertical circulation is mostly shared between the Conservatoire and deSingel

The area of Radio 2 is unaltered. The main entrance has shifted to the south façade.

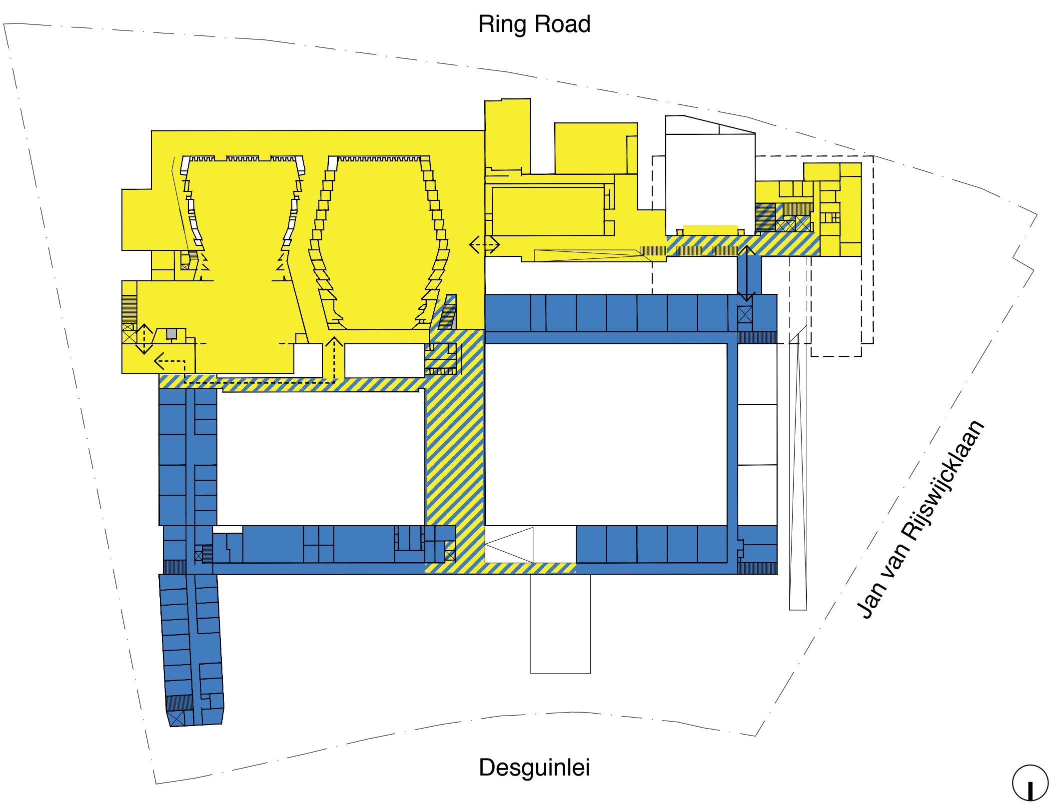
The Conservaoty mainly uses the courtyards. The area around the building is used by deSingel and in the south shared with Radio 2 and in the north shared with the Conservatoire.

1980



Level +1

2015



Conservatory

Radio 2

Level +1 – 1980

Level +1, the main level, is entirely used by the Conservatoire. In reality this situation never existed as from the beginning the halls and corridors around were leased.

Conservatory

deSingel

Radio 2

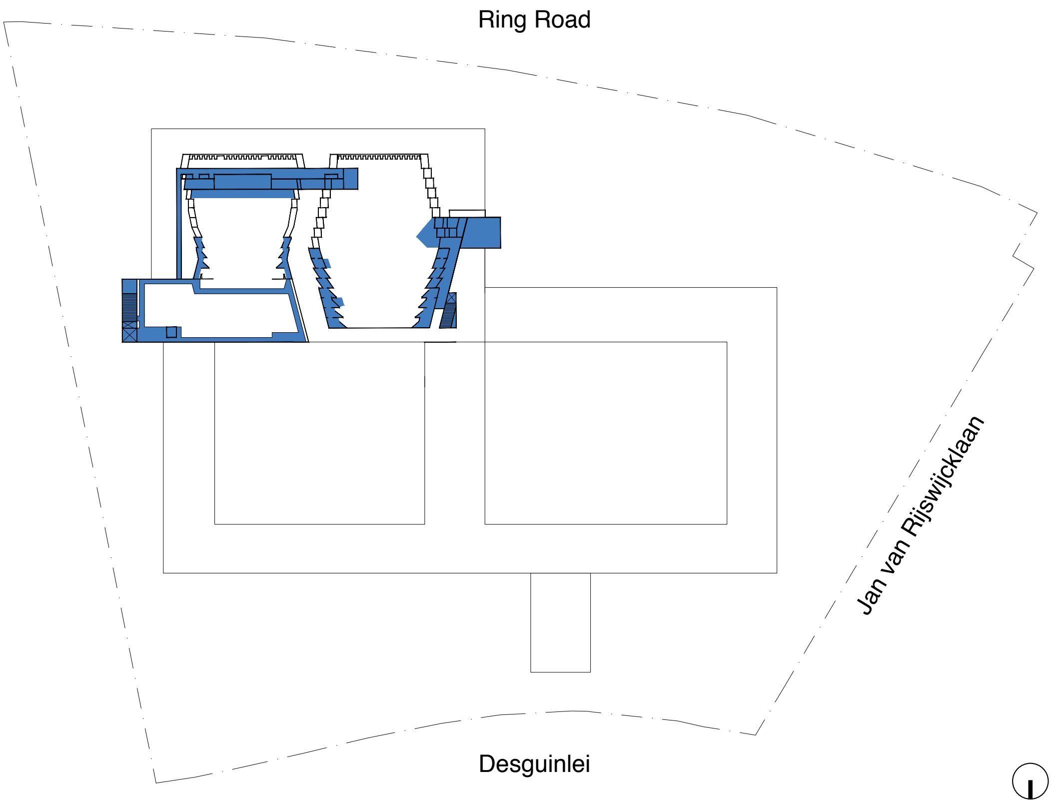
Common

Level +1 – 2015

On this level a great intersection between the Conservatoire and deSingel exists, mostly concerning circulation. Both users have the same main entrance and use the main hall as 'distribution axis'. The new hallway along the east courtyard makes for deSingel a connection between the loading quay and the concert hall. For the Conservatoire this hallway completes the circulation around the courtyards.

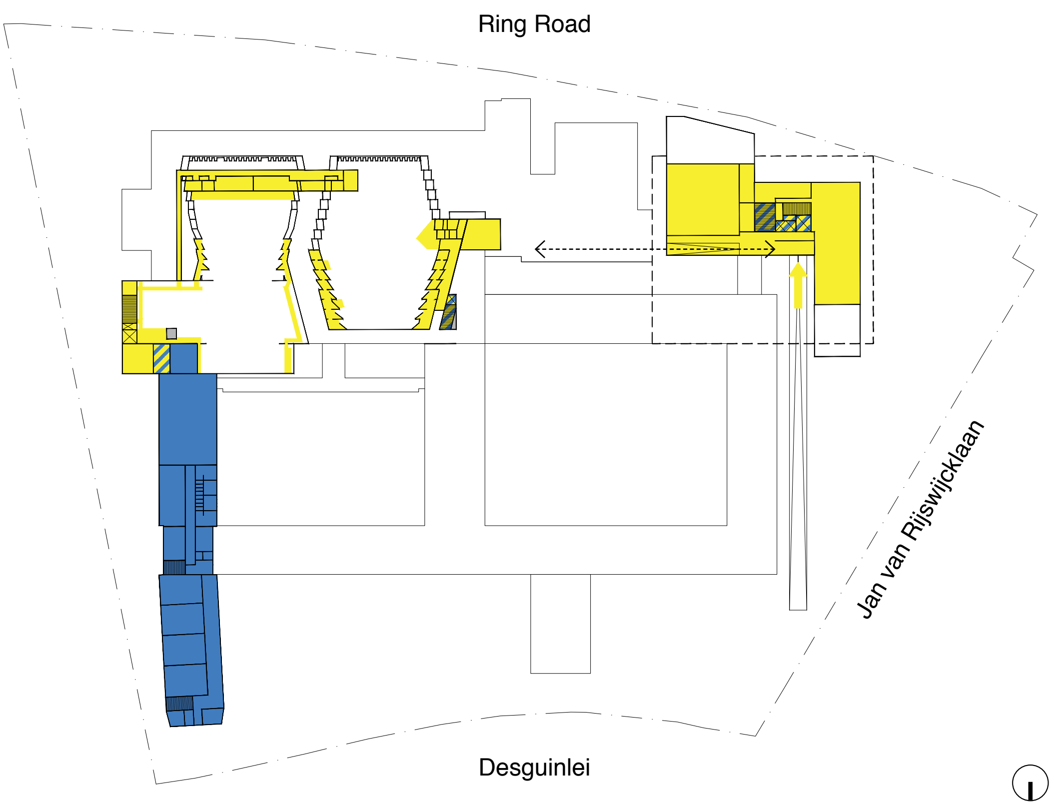
The new building has a connection for deSingel nearby the concert hall, for the Conservatoire this connection is located at the corner of wing D and E. This bypass gives access to the vertical circulation towards the horizontal tower.

1980



Level +2

2015



Conservatory
Radio 2

Level +2 – 1980

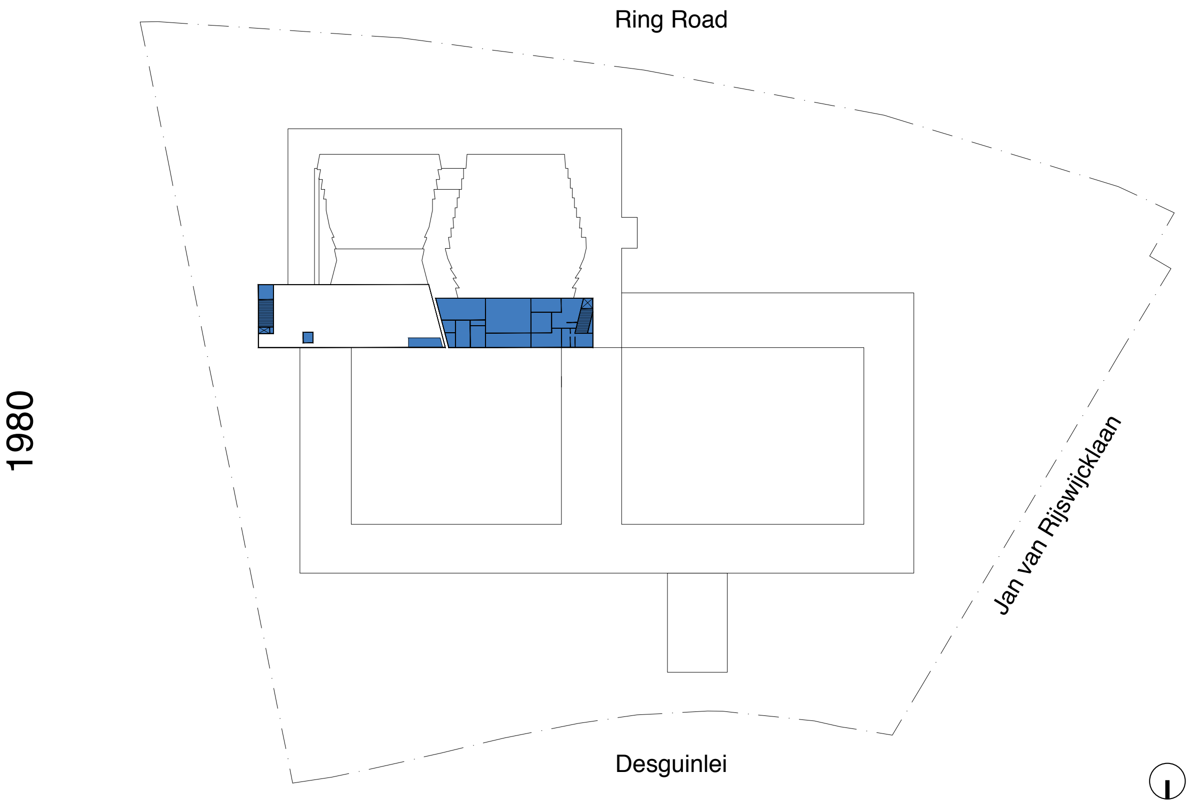
This level houses logistic rooms for the halls and is accessible by the vertical circulation cores on both sides of the tower. The ‘control room’ of both concert and theatre hall is located in the bridge volume in the south and is accessible by a small passerelle along the theatre hall. The royal balcony located at the west of the concert hall has a separate circulation and is directly accessible from the ground level (entrance artists) by the elevator.

Conservatory
deSingel
Radio 2
Common

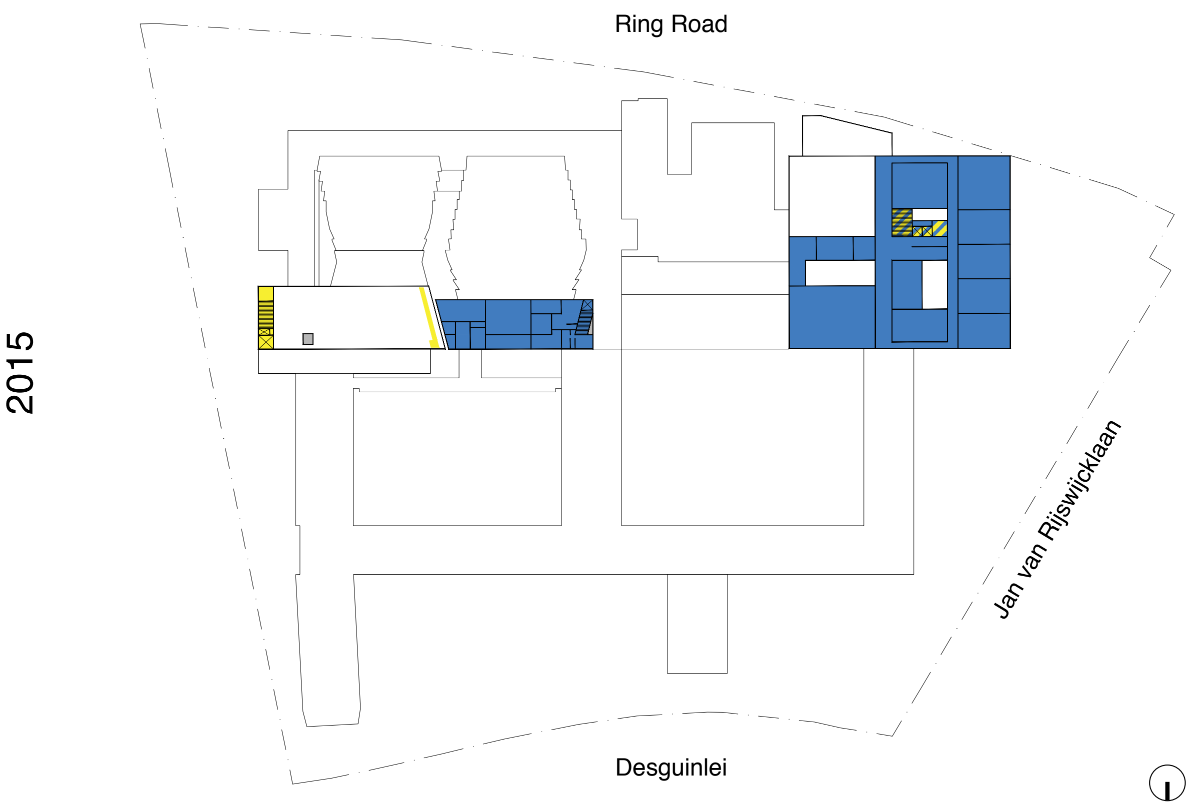
Level +2 – 2015

Different unconnected volumes are present on this level and accessible by stairs for the reference level (level +1). The facilities of the Conservatoire in the east wing are accessible by the new vertical core located at the intersection of wing A and wing B.

The new building (phase 4.2) houses on this level the most public functions of deSingel: the café-restaurant and the reading room. A main public entrance on this level is directly accessible from street level by the rampart along the west wing of the Conservatoire. The interior rampart connects this level with the main public level of the Conservatoire, level +1.


Ring Road
1980
Jan van Rijswijcklaan
Desguinlei

Level +4


Ring Road
2015
Jan van Rijswijcklaan
Desguinlei

Conservatory

Radio 2

Level +4 – 1980

The reading room of the library of the Conservatoire is located on this level and accessible by the vertical circulation core at the west of the tower. The void in the tower at the east concerns the flytower of the theatre hall.

Conservatory

deSingel

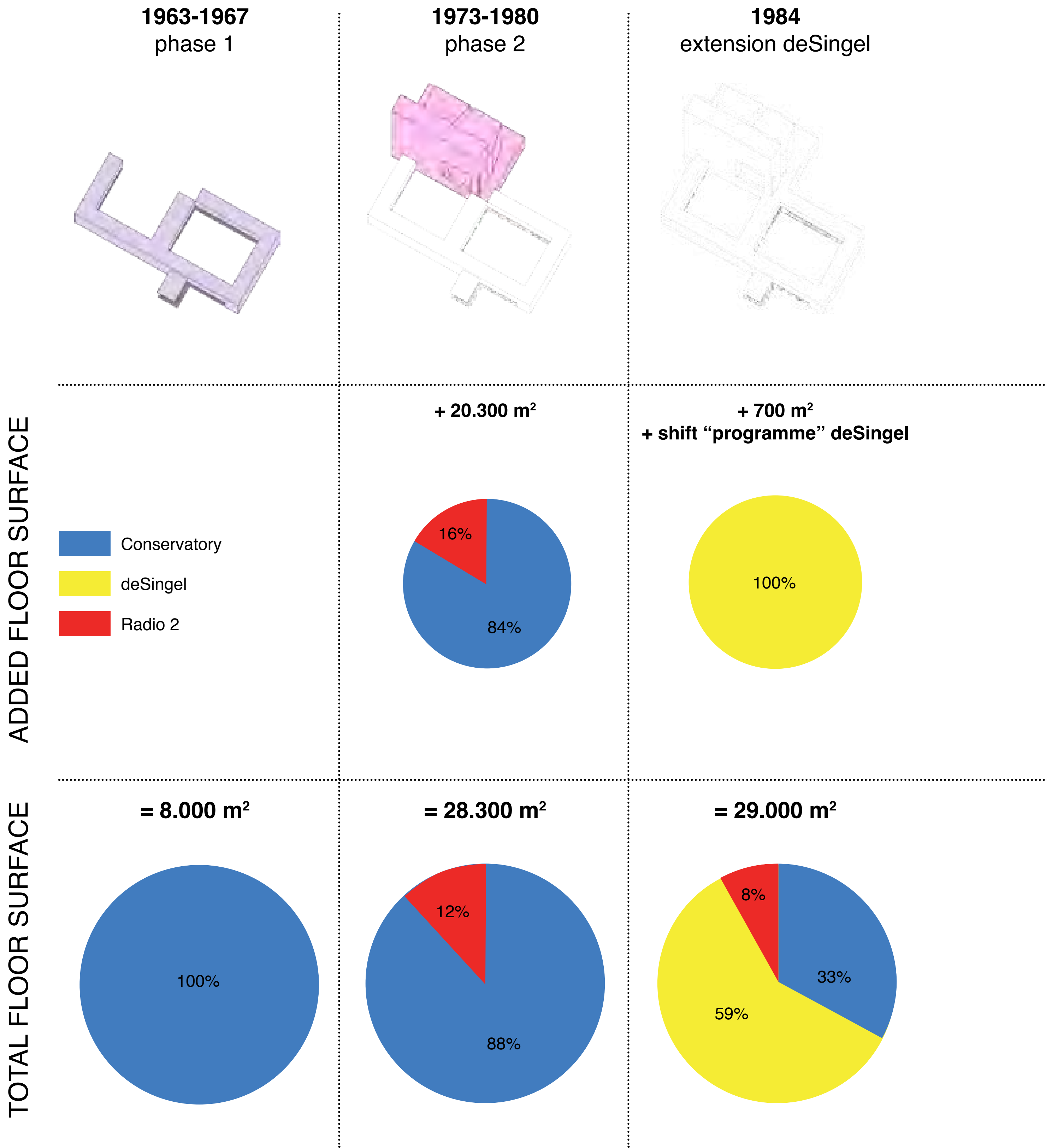
Radio 2

Common

Level +4 – 2015

The library of the Conservatoire is still present in the tower at this level.

The new facilities of the Conservatoire are located in the horizontal tower above the low-rise buildings and accessible by the central vertical core.


1963-1967
phase 1
1973-1980
phase 2
1984
extension deSingel
ADDED FLOOR SURFACE
Conservatory
deSingel
Radio 2
+ 20.300 m²
16%
84%
+ 700 m²
+ shift “programme” deSingel
100%
TOTAL FLOOR SURFACE
= 8.000 m²
100%
= 28.300 m²
12%
88%
= 29.000 m²
8%
33%
59%

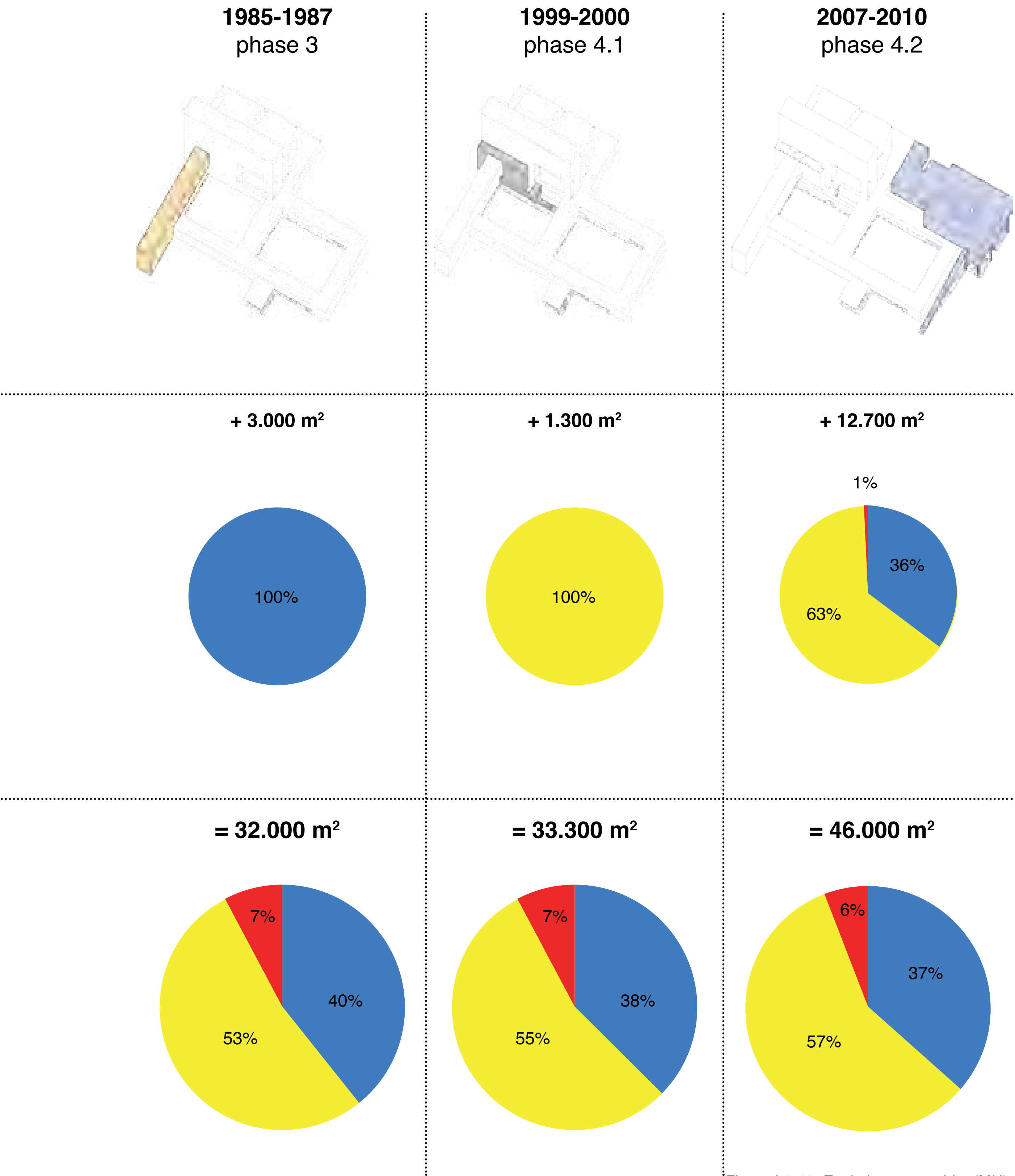


Figure I.3.43: Evolution ownership (MH).

3.3. Evolution of the Ownership

The diagrams on the previous pages give an overview of the evolution of the different users. The structure of ownership is represented in pie charts and this for every phase in the evolution of the building. The isometric scheme on top represents the added building volume. The small pie chart in the middle represents the added floor surface. The big pie chart underneath gives an indication of the situation of the total complex. The data used for these schemes is extracted out of the surface table made by deSingel. The surface of the shared spaces is equally divided between every user.
The schemes of the different levels on previous pages correspond with phase 2 (situation 1980) and phase 4.2 (situation 2015).

The complex built between 1963 and 1967 (**phase 1**) was totally owned and used by the Conservatoire and has a total floor surface of 8.000 m^2. It houses the facilities of the actual school. The volume added between 1973 and 1980 (**phase 2**) houses the extra facilities for the Conservatoire (halls, library, refectory) and the accommodations for Radio 2. With the addition of this volume, the total floor surface became 28.300 m^2 of which 12% was owned by Radio 2. If the surface of phase 1 is compared with the surface of the total complex, is phase 1 a small fraction of the total building (≈30%) and are the halls with supplementary facilities an existential part of the building.
deSingel was established in 1983. This resulted in the addition of offices for this organisation (**1984**), but also in a shift of use/ownership of the total building. Since deSingel uses the halls with supplementary facilities and parts of the circulation. Due to this shift, more than 50% of the building is used by deSingel.
Facilities for the Conservatoire are added between 1985-1987 (**phase 3**). If this added surface, 3000 m^2 is compared with the surface of phase 1, the actual school' this surface concerns an important amount and adds almost 50% of extra classes.
The logistic interventions made between 1999-2000 (**phase 4.1**) are carried out to optimise the functioning of deSingel. Besides the added volume, also internal reorganisations were made.
The big extension of the total complex between 2007-2010 (phase 4.2) adds a total floor surface of 12.700 m^2 to the building. The division of the different users in this new complex is similar to the division of the existing complex. This means that every user, except Radio 2, expands proportionally. This results in a total floor surface of 46.000 m^2.

3.4. The Inhabitants of deSingel

The diagram on the next pages gives an overview of the reference levels. The different 'inhabitants' of deSingel (the main user of the building, cfr. infra) are indicated in this scheme. Specific accommodations for intrinsic users of deSingel are integrated in the new building and were thus part of the building program. These users are 'deSingel Grand Café', the public bar and restaurant and 'Flanders Architecture Institute' (Vai). '**deSingel Grand Café**' is located at the second level and direct accessible from the ground level by the outside rampart. This function has independent opening hours.
'**Flanders Architecture Institute**' is located at the first level and completes the artistic program of deSingel. Their main public activities are the organisation of exhibitions and publications on contemporary architecture. The Flanders Architecture Institute uses the new exposition room on level +1. Before expositions were held in the wide corridors around the concert and theatre hall.
Other users with activities within the field of deSingel are housed on several locations. Several are located at level -1 in offices deSingel leases from Radio 2.

The Inhabitants of deSingel

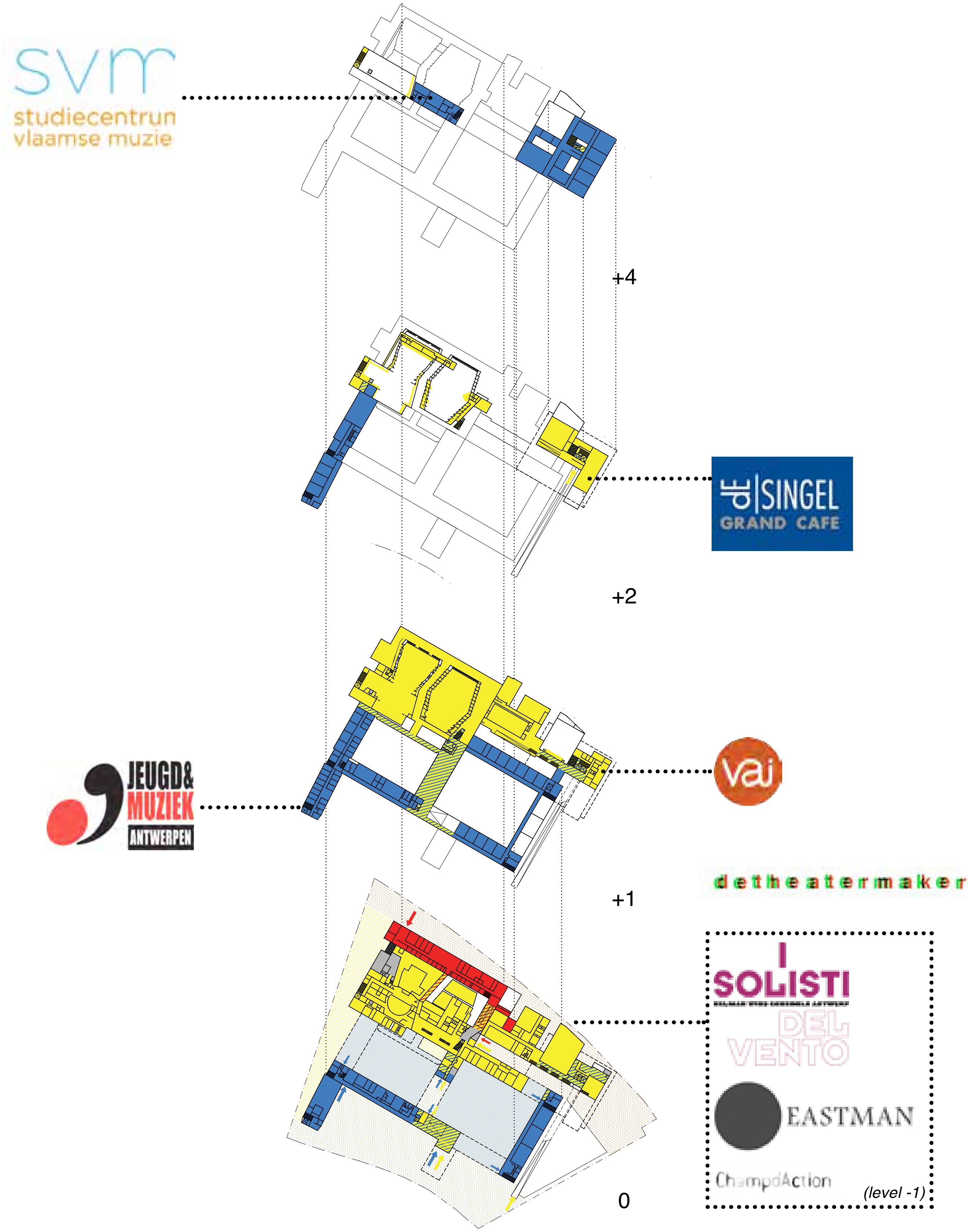


Figure I.3.44: Inhabitants of deSingel (MH).

Figure I.3.45 (middle): Exhibition case VAi (flickr.com, 2015).

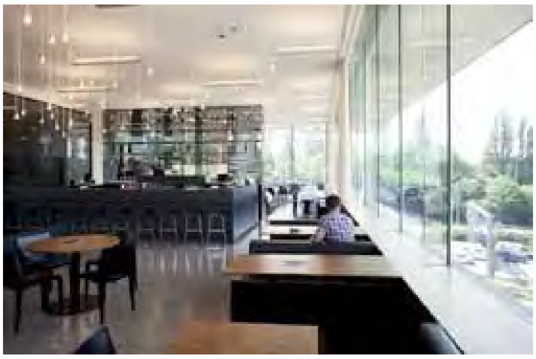
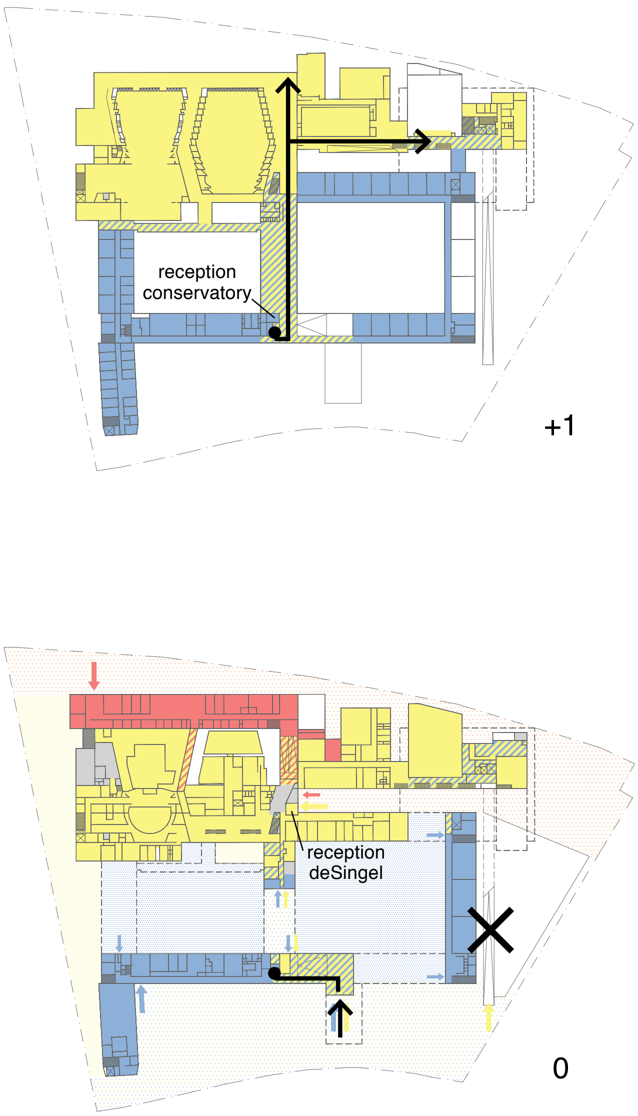


Figure I.3.46 (bottom): Grand Café (© Luca Beel, SBA).



3.5. Accessibility and routing

The building has two main public entrances: the entrance of the original building at the Desguinlei and the entrance of the new building by the outside rampart along the van Rijswijcklaan. Because the outside rampart has an inclination more than 5%, and therefore doesn't comply with the regulations concerning accessibility, disabled people need to enter the building by the Desguinlei. An elevator at the start of wing A gives access to the level +1.[24] From this level the main public functions and the access to the horizontal tower are accessible.

24 The connection between the main entrance and the elevator on level 0 happens by a small ramp inside the building. This ramp is also to steep, but is now used as most accessible entrance.

Figure I.3.47: Scheme accessibility (MH).

The clear routing of the building has disappeared due to the different extensions. Many dead ends exist in the building and functions blend into each other. To make it to some extent possible to orientate yourself in the building, the different building blocks got a name. The routs to main entities (such as the halls, the library, the exposition room, …) are signposted.
The reception of the Conservatoire is located on the first level and directly visible from the entrance hall. The reception of deSingel is positioned near the logistic entrance of deSingel on level 0 and somewhat hidden.

Figure I.3.48: Signposting (MH, 23/05/2014).

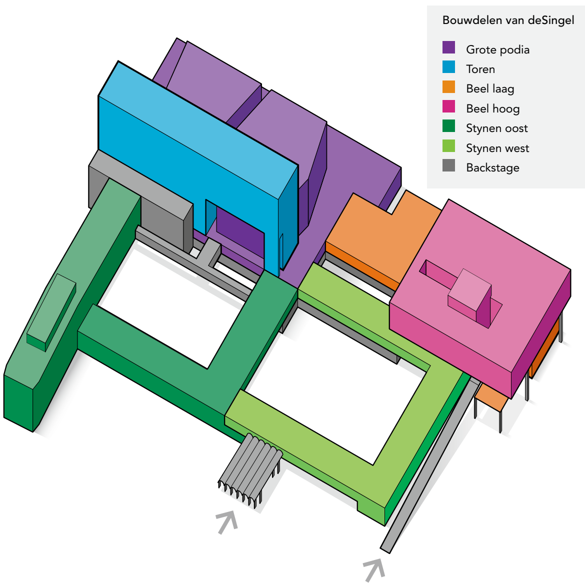


Figure I.3.49: Scheme building blocks (Antwerp: deSingel).

4. Analysis of the building program

4.1. Different functions spread through the building

The following schemes give an overview of the different functions of the rooms. A scheme is made for every reference level, each time for both the situation in 1980 (after completion of the original building) and the situation today. The information in the schemes of 1980 derives from the drawings and descriptions of the design made by Stynen and De Meyer. The schemes of the situation today are based on the room list made by deSingel.
The following schemes show that in the current situation clusters of functions are spread through the building. These clusters follow broadly the structure of the different users (cfr. supra): the Conservatoire-deSingel-Radio 2. In the attempt to make a clear description of the different functions, the description corresponds with the zones of the different users. The location of a room in the buildings is mostly explained by orientation and the name of building blocks (cfr. bookmark).

1980

Level 0

2015

- Classroom
- Office
- Library
- Hall/Stages
- Restaurant
- Backstage
- Rest rooms
- Hallway-staircase-elevator
- Logistic rooms
- House janitor

Level 0 – 1980

Three big auditoria are situated in the east wing (wing E), next to the pond. The offices of the Conservatoire are located in the north wing (wing A). The house of the janitor is located at the end of the north wing and has two levels. The third entity on ground level concerns the backstage of the halls and the offices of Radio 2 (located at the south). The make-up rooms are clustered underneath the halls (backstage). The royal circulation space also serves as a foyer. A rehearsal room is located underneath the concert hall.

- Classroom
- Office
- Library
- Hall/Stages
- Restaurant
- Backstage
- Rest rooms
- Hallway-staircase-elevator
- Logistic rooms

Level 0 – 2015

In the zone of the Conservatoire a refectory is added perpendicular to the north wing (wing G). The house of the janitor has been removed to house restrooms and to provide vertical circulation to the upper levels.
The zone of deSingel is situated in the middle of the site. New offices are located underneath wings C and D and in the new building (block N). The foyer underneath the hall has extended and got a more public function. The backstage of the halls is still situated underneath the concert and theatre hall but is reorganised. Some make-up rooms are relocated to the new volume attached to the theatre hall (block I) to free the façade to the courtyard. Additional make-up rooms are provided in the new building (block N). Also two new halls are located in this new building, a dance studio (block N) and a theatre studio (block O).
The zone of Radio 2 has merely changed. The offices have been reorganised and a refectory is integrated in the volume.

1980

Level +1

2015

- Classroom
- Office
- Library
- Hall/Stages
- Restaurant
- Backstage
- Rest rooms
- Hallway-staircase-elevator
- Logistic rooms
- House janitor

Level +1 – 1980

The classes of the Conservatoire are located around the two big courtyards. The concert and theatre hall are present in the south part of the building and accessible on this level. The refectory is situated next to the theatre hall. In reality this refectory has never been used as the halls and the surrounding corridors got a public function and were used as exposition space from the beginning. The temporary refectory was situated underneath the main corridor (wing C) and was used until the new refectory was added in 1987 (phase 3).

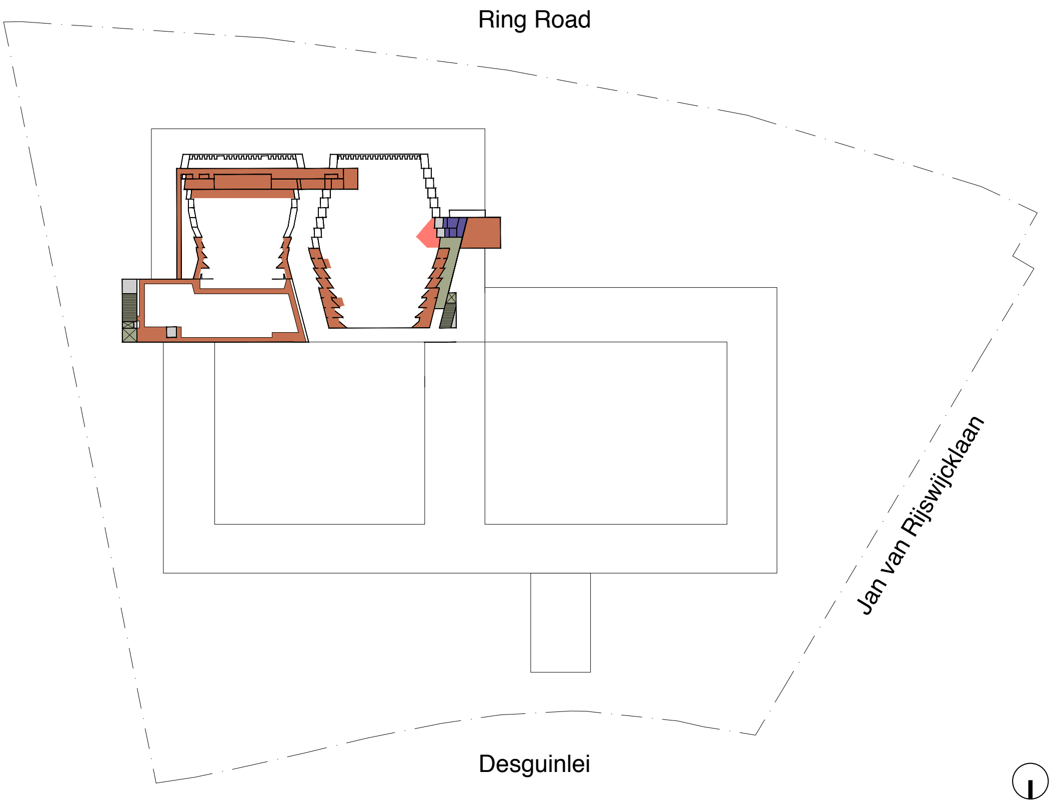
- Classroom
- Office
- Library
- Hall/Stages
- Restaurant
- Backstage
- Rest rooms
- Hallway-staircase-elevator
- Logistic rooms

Level +1 – 2015

The classes of the Conservatoire are still located around the courtyards but certain classes have been changed to offices. The new wing (wing G) houses small classrooms.

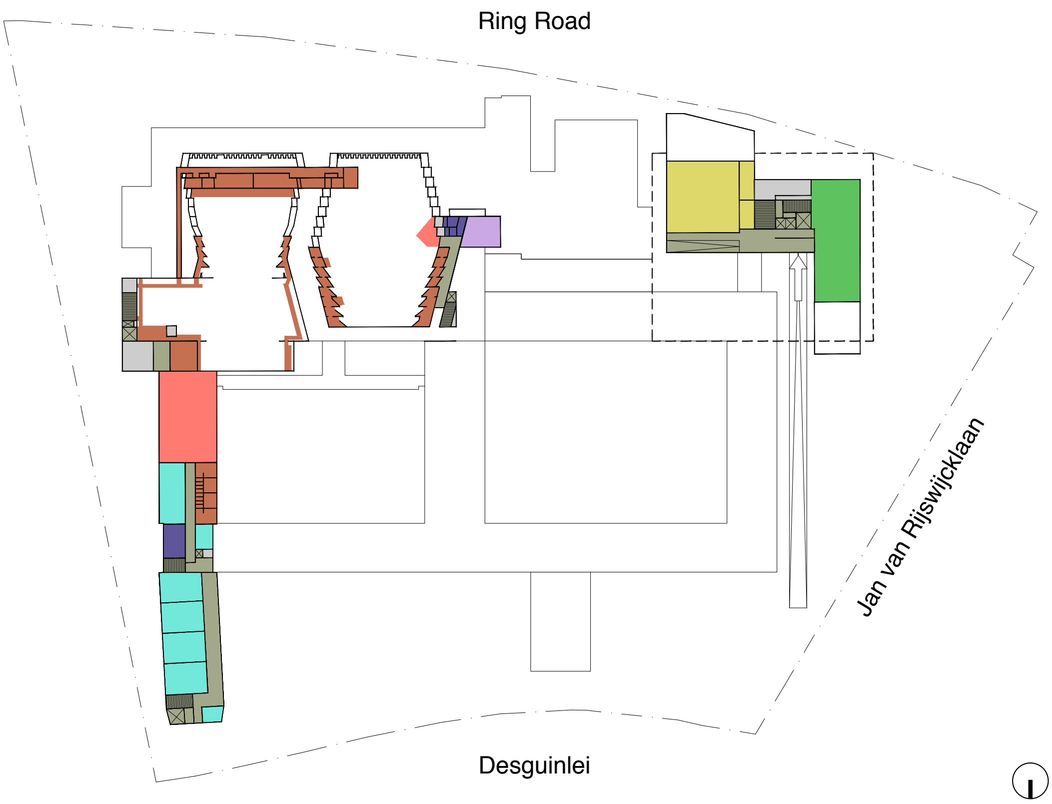
The space of former refectory has expanded and evolved to foyer of the theatre hall (east). A new foyer is added nearby the concert hall (west). In the new building a new exposition room (block N), the entrance to two new halls, a music studio (block N) and a theatre studio (block O, cfr. supra) are located. At the west end of the new building the offices of the Flemish Architecture Institute are situated.

1980



Level +2

2015



Classroom
Office
Library
Hall/Stages
Restaurant
Backstage
Rest rooms
Hallway-staircase-elevator
Logistic rooms
House janitor

Level +2 – 1980

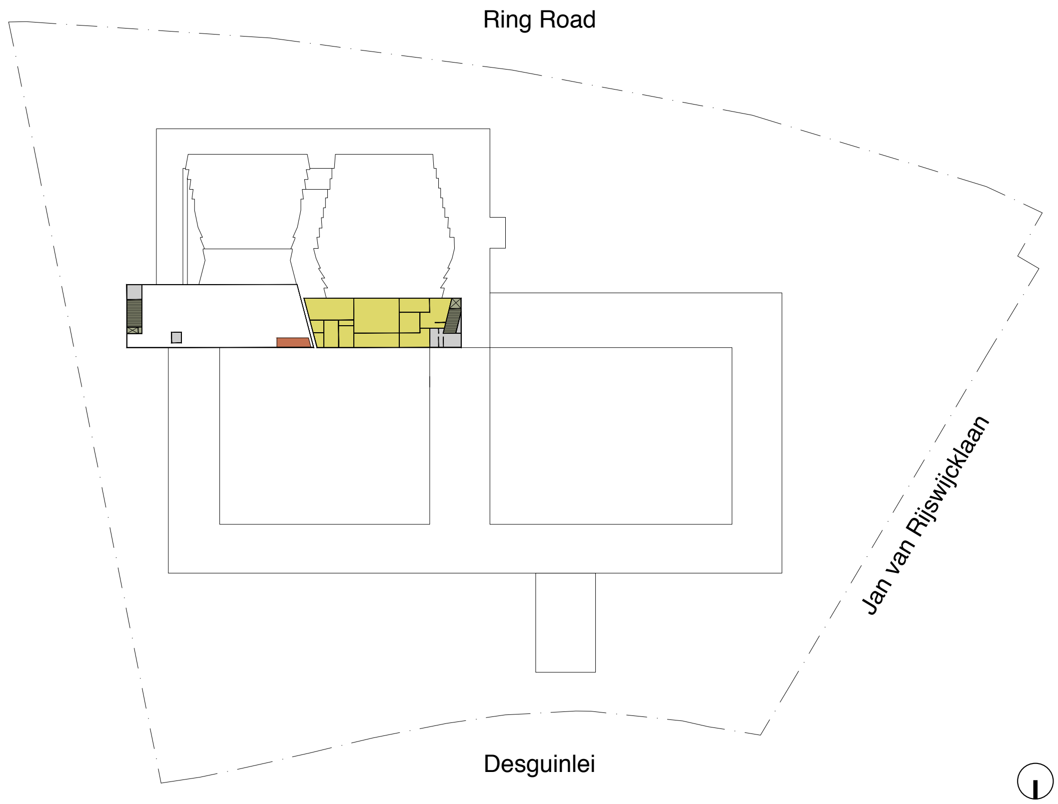
On this level the logistic rooms or the halls are located. The 'control room' of both concert and theatre hall is located in the bridge volume in the south. At the west of the concert hall a cluster for royal visit is installed: a balcony with the best view on stage, private restrooms and a private salon. The private salon is also used as jury room.

Classroom
Office
Library
Hall/Stages
Restaurant
Backstage
Rest rooms
Hallway-staircase-elevator
Logistic rooms

Level +2 – 2015

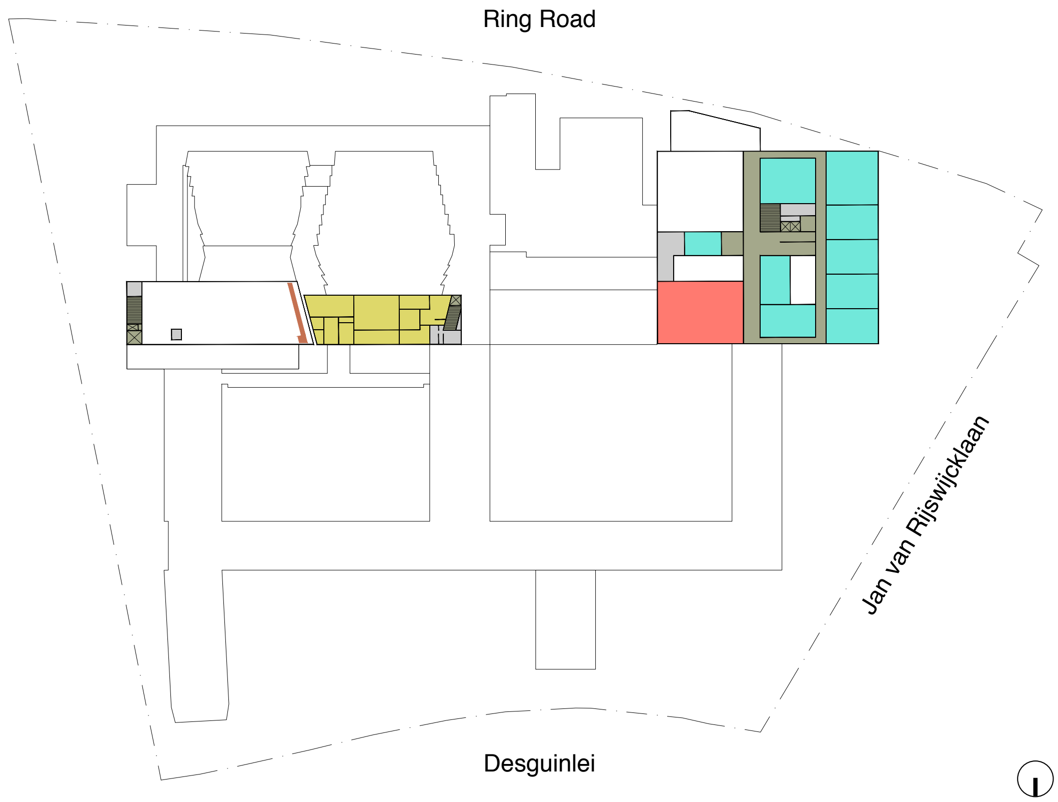
Additional functions for the Conservatoire are located in the east wing: big classrooms and a small theatre room.
The backstage of the halls has been optimised.
The royal cluster at the west of the concert hall is now partly used as meeting room of deSingel.
In the new volume a reading room and restaurant/café are located.

1980



Level +4

2015



- Classroom
- Office
- Library
- Hall/Stages
- Restaurant
- Backstage
- Rest rooms
- Hallway-staircase-elevator
- Logistic rooms
- House janitor

Level +4 – 1980
The library of the Conservatoire is situated on this floor. The storage rooms and archives are located in the upper levels of the tower.

- Classroom
- Office
- Library
- Hall/Stages
- Restaurant
- Backstage
- Rest rooms
- Hallway-staircase-elevator
- Logistic rooms

Level +4 – 2015
The levels of the original building are unaltered. This level of the horizontal tower houses classes and a hall of the Conservatoire.

4.2. Places to Observe

The scheme on the next page gives an overview of the different levels. The different halls are indicated in this scheme. The following description gives more information about the use and the capacity of each room.[25] Next to the name of the hall the basic information is indicated: the level, the phase of construction and the main user (the colours corresponds to the general legend, cfr. bookmark).

Blue Hall **(940p)** +1 2 S

name hall capacity level phase of construction user

Originally (phase 1 & 2), two halls (Blue & Red Hall) and a rehearsal room (Small Hall) were present in the building. An auditorium for the Conservatoire has been added during the third phase (Black Hall). The new extension adds seven new halls with varying size and use.

25 The information on the website of deSingel is used al main source for these descriptions: "Gebouw", in *deSingel*: https://www.desingel.be/nl/gebouw (accessed on 24/07/2015).

Blue Hall (940p) +1 2 S

Figure I.3.50: Blue Hall (www.desingel.be, 2015).

The Blue Hall is situated on level +1 and is the main concert hall. The stage of the Blue Hall can accommodate a choir of 100 and an orchestra of up to 120 musicians. An audience of 940 people can enjoy the concerts. This hall is exploited by deSingel. The Blue Foyer is linked to this hall.

Red Hall (800p) +1 2 S

Figure I.3.51: Red Hall (www.desingel.be, 2015).

The main theatre and dance hall concerns the Red Hall. This hall is situated on level +1 and can accommodate 800 spectators. Although a variable set up of the seats is possible, the hall is always used in his maximum/standard composition. This hall is exploited by deSingel. The Red Foyer is linked to this hall.

Small Hall (92p) 0 2 S

Figure I.3.52: Small Hall (www.desingel.be, 2015).

The Small Hall is situated on level +0 and is connected to the artists' foyer. It is a multifunctional auditorium for concerts, performances, receptions and readings. The hall is exploited by deSingel. Students also use the auditorium as a rehearsal room.

Black Hall (114p) +2 3 C

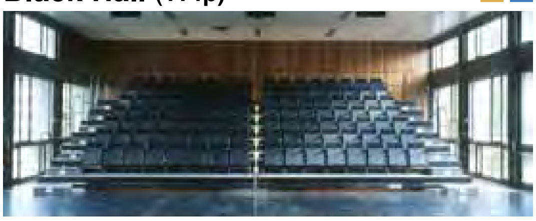


Figure I.3.53: Black Hall (www.desingel.be, 2015).

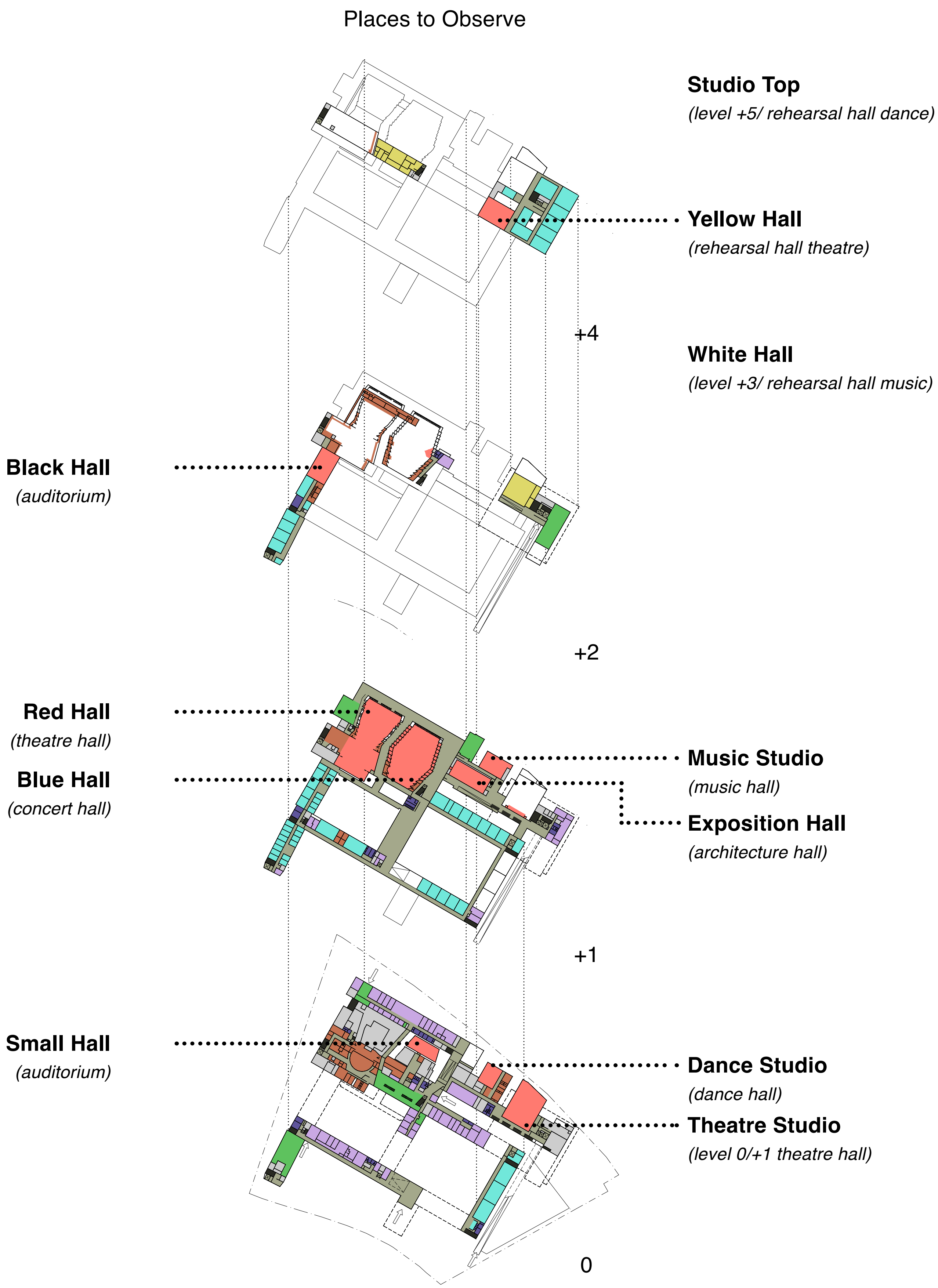


Figure I.3.54: Scheme places to observe (MH).

The Black Hall is a classroom for the students of the Conservatory and located on level +2. The room is used for public examination performances and small-scale theatre or dance performances.

Theatre Studio (152-600p) 0/+1 4.2 S

Figure I.3.55: Theatre Studio (www.desingel.be, 2015).

The Theatre Studio is exploited by deSingel and was designed as rehearsal room for theatre and dance productions, but is now used for workshops, theatre and dance performances and as musical theatre studio. The hall is accessible on level +1.

Music Studio (144p) +1 4.2 S

Figure I.3.56: Music Studio (www.desingel.be, 2015).

The Music Studio is a single level hall exploited by deSingel situated on level +1. The hall is mainly intended for contemporary experimentation but also for other media.

Exposition Hall (-) +1 4.2 S

Figure I.3.57: Studio Top (www.desingel.be, 2015).

The exhibition space is the main centre of activities in the architectural programme. The room is situated on level +1

Dance Studio (-) 0 4.2 S

A dance studio is located on level 0 and integrated in the backstage area of the new building. The studio is used by deSingel.

White Hall (240p) +3 4.2 C

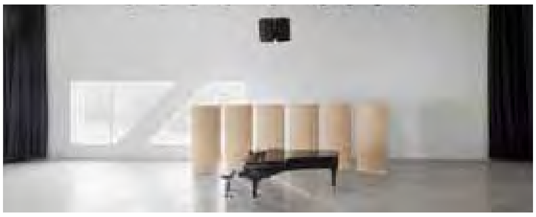


Figure I.3.58: White Hall (www.desingel.be, 2015).

The White Hall is a music rehearsal room for music students of Conservatory and is located on level +3. Small-scale concerts can also be held here.

Yellow Hall (124p) +4 4.2 C

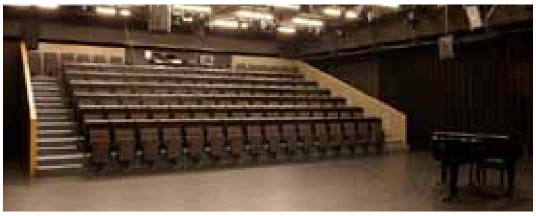


Figure I.3.59: Yellow Hall (www.desingel.be, 2015).

The Yellow Hall is a large rehearsal studio for the drama and dance students of Conservatory. The hall is equipped as an auditorium and is located on level +4. It is also used for public performances.

Studio Top (-) +5 4.2 C

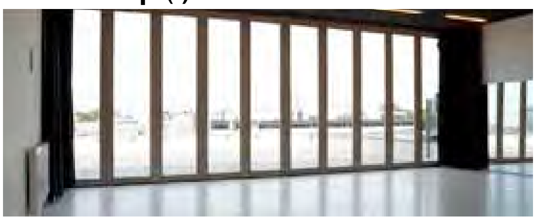


Figure I.3.60: Studio Top (www.desingel.be, 2015).

Studio Top is a rehearsal room for dance students from the Conservatory. The room is situated on level +5.


Figure I.3.61: Public axis (flickr.com, 2015).


Figure I.3.62: Artists' foyer (MH, 23/05/2014).


Figure I.3.63: Students' refectory (MH, 23/05/2014).

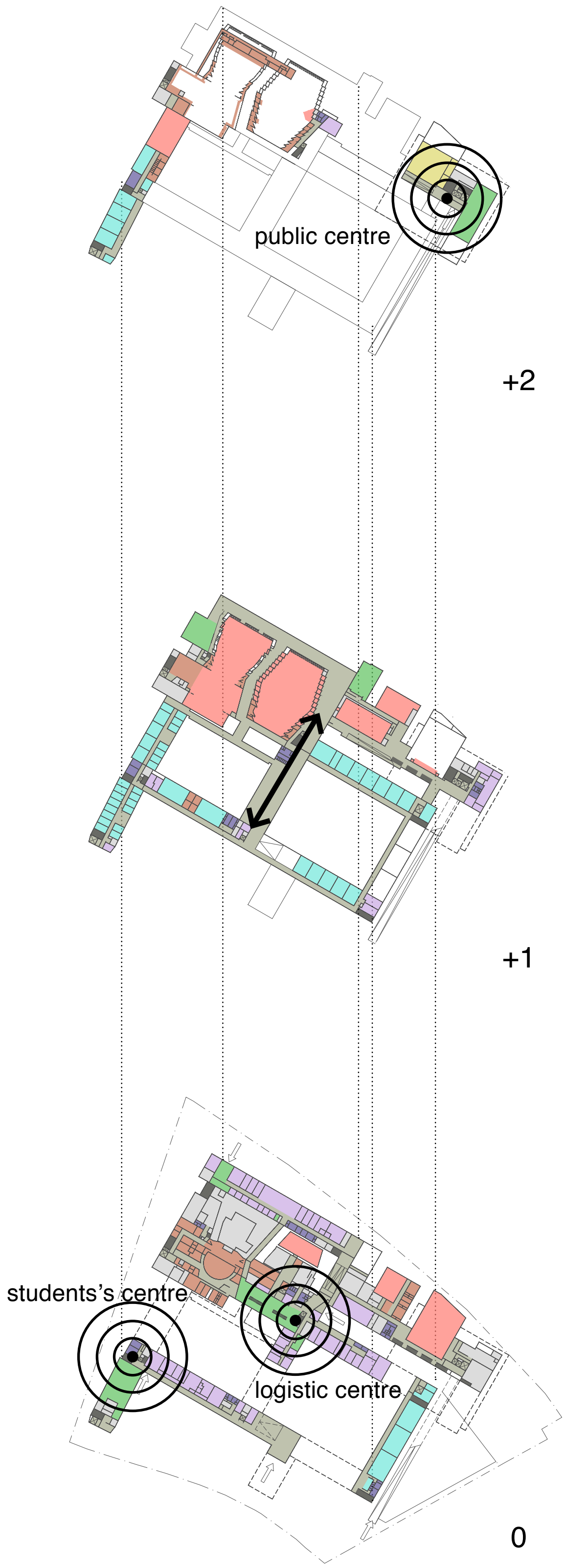


Figure I.3.64: Scheme centroids (MH).

4.3. Clusters of functions

The complex has different centroids: clusters of functions organised around a 'social core'. This pattern is the result of the evolution of the building. Before the pooling of the infrastructural needs in a global plan (1992), the building programme and its spatial translation occurred almost organically: rooms were transformed and reallocated, temporary solutions became permanent, functions of different users intersected and merged.

The social core of the original building was located in the central hallway of the low-rise building and the corridors around the halls.

The centroid of the Conservatoire moved to the crossing of block A and B and the refectory. Besides the presence of the refectory, most activity exists here because the route to many classrooms passes at this junction. Also the offices of the Conservatoire are present in this zone.

Another centroid is located underneath the concert hall. The artists' foyer is present here and serves as the hart of the logistic zone of the building. This foyer evolved from a closed area for the artists to a meeting place for the staff and artists of deSingel. The proximity of the offices of deSingel has steered this process.

The Grand Café is the public centroid of the new building. The public axis with the reading room, the studio's and exhibition hall are part of this cluster of functions.

The zone of Radio 2 is a self-sufficient entity and has little interaction with the other functions or users.

The centroids are vital cores of the building and activate the total complex. They enhance the status of an art city and provide the complex a flexible use; able to support many different functions.

The biggest interaction zone of the complex exists in the central hallway of the original building. The hallway is the entrance and main circulation axis for both the students of the Conservatoire, the staff of deSingel and the visitors of the building. The original status of this hallway has been the starting point of the master plan of Beel. Today this status has been confirmed and enhanced.

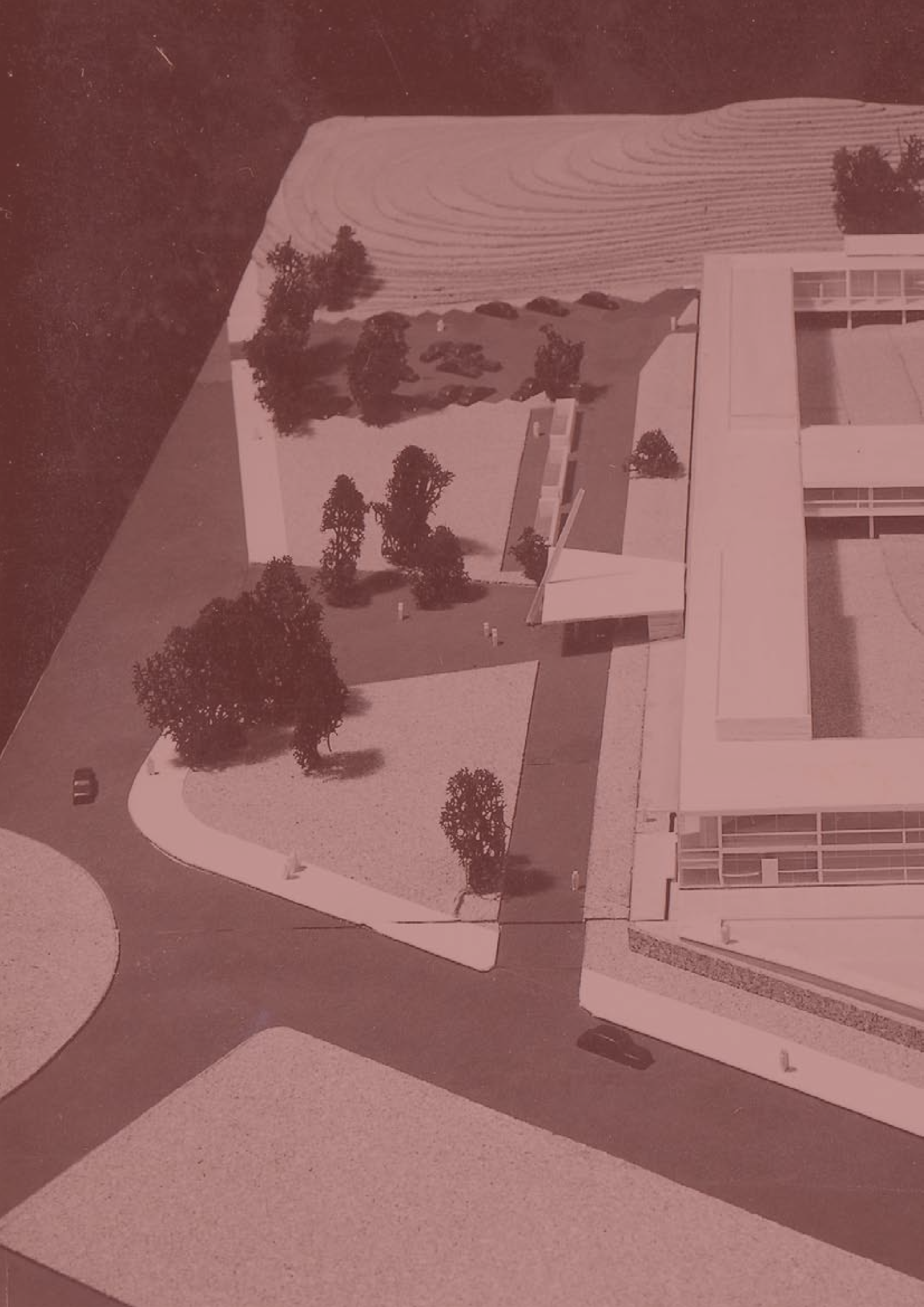
Although the master plan of Beel took the strengths of the building as starting point, the overall organisation of the building was not questioned. The past ad-hoc interventions and functional answer to problems were not evaluated. The new extension continues on the organically grown functioning of the complex.

KEY POINTS OF THE CHAPTER

- The complex today is a layered building with different architectural languages:
  - The building designed by Stynen and De Meyer (phase 1&2) is pure and balanced. The form derives from its function and the proportions are based on the golden ration and the Modulor.
  - The extension designed by De Meyer (phase 3) has a pragmatic approach. Its appearance is a formal interpretation of the original building.
  - Beel developed a context-based strategy. The alterations to the existing building (phase 4.1) form a new integrated entity. The large-scale extension (phase 4.2) is a contrasting and independent complex.

- The complex has three different users: the Conservatoire, deSingel and Radio 2. The Conservatoire and deSingel have shared interests and live in ‘symbiosis’. Radio 2 is an independent user with a separate programme.

- The building has different centroids with clusters of functions. This organisational structure has grown organically and has been taken as the starting point for the new extension (phase 4.2).



PART I

CHAPTER 4: INTERMEDIATE REVIEW

The study carried out in the previous chapters concerns an analysis of the entire building. At this point an intermediate review is made to summarise the most important results of this study and to frame the following part of this dissertation.

1. Definition of 'heyday'

The architectural heyday can be designated to the original design of Léon Stynen and Paul De Meyer and existed right after the completion of the second phase. Although the context was changed and an extra programme was added to the building (Radio 2), the complex was in its true pure composition.

2. deSingel as catalysis

Today the function of the building is more extensive and more complex. The Music Conservatoire has evolved into an International Arts Campus. The campus is a place of extensive artistic cross-pollination: "*The partnership between the Conservatoire and deSingel ensures a unique exchange of talent, art and knowledge that supports and fosters a strong international profile. Creativity and artistry can only exist where there is room for communication, research and awareness.*" The complex is a result of this intense programmatic evolution. The complex is now a small city and the original building is its historic core.[1]

1 "Royal Conservatoire Antwerp", in Artesis Plantijn Hogeschool Antwerpen: https://www.ap.be/royal-conservatoire-antwerp/1135 (accessed 26/07/2015).

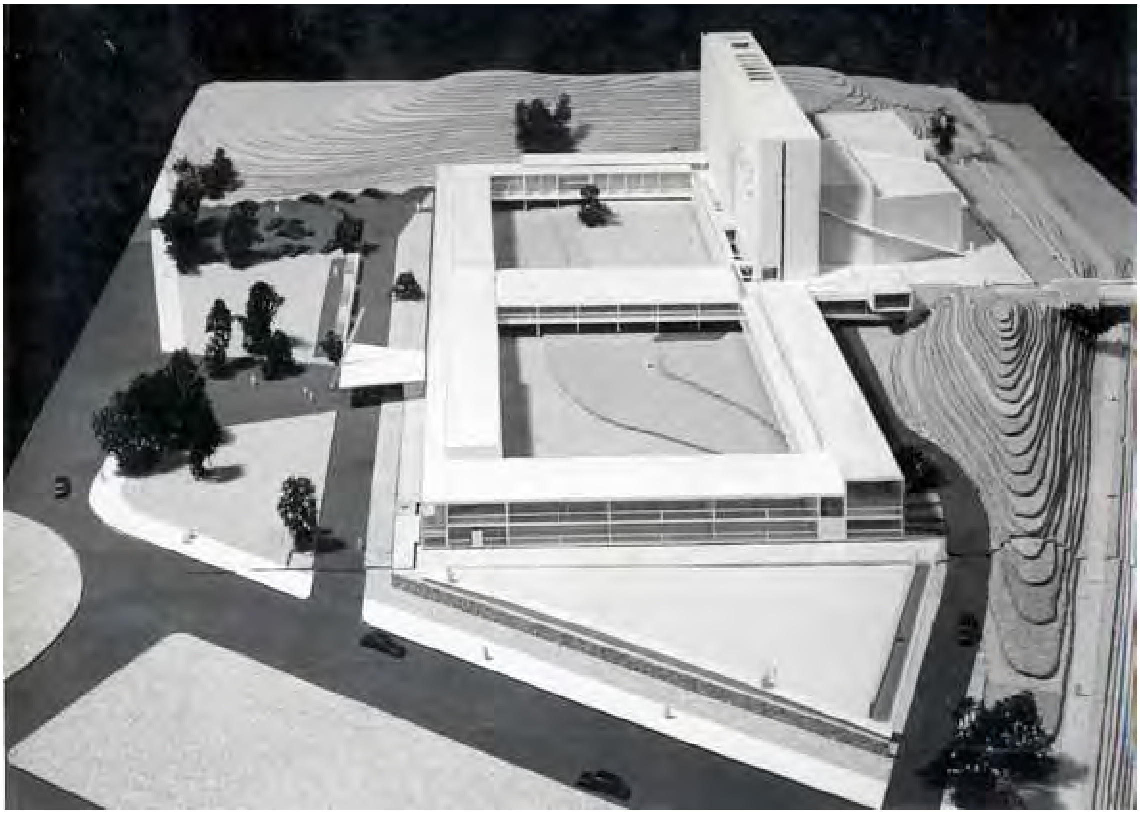


Figure I.4.1: Model design Stynen and De Meyer, 1959 (Antwerp: APA).

Figure I.4.2: After completion second phase, 1980 (Antwerp: deSingel).

3. Revaluation of the original building

During this evolution a value assessment of the existing building has never been carried out. The opportunity is never taken to remove organically grown disturbances.
The complex is the result of constant growth and this is linked to the very rapid change of the building programme. A complicated and layered building structure is the outcome.
The original building becomes less **recognisable** in this context. It is important to evaluate the original building and adjust future interventions to its qualities.
The following part of this dissertation focuses on a part of the building: phase 1. This offers the opportunity to carry out a profound study and create a methodology. Furthermore is this part, phase 1, the oldest part of the building and most ready for a future restoration. Additionally does this part have repetitive elements by which the study has the biggest impact. Moreover is this part of the building connected with every other building phase.
The following scheme shows the area of focus: **phase 1 with its connections to the other phases**. Phase 3 is considered as entirely connected and is for this reason also part of the detailed study.

Figure I.4.3: Overview complex, 2012 (flickr.com, 2015).

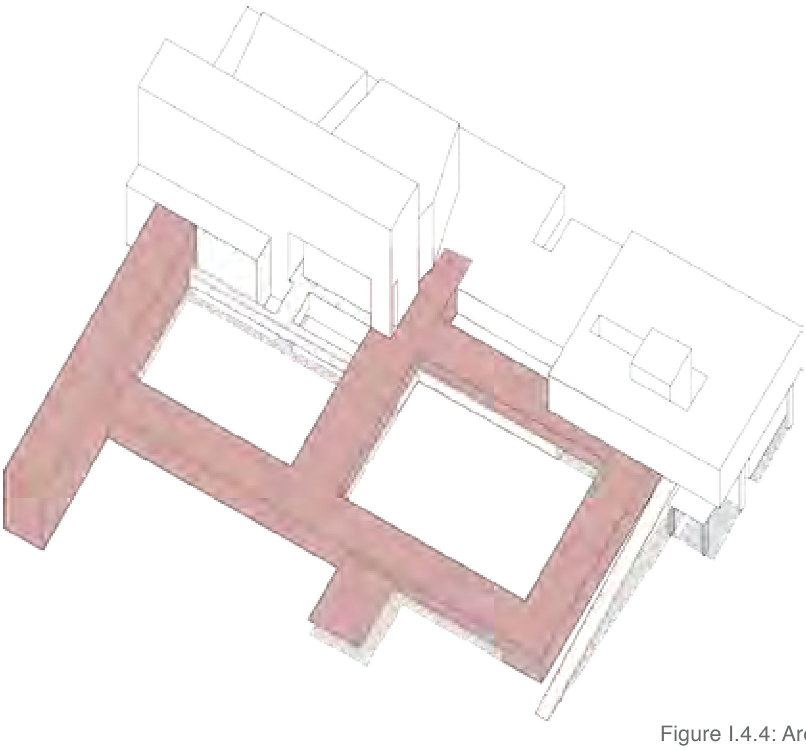


Figure I.4.4: Area of focus (MH).

PART II
DETAILED STUDY OF PHASE 1

PART II
CHAPTER 1: TECHNICAL ANALYSIS

1. Survey methodology

This chapter concerns a detailed study of phase 1 and its relation to the other phases of construction. The materials and specific details are investigated in situ and compared with archival sources: original drawings, specifications and old pictures. Detailed drawings are available in the archive of deSingel, the specifications and old pictures are present in the Architecture archives of the province of Antwerp (APA). The drawings and specifications concern those of the calling for tenders. The execution files where not available in the consulted archives.

The survey in situ has been carried out on the following inspection days: 06/03/2015, 20/03/2015, 27/03/2015, 03/04/2015, 22/05/2015. Unless mentioned, the pictures in this chapter are taken by the author on these inspections days. All the pictures are digitally classified in a room-by-room list. The numbers of the rooms redirect to the room numbers used by the technical service of deSingel.

2. Construction and acoustics

2.1. Phase 1

The drawings of block F are represented on the next pages to illustrate the structural concept:

1 - plan level +1 (Antwerp: deSingel)
2 - longitudinal section (Antwerp: deSingel)
3 - transversal section (Antwerp: deSingel)
4 - indication block F (adapted from Antwerp: deSingel)

2.1.1. Foundations

The foundation of the building of phase 1 consists out of a pile foundation. The reinforced concrete piles are driven according to a grid of 7,40m x 8,40m. This raster corresponds to the dimensions of the classes and is deduplicated due to acoustic reasons. Every ‘class/module’ is separated from foundation to roof by an anti vibration joint. This results in self-containing modules able to vibrate independently from each other. These vibration joints also serve as expansion joint.

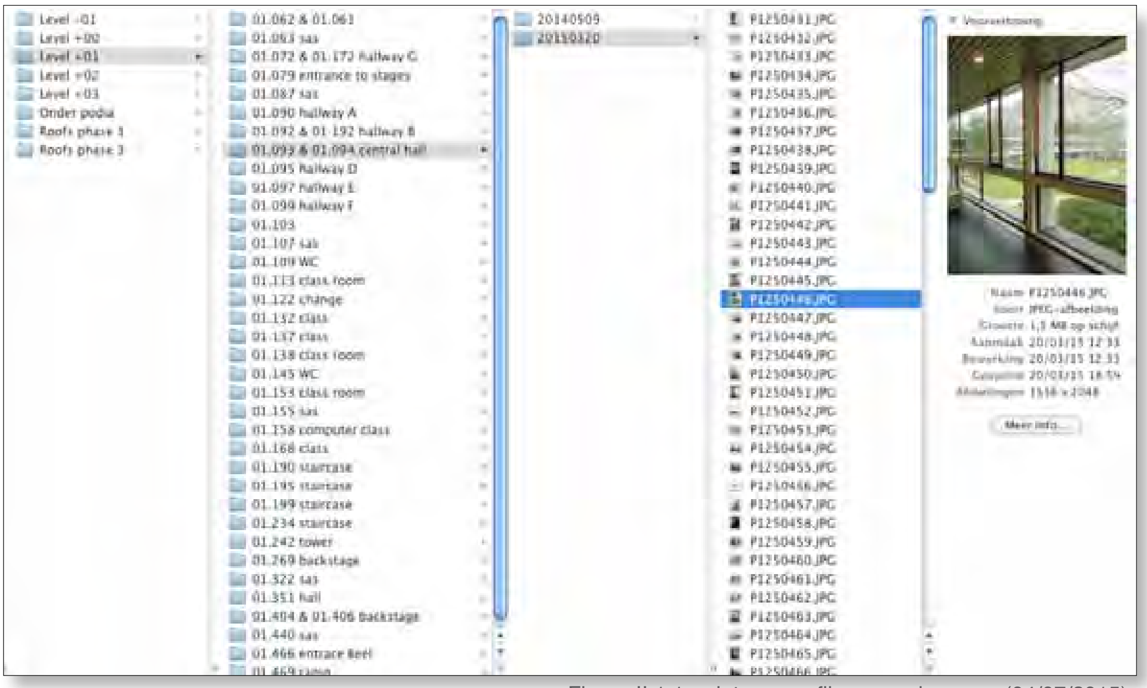
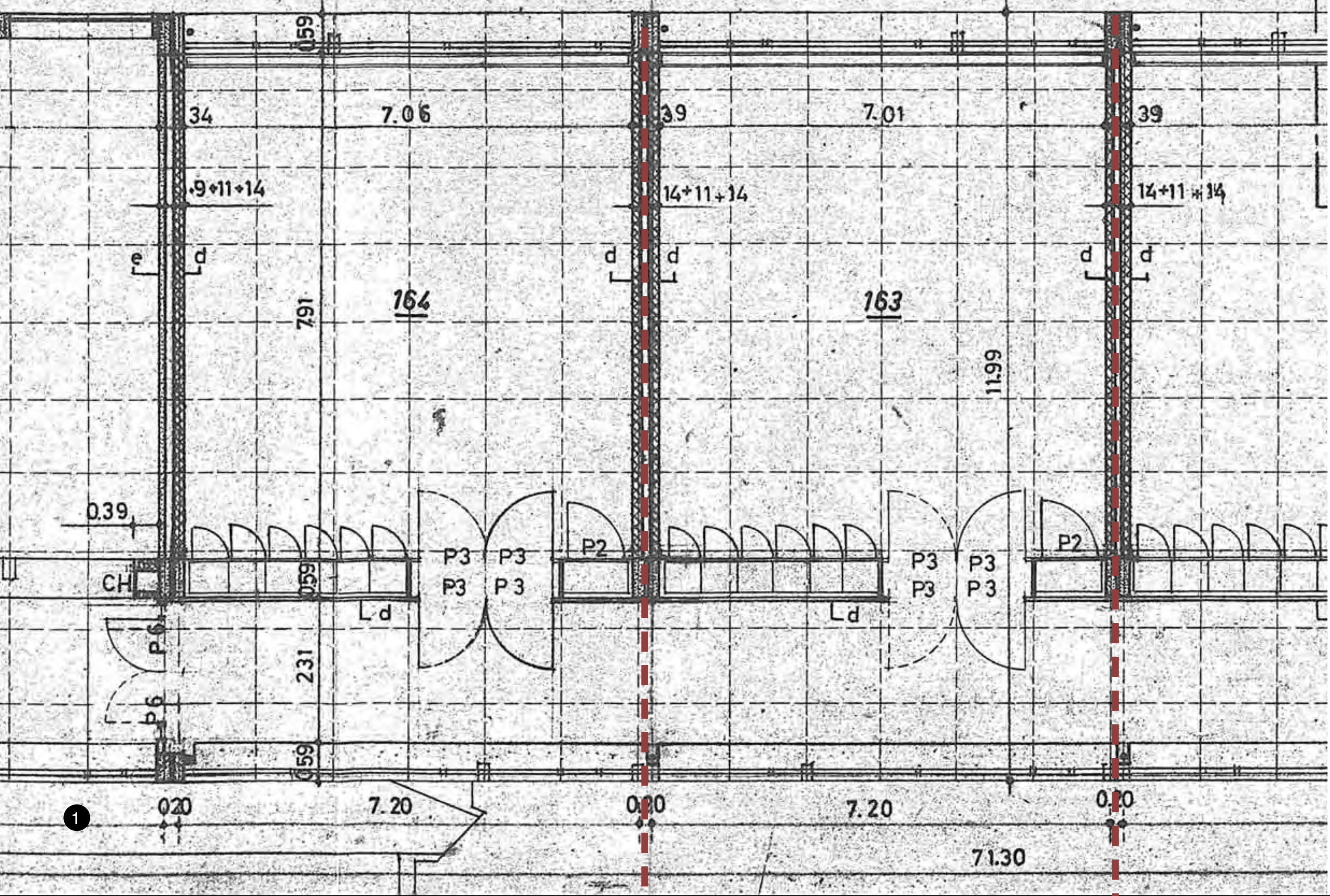


Figure II.1.1: print screen files room-by-room (04/07/2015).

1

34
7.06
39
7.01
39
9+11+14
14+11+14
14+11+14
164
163
791
11.99
0.39
CH
P2
P2
P3
P3
P3
P3
P3
P3
P3
P3
P6
P6
059
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231
0.20
7.20
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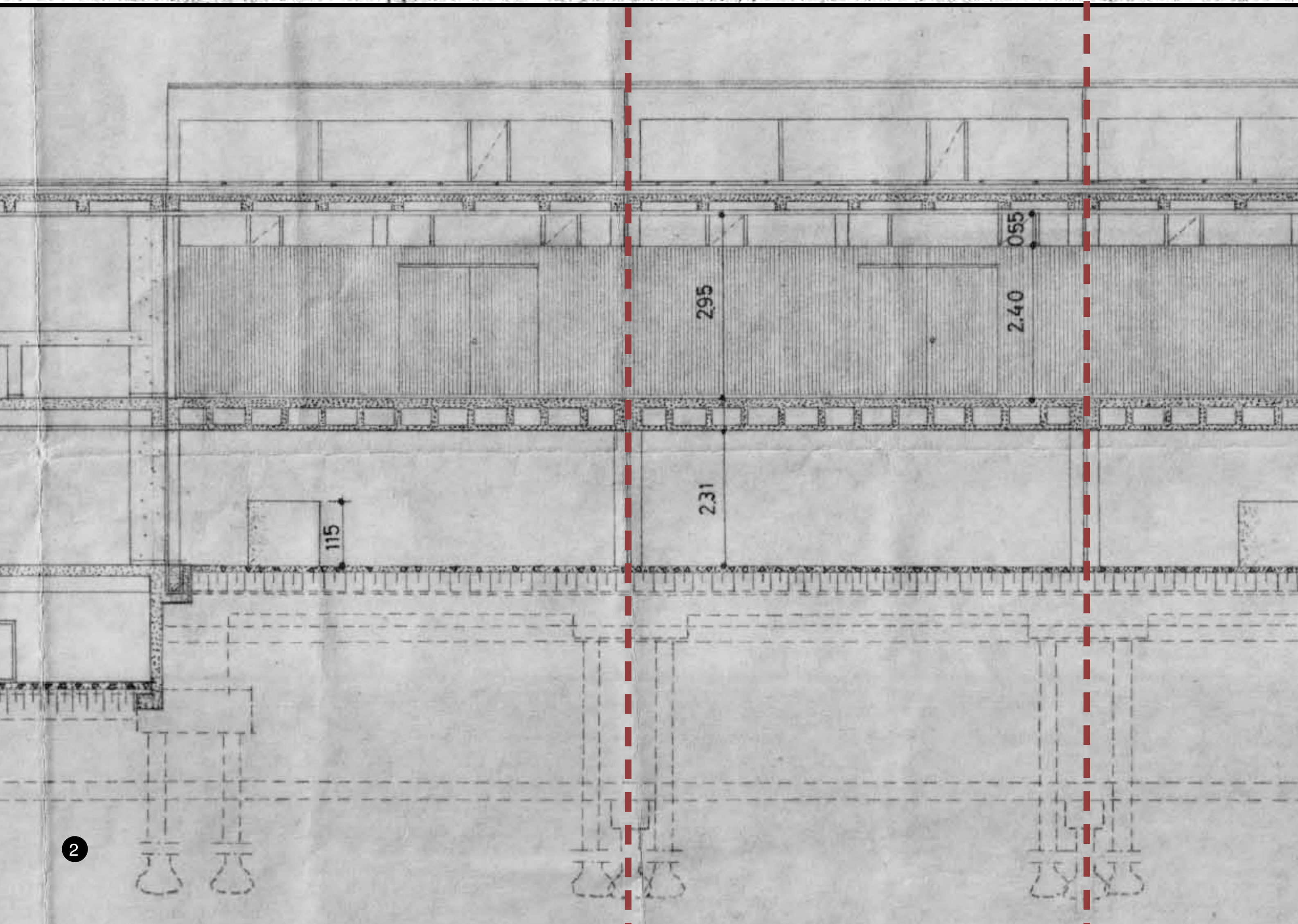
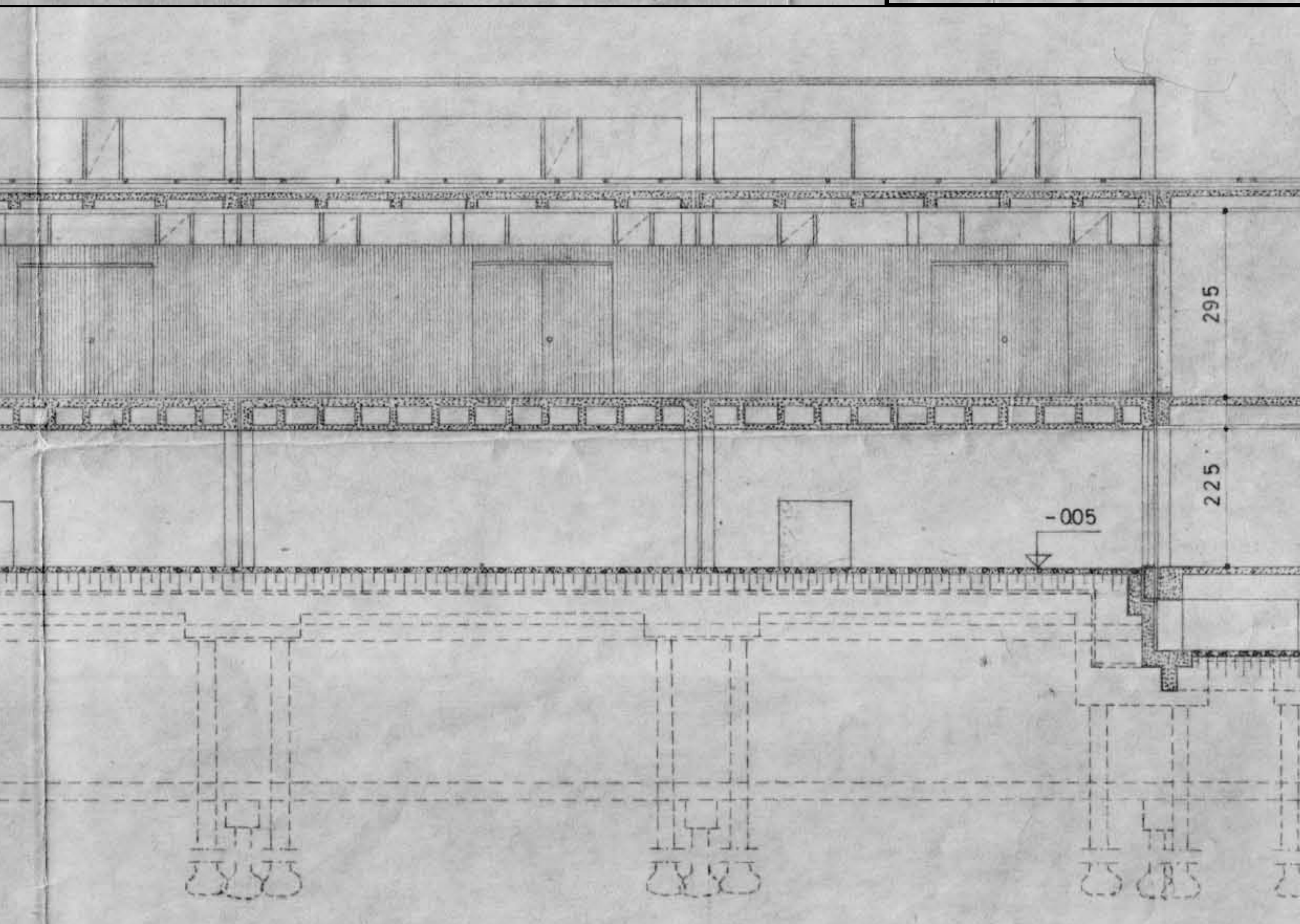
71.30

2

055
295
2.40
2.31
115


pás +280
pas -005
6.25
cantilever
3
4


295
225
- 005

2.1.2. Framework and plates

The primary bearing structure of phase 1 is an in-situ concrete framework following the same grid as the foundations (7,40m x 8,40m). The floor and roof plates are in-situ concrete ribbed plates. The lateral stability is ensured by the orthogonal connection of the different elements and the solid cores near the restrooms and staircases.

2.1.3. Roof

Prefabricated concrete slabs are placed on top of the in-situ concrete ribbed roof plates to create a ventilated roof structure. These prefabricated slabs have no structural function.

2.1.4. Walls

The walls between two classes concern two masonry walls finished with wooden lamellas. Double-hulled wooden walls make the separation between classes and hallway. Besides the acoustic benefits, this provides space for integrated cabinets and technical

Figure II.1.2: Acoustic joint: deduplicated columns (MH, 23/05/2014).

Figure II.1.3: Block E under construction (Antwerp: APA).

installations.

2.2. Phase 3

Phase 3 concerns an alteration and extension of the east wing.[1] An extra level is constructed on top of block B. Because the foundations of the existing building were not sufficient to carry extra loads, the extra level is a bridge construction over the existing wing. The new columns (phase 3) are positioned next to the existing columns (phase 1) and heavy beams bear the second floor and the roof from façade to façade. The columns are also deduplicated to meet up with the acoustic requirements. The structure of prefabricated concrete elements is visible in the façades of phase 3. The original structure of phase 1 still exists underneath the new structure.

1 Cfr. 'Chapter I.3: Architectural and Functional Analysis' for detailed information.

3. Pipeline system

3.1. Rainwater downpipes

The rainwater is collected in gutters on the roofs. These gutters are integrated in the roof profile near the façades. Where the glass is positioned at the inside plane of the façade (south and west oriented façades), the rainwater downpipe is present outside and runs directly from roof to ground level. Where the glass is positioned at the inside plane of the façade (north and east oriented façades), the rainwater downpipe is present inside. The connection between the roof gutter and vertical downpipe is made in the lowered ceiling. Afterwards the water is collected in an integrated horizontal pipe underneath the floor of level +1 because no columns are present underneath the façade (cantilever) (the finishing panel is missing in the picture on the next page). The horizontal pipe runs to the crossing with another wing and diverts to ground level. The vertical rainwater downpipes are visible elements and are painted dark green.

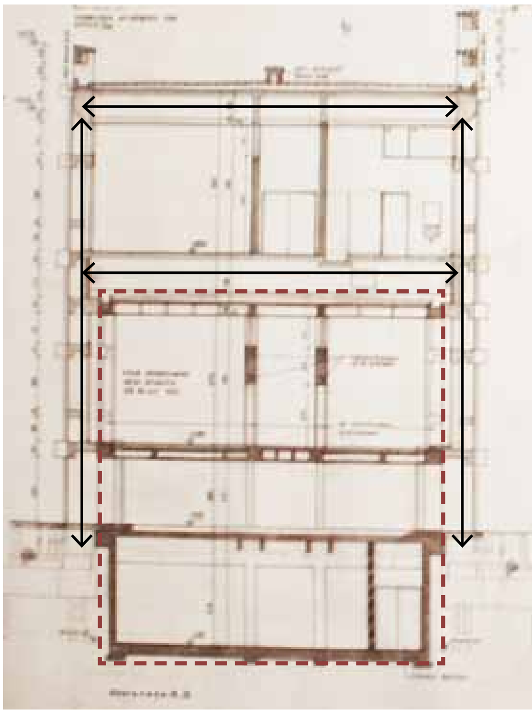


Figure II.1.4: Section block B (adapted from Antwerp: APA).

Figure II.1.5: Structure phase 1 (left) and structure phase 3 (right) (MH, 23/05/2014).

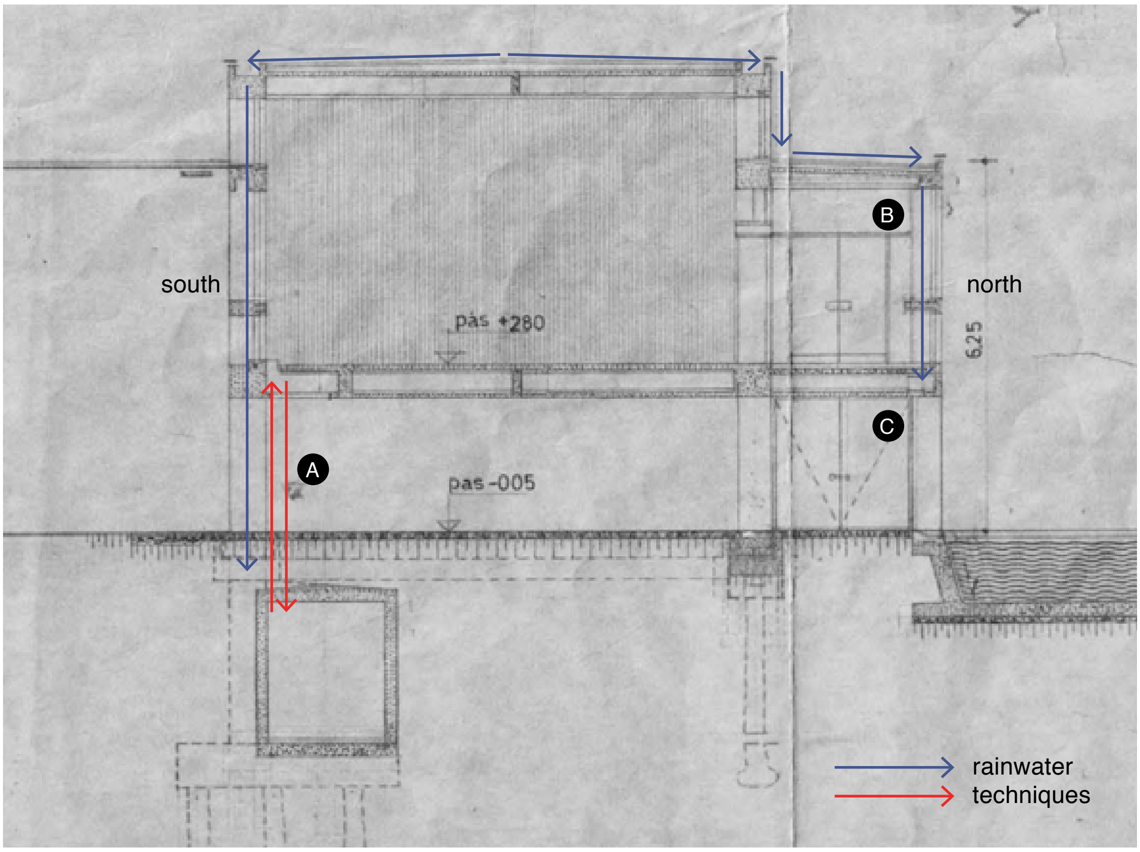


Figure II.1.6: Scheme pipe system (Section block F, adapted from Antwerp: deSingel).

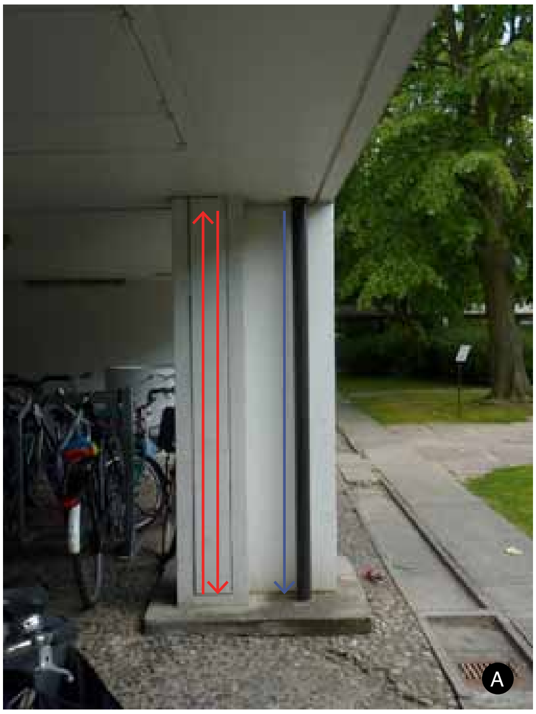


Figure II.1.7: Column with shaft and rainwater downpipe.

Figure II.1.8: connection rainwater downpipe.

Figure II.1.9: Horizontal rainwater downpipe
(*note: the finishing panel is missing*).

3.2. Techniques

Horizontal channels are present on level -1. The horizontal distribution of technical pipelines occurs in these underground channels. Near the columns underneath the classes, vertical pipes make the connection with level +1. The columns have an adapted profile with integrated shaft: a U-shaped element is added to the rectangular column. A removable panel makes the shafts accessible from outside. Input and output of technical provisions, such as electricity and heating, occurs by these individual vertical shafts. Horizontal connections of technical pipelines between classes is avoided due to acoustic reasons (sound transmission).
In the floor underneath each classroom a void is present. A convector used to be positioned here to heat the classroom. The voids are accessible by a metal hatch integrated in the underside of the floor of level +1.

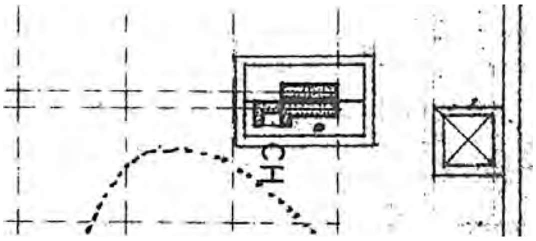


Figure II.1.10: Column with shaft (Antwerp: deSingel).


Figure II.1.11: Horizontal underground channel.

4. Inventory original interior materials

In the following paragraph, an inventory of the original interior finishing materials is presented. This study is carried out to distinguish the original interior materials of phase 1 and their way of application. The interior materials of phase 3 are also studied in depth because phase 1 and phase 3 intersect. In order to create the right frame of reference the main original interior materials of the other phases are also represented (phase 2, phase 4.1 and phase 4.2). This is necessary to understand the overall concept of the building, but also to investigate which parts of previous phases have been renewed during the construction of new phases.
The observed materials of phase 1 are compared with the specifications. These specifications and tender documents are present in the archive of Léon Stynen in the Architecture archives of the province of Antwerp (APA). The available specifications concern the specifications made for the calling for tenders (14/07/1961). Materials and details have been changed during construction and the execution drawings were not available in the consulted archives. Furthermore are the specifications not complete. The document is used as a reference to verify the observed materials. Photographs of the execution and the period right after completion of phase 1 are used as an additional source for the confirmation of the original material and its way of application.
The inventory of the interior materials is followed by a comparison between phase 1 and phase 3 to point out the similarities and differences between both intersecting phases. Diptychs are made of exemplary rooms such as hallways, classrooms and restrooms.
This paragraph is concluded by the reflection on the overall concept of the interior materials.

4.1. Phase 1

4.1.1. Floors

Figure II.1.12: linoleum type a.

Linoleum (type a)

The floors of the hallway, staircases, classes and offices of level 0 and +1 are covered with black linoleum with white clouds (type marmoleum). The back of this material consists out of ‘woven jute’. The linoleum is glued on the screed. Where a construction joint is situated, a screwed aluminium profile is applied (see picture).
In many rooms (mainly classrooms), the original material is still existing. When the material is renewed (for example in hallways connecting to the new extensions), it is replaced by a similar type of linoleum.

Figure II.1.13: plinth in blue limestone.

Plinth in blue limestone

When black linoleum is used as floor finishing, the concrete walls (painted white) have a plinth in blue limestone (h=10cm). The colour and pattern of the stone matches the appearance of the marmoleum linoleum. It is not beyond doubt if this material is the original as in the specifications plinths in ‘asbestos cement sheet’ are described. Either the plinths are replaced or the material has been changed during execution. On many places (mainly at the columns in the hallways) the blue limestone is overpainted in a white colour.

Figure II.1.14: marble ‘Saint Anne’.

Marble ‘Saint Anne’

The floor of the entrance hall and the main stair are finished with marble ‘Saint Anne’, a dark grey marble with a light grey pattern. The plinths are in the same material (h=10cm). The floor used to be very shiny because the marble was polished. The material has become matte over time.

Figure II.1.15: grey-white ceramic tiles.

Ceramic tiles

The floors of the rest rooms are finished with matte grey-white ceramic tiles with a dark grey cement joint. The size of the tiles is 10 x 10 cm. This material is still intact in all rest rooms dating from phase 1.

4.1.2. Walls

Concrete (painted)

The structural concrete walls and columns (if not finished with tiles or wood) are painted white. The surface structure of the concrete and pattern of the formwork are visible. As described in the specifications (archive Léon Stynen, APA), the joints of the formwork had to be applied with shifting vertical joints (cfr. brickwork bonds) and the dimensions had to be chosen that way they correspond with the height of windows, door openings and parapets. De joint division had to be approved by the architect.
The vertical structural and acoustic joints between are finished with aluminium profiles.

Figure II.1.16: concrete (painted).

Wooden lamella (type a)

The walls of the classes and offices and walls between hallways and classes are finished with wooden lamella (nailed). It concerns varnished Iroko-Kambala.
The width of the lamella is 4,3 cm and the joint 0,7 cm. A singular lamella has a Z-shape (cfr. drawing). This material is the main and most dominant/defining wall finishing and hasn't been replaced since 1969.

Figure II.1.17: wooden lamella.

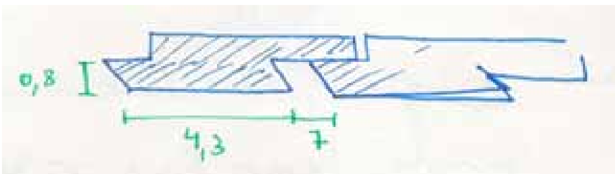


Figure II.1.18: sketch wooden lamella.

Glazed tiles

The walls of the rest rooms are cladded with light-blue glazed tiles with a dark grey cement joint. The size of the tiles is 10 cm x 20 cm. This material is still intact in all rest rooms dating from phase 1.

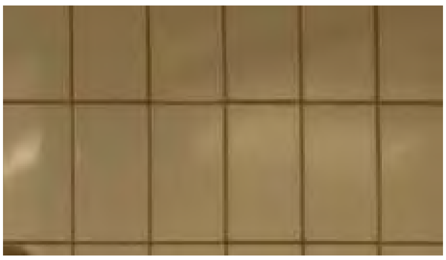


Figure II.1.19: glazed tiles.

4.1.3. Ceilings

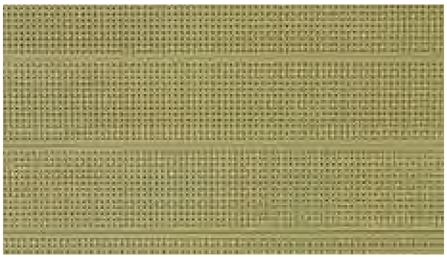


Figure II.1.20: perforated aluminium lamella.

Perforated aluminium lamella

The ceilings of the hallways, classes and offices on level 0 and +1 and the ceilings of the staircases and rest rooms on level +1 are finished with white perforated aluminium lamella (l=120cm , w= 12cm). The upper side of these lamella is covered with black felt to improve the acoustic performance (absorption). Lights modules are integrated in the grid of the lamella. The lamella are all placed in the same direction and create one continuous plane (crossways in blocks A, D and F / parallel in block E).
The lamella in the central hallway are replaced with an other type (narrow, not perforated, cfr. ceiling phase 2) when the second phase was added. This conclusion can be made by the comparison of the follow two pictures.


Figure II.1.21: Entrance hall in 1967 (PERSOONS 1998, p. 15).


Figure II.1.22: Entrance hall in 1980 (PERSOONS 1998, p. 341).

Concrete (painted)

The structural concrete floors above level 0 (if not finished with aluminium lamella) are painted white. The surface structure of the concrete and pattern of the formwork are visible. The lights are attached to the ceiling, the wires are integrated in the floor.

Figure II.1.23: concrete ceiling (painted).

4.2. Phase 2

4.2.1. Floors

Carpet

The floors of the public circulation area of phase 2 (hallway around blue and red hall) are finished with a light brown carpet. The plinths are made out of varnished wood.
The blue and red hall are finished with respectively a blue and red carpet.
Since the opening of the second phase in 1980, the carpets have been renewed (several times) with a similar type.

Figure II.1.24: light brown carpet.

4.2.2. Walls

Textured concrete

The walls of the public circulation area of phase 2 are finished with a textured concrete. A finishing layer of gravel is applied on the concrete. The corners of the walls have a smooth surface and enforce the suggestion of folded planes in stead of the impression of one volume.

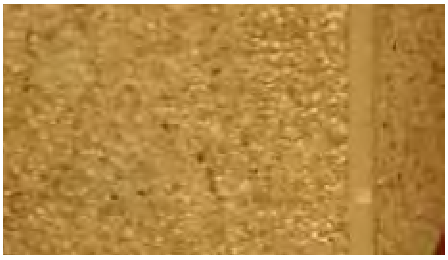


Figure II.1.25: textured concrete.

4.2.3. Ceilings

Aluminium lamella

The ceilings of the public circulation area of phase 2 are finished with white aluminium lamella without perforations. Round spots are integrated and are positioned following the system of a shifting grid. The lamella are all placed parallel to the central hallway (block C) and create one continuous plane.

Figure II.1.26: aluminium lamella.

4.3. Phase 3

4.3.1. Floors


Figure II.1.27: linoleum type b.

Linoleum (type b)

The floors of the hallways, staircases and classes on level 0, +1, +2 and +3 and the refectory on level 0 are finished with a black linoleum with white clouds (type marmoleum). The black is less intense than the black of the linoleum of phase 1. The back of this linoleum consists out of an elastic material. Where a construction joint is situated, an aluminium profile with a rubber joint is applied (see picture). A wooden plinth is used in the staircases.


Figure II.1.28: white ceramic tiles.

Ceramic tiles

The floors of the rest rooms are finished with white ceramic tiles with a dark grey cement joint. The size of the tiles is 20 cm x 20 cm.

4.3.2. Walls


Figure II.1.29: wooden lamella.


Figure II.1.30: detail wooden lamella.

Wooden lamella classroom (type b)

The walls of the classes are finished with varnished wooden lamella. The lamella have visual the same rhythm as those of phase 1, but are constructed and attached in a different way. Each board consists out of 2 visual lamella by profiling a fake joint in the middle of the plank. The planks are attached to the wall by a clipping system (acoustic: massa-spring). Behind the lamella, a layer of mineral wool is situated (acoustic: absorption).

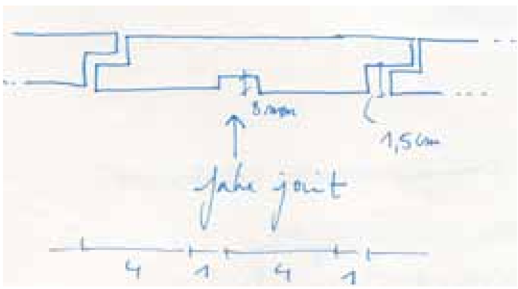


Figure II.1.31: sketch wooden lamella classes phase 3.

Wooden lamella hallway (type c)

The walls of the hallways are finished with varnished wooden lamella. Like the lamella in the classrooms (type b), each plank consists out of 2 visual lamella. These planks are thinner than the planks of type b and the joint is less profiled. They are attached directly on the structure and have no acoustic function (cladding).

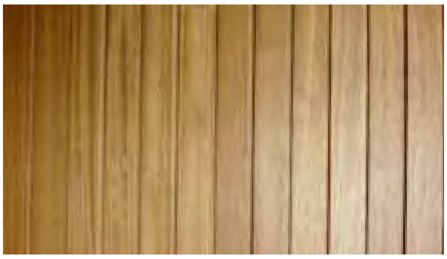


Figure II.1.32: wooden lamella.

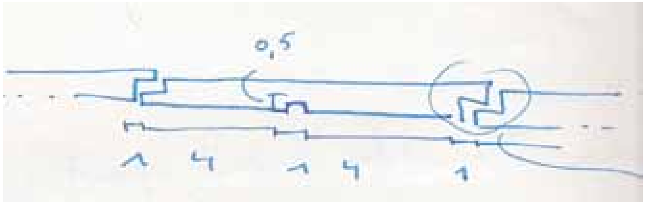


Figure II.1.33: sketch wooden lamella hallways phase 3.

Figure II.1.34: detail wooden lamella.

Brown-red bricks

The walls of the staircases are finished with brown-red bricks with light grey cement joints. The structural walls of these circulation cores are made out of concrete. The bricks are used as cladding and fulfil no structural function.

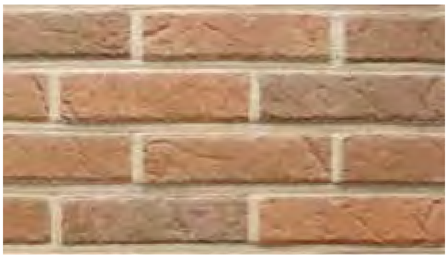


Figure II.1.35: brown-red bricks.

White ceramic tiles

The finishing of the walls of the rest rooms concerns white ceramic tiles with a white cement joint. The size of the tiles is 10 cm x 20 cm.

Figure II.1.36: white ceramic tiles.


Figure II.1.37: aluminium lamella.


Figure II.1.38: structured rendering.

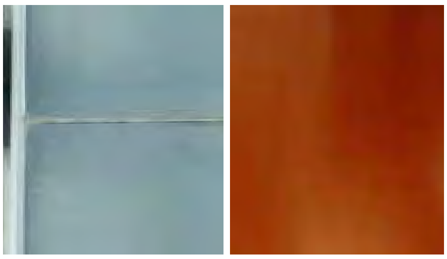


Figure II.1.39: grey and red resinous flooring.

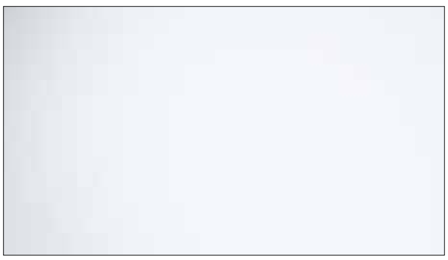


Figure II.1.40: rendering painted white.

4.3.3. Ceilings

Aluminium lamella

The ceilings of all rooms (except staircases) on level 0, +1, +2 and +3 are finished with white aluminium lamella. It concerns the same type used in phase 2 (cfr. supra). Oblong lights are integrated in the longitudinal direction. The lamella are all placed parallel to the central hallway (block C).

Structured rendering

A structural rendering is applied at the underside of the concrete staircheeks and the ceilings in the staircases. The rendering is painted white.

4.4. Phase 4.1

4.4.1. Floors

Resinous flooring

The main floor finishing material used in the public areas of phase 4.1 concerns resinous flooring. A grey resinous flooring is applied in the new hallway on level +1 (block H). The edges nearby the glass are executed in stainless steel. The floor in the artist area (bar/green room and dressing rooms) is a red resinous floor.

4.4.2. Walls

Rendering

A smooth rendering with matte white paint is applied on the new walls.

4.4.3. Ceilings

Woodwool cement slabs (type a)

Slabs composed out of fine fibre grey-white woodwool cement is used as ceiling finishing in the public areas of phase 4.1.The panals are applied with shifting joints (cfr. brickwork bonds).

Figure II.1.41: woodwool cement ceiling.

4.5. Phase 4.2

4.5.1. Floors

Red carpet

The floor and ramp of the central hall is finished with a plain bright red carpet. This material corresponds to the carpet used in phase 2 and the colour is a repitition of the red resinous flooring used in the artist area of phase 4.1.

Figure II.1.42: red carpet.

4.5.2. Walls

Rendering

A smooth rendering with matte white paint is applied on the new walls.

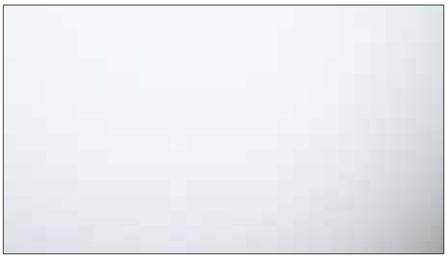


Figure II.1.43: rendering painted white.

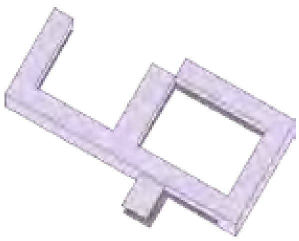
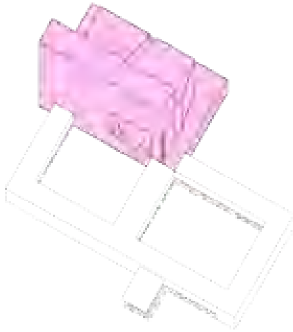
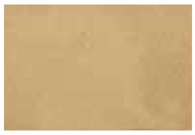
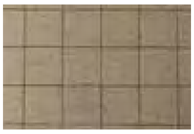
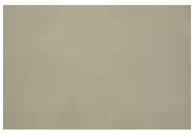
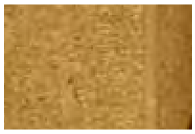
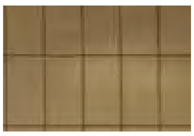
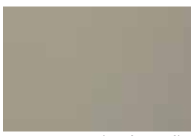
4.5.3. Ceilings

Woodwool cement slabs (type b)

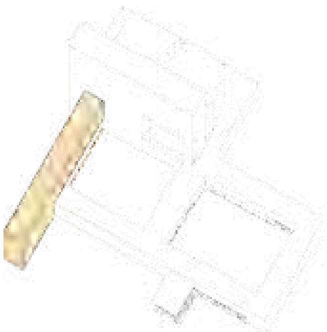
Cream-white woodwool cement slabs with shifting joints (cfr. brickwork bonds) are used as ceiling finishing. The fibres are rougher than those of the woodwool cement slabs used in phase 4.1 (type a, cfr. supra).

Figure II.1.44: woodwool cement ceiling.

4.6. Overview materials

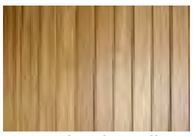
	1963-1967 phase 1		**1978-1980** phase 2
			
FLOOR	 linoleum type a	 marble 'Saint Anne'	 white carpet
	 ceramic tiles		
WALL	 wooden lamella	 concrete (painted)	 textured concrete
	 glazed tiles		
CEILING	 perforated aluminium lamella	 concrete (painted)	 aluminium lamella

1987
phase 3



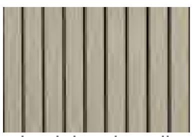

linoleum type b


ceramic tiles


wooden lamella

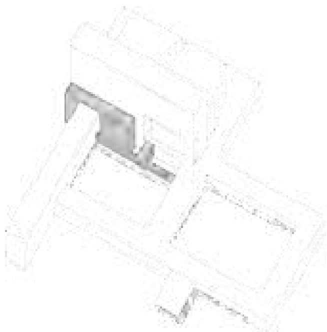

brown-red bricks


ceramic tiles


aluminium lamella


structured rendering

1999-2000
phase 4.1



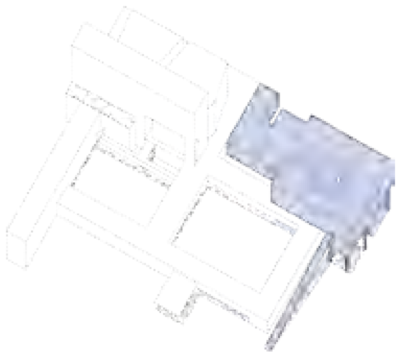

resinous flooring


resinous flooring

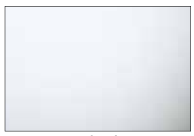

rendering


woodwool cement ceiling

2007-2010
phase 4.2




red carpet


rendering


woodwool cement ceiling

4.7. Exemplary rooms

In this paragraph exemplary rooms of phase 1 and phase 3 are 'confronted': hallway, classroom and rest room. A sample card of the materials (as described in previous paragraph) is created together with two overview pictures. The aim of the following diptychs is to point out the similarities and differences between phase 1 and phase 3 as phase 1 and phase 3 almost 'freely' merge into one other. The understanding gained by this exercise provides a useful tool to read the different layers of the building.
(Note: the 'reference rooms numbers' redirect to the room numbers used by the technical service of deSingel.)

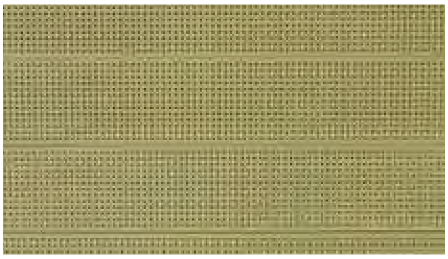


Figure II.1.45: perforated aluminium.


Figure II.1.46: acoustic wood.


Figure II.1.47: linoleum type a.

Phase 1: Hallway

The floor of this hallway is finished with a black linoleum with white clouds (type a). A double aluminium profile is applied at joints. Profiled prefabricated concrete slabs make the junction floor-facade.
The hallways are on one side flanked by the outdoor windows with windowsill and on the other side by walls finished with wooden lamella (type a). The doors are visually integrated as they are finished with the same material. Inner windows with wooden frames and a similar rhythm as the outdoor windows are integrated between the upper part of the trimwork walls and the ceiling.
Perforated aluminium lamella are used as ceiling finishing. Lights are integrated within the rhythm of the lamella.
(reference room: 01.095)


Figure II.1.48: hallway D level +1 (MH, 23/05/2014).


Figure II.1.49: hallw. D level +1.

Figure II.1.50: aluminium.

Figure II.1.51: wood.

Figure II.1.52: linoleum type c.

Phase 3: Hallway

The floors of the hallways of phase 3 are finished with a similar black linoleum (as used in phase 1), though the colour is less intense. The profile applied at joints is also different: it contains a central rubber strip. Both sides of the hallway are flanked by walls finished with wooden lamella (type c). As described in previous paragraph, the lamella are constructed in a different way: each plank consists out of 2 visual lamella by profiling a fake joint in the middle of the plank. The doors concern white doors with wooden frame. In contrast to the doors in the hallway of phase 1, these doors are not visually integrated in the walls.
The ceiling is finished with aluminium lamella, they are continuous and not perforated. Oblong lights are integrated in the longitudinal direction. (reference rooms: 02.072 and 01.072)

Figure II.1.53: hallway G level +2 .

Figure II.1.54: hallway G level +1.

Phase 1: Classroom

The same black linoleum as in the hallway is used as finishing material of the floors (linoleum type a).
The outer wall consists out of big glass windows in steel frames, horizontally separated by a windowsill. The other walls of the classroom are finished with wooden lamella (type a). In the wall between the classroom and the hallway, cabinets are integrated. The doors of those cabinets and the door giving access to the hallway are also covered with wooden lamella.
The same perforated lamella as in the hallway are used a ceiling finishing.
(reference room: 01.093)

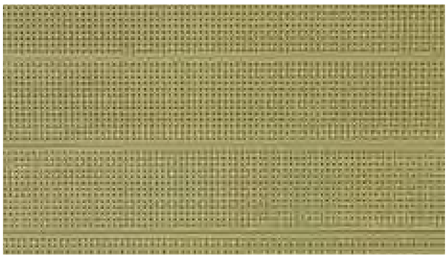


Figure II.1.55: perforated aluminium.

Figure II.1.56: acoustic wood.

Figure II.1.57: linoleum type a.

Figure II.1.58: classroom in hallway D level +1 (MH, 23/05/2014).

Figure II.1.59: classroom in hallway D level .

Figure II.1.60: aluminium.

Figure II.1.61: wood.

Figure II.1.62: linoleum type c.

Phase 3: Classroom

The floor of the classroom is finished with linoleum type b (cfr. hallway).
The outer wall is an aluminium joinery composition without integrated windowsill. A horizontal concrete slab is located above eye level.
The interior walls are finished with wooden lamella (type b) and contribute to the overall acoustic quality of the classoom. The doors giving access to the hallway are white double doors with wooden frame and are not visually integrated.
The ceiling consist out of white continuous lamella with integrated light elements.
(reference room: 01.137)

Figure II.1.63: classroom in hallway B level +1 (MH, 27/03/2015).

Figure II.1.64: classroom in hallway B level +1 (MH, 27/03/2015) .

Phase 1: Rest room

Small matte ceramic tiles (10 cm x 10 cm) with dark grey cement joints are used to finish the floors of the rest rooms. The tiles have a flamed grey-white pattern.
The walls are covered with rectangular shiny light blue tiles (10 cm x 20 cm) with dark grey cement joints. Rounded elements are used for the convex corners.
Depending on the position of the rest room in the building, the ceiling is either finished with aluminium lamella or either a structural concrete floor panel.
(reference room: 00.059)

Figure II.1.65: concrete ,painted white.

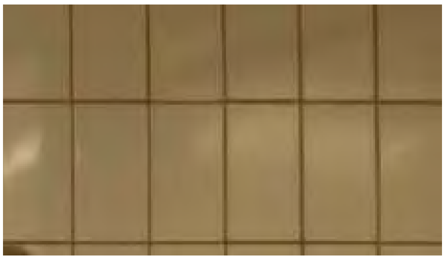


Figure II.1.66: light blue ceramic tiles.

Figure II.1.67: ceramic tiles.

Figure II.1.68: rest room in hallway E level 0 (MH, 06/03/2015).

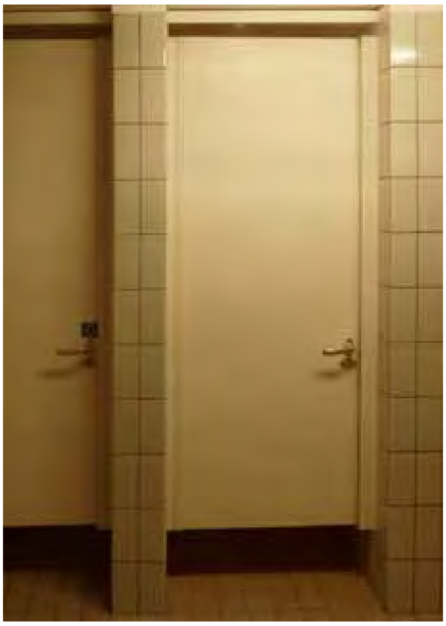


Figure II.1.69: rest room in hallway E level 0 (MH, 06/03/2015) .


Figure II.1.70: aluminium.


Figure II.1.71: white ceremic tiles.

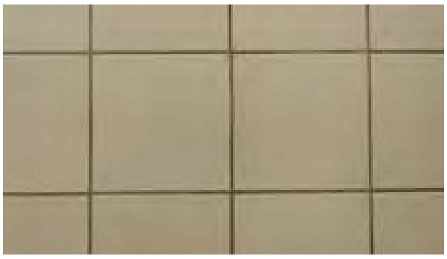


Figure II.1.72: ceramic tiles.

Phase 3: Rest room

The floors of the rest rooms are covered with matte ceramic tiles (20 cm x 20 cm) with dark grey cement joints.
The walls are finished with rectangular matte white tiles (10 cm x 20 cm) with white cement joints. The partition walls between the toilets concern high-pressure laminate plates. These partition walls and doors are probably also original, as the dimensions correspond with the dimensions on the original plans and the direction of the doors, rotating toward the toilet, would have been changed during renovation works because public building regulations require doors rotating away from the toilet.
The ceilings are finished with white continuous lamella.
(reference room: 02.214)


Figure II.1.73: rest room in hallway B level +2 (MH, 27/03/2015).


Figure II.1.74: rest room in hallway B level +2 (MH, 27/03/2015).

4.8. Transparency and continuity

The study of the interior finishing materials of the original building (phase 1) shows that the interior surfaces are materialised as continuous planes without visual obstructions.
The floor is a continuous surface through the whole building. The floor is the same in both hallways and classrooms. The entrance is finished with a dark marble that continuous on the main stair. This continuity of materials makes the route to the main level natural.[1]

1 Initially the outside plane underneath the canopy was finished with the same marble but has been changed because it was too slippery. This continuity of material enforced the transparency between inside and outside.
(Antwerp: RdGA, Antwerpen – KVMC – P31/BG5/11611 – 1e schijf: overeenkomst)

The walls between the hallways and the classes and the walls of the classes are finished with wooden lamella. The doors to the classes and the doors of the cabinets are finished the same and are totally integrated in the plane. The vertical rhythm of the lamella enforces this continuity.
The aluminium lamella of the ceiling is applied that way it creates a continuous plane. The lamella are all placed in the same direction (cfr. scheme) and the lights are integrated in this rhythm.
The continuous surfaces are never obstructed. Everything is integrated in the plane: lightening elements, doorframes, … Even the outside framework is integrated in the concrete structure (cfr. infra). Both inside and outside no window frames are visible. The building has a very transparent character and is continuous between the rooms.

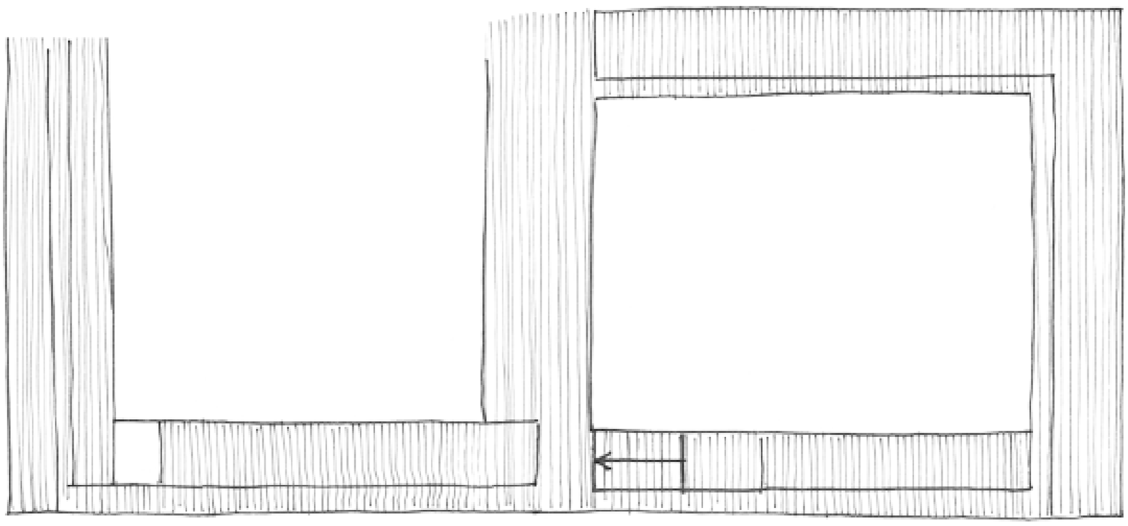


Figure II.1.75: Continuity ceiling (MH).

Figure II.1.76: Continuity and transparency.

5. Inventory original exterior materials

The following paragraph gives an overview of the exterior materials of phase 1 and phase 3. The same methodology as the interior materials is used: observations in situ are compared with the specifications and historic photographs. First the materials of phase 1 and phase 3 are described. Subsequently a schematic drawing of a module of both façades is made and the materials are indicated on these drawings. Finally the steel window frames of phase 1 are studied in detail.

5.1. Phase 1

1 Concrete (painted)

The main structure of the building concerns concrete (cfr. supra). This structural concrete is also visible in the facade. In the specifications a lot of attention is paid to the composition of the concrete and the quality of the formwork as the concrete remains visible. The specifications also describe the finishing coating: "Painting of the visible concrete of the facades (and interior walls) with three layers of paint based on PVC, transparent or a colour to decide during construction".

The original colour of the paint is unknown. The original colour can be traced by removing the new layers of paint (stratigraphic). (An investigation into the composition of the paint is recommended as the original paint is described as being based on PVC (cfr. paragraph 5).)

2 Steel (painted)

The window frames are made of steel and painted dark green. The original colour is dark green but can differ from the current colour.

3 Galvanised steel (painted)

The upper side of horizontal concrete facade beams is covered with folded galvanised steel plates (t = 3mm), creating a drip sill with waterdrip. When the width of the beam is more than 11 cm, a second galvanised steel plate is

Figure II.1.77: Drip sill.

applied. The specifications describe that the plates are placed in mastic on top of a roofing. The plates have the same colour as the window frames. The original colour is unknown.

4 Aluminium (painted) / not original

The eave is finished with a white aluminium profile. According to the specifications, drawings and pictures, this material is not original (cfr. paragraph 8).

5 Thermal glazing (transparent)

The windows concern insulating double glass. The spacer has the inscription “GLAVERBEL VITRAGE ISOLAN 66 2”. The glass dates from 1966 and is highly transparent. Some windows have been replaced.

6 EPDM / not original

The roofs are covered with EPDM. According to the original drawings and the specifications the original material used to be zinc.
The original material was replaced by roofing with a ballast of boulders. Afterwards, a polyester waterproofing system covered the roofs. In the 2003 the roofs have been insulated and finished with EPDM.

Figure II.1.78: South facade block F (MH, 23/05/2014).

5.2. Phase 3

A Concrete

Phase 3 (built over wing B of phase 1, cfr. supra) has a concrete structure. As in phase 1 this structural concrete is also visible in the facade, but here it concerns prefabricated untreated elements.

B Galvanised steel (painted)

According to the drip sills of phase 1, the drip sills at parapet height are made out of a galvanised steel plate. The horizontal facade beams at floor level and above eye level are finished with EPDM (cfr. infra).

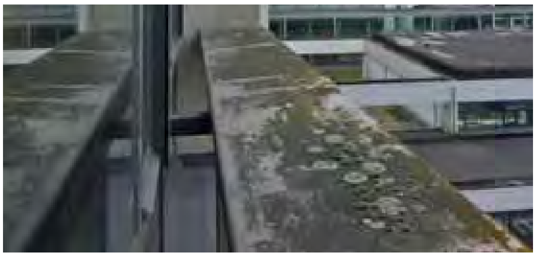


Figure II.1.79: Drip sill at parapet height.

C Aluminium (painted)

The window frames are made of aluminium and have a dark green colour.

D Thermal glazing (reflective)

The windows concern insulating double glass. In comparison to glass of the windows of phase 1, the glass of the windows of phase 3 is more reflective.

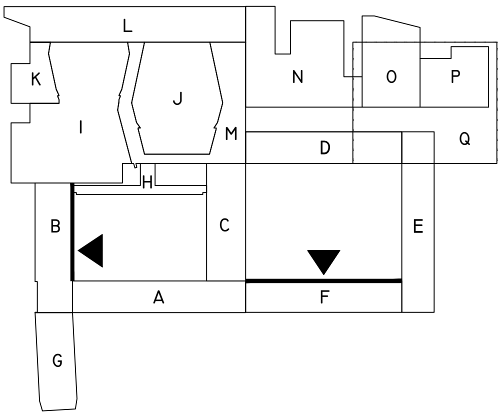
E EPDM

The roofs and the horizontal facade beams at floor level and above eye level are coverd with EPDM. This material is problay not original and is also replaced in the 2003 during the renovation works of the roofs of phase 1 (cfr. supra).

Figure II.1.80: West elevation block G (MH, 23/05/2014).

5.3. Exemplary elevations

- Concrete
- Concrete (painted)
- Steel (painted)
- Galvanised steel (painted)
- Aluminium (painted)
- Thermal glazing (transparent)
- Thermal glazing (reflective)
- EPDM



Phase 1: Example elevation

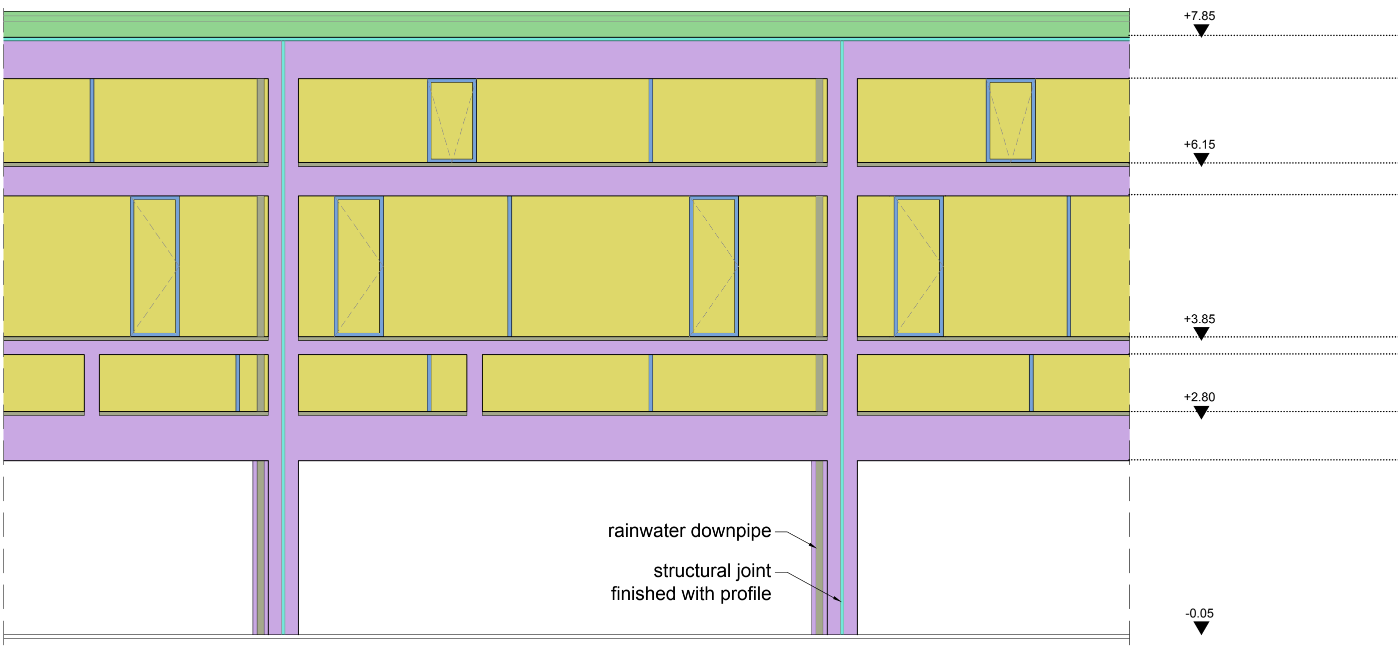


Figure II.1.81: Fragment south elevation block F (MH).

Phase 3: Example elevation

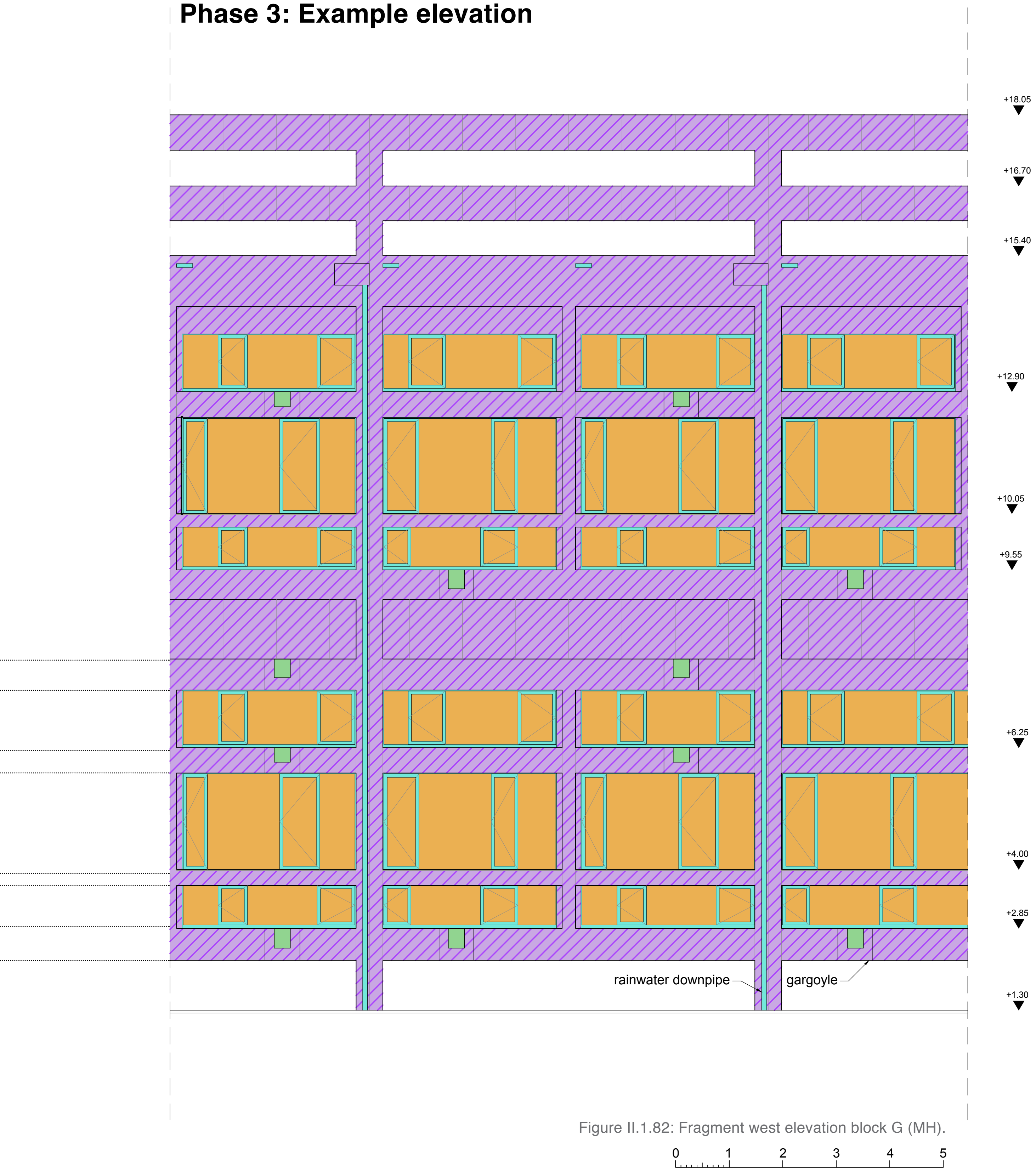


Figure II.1.82: Fragment west elevation block G (MH).

5.4. Steel window frames phase 1

The steel window frames of phase 1 are integrated in the concrete structure both at the horizontal and vertical edges. The division of the glass with vertical profiles is visible. These profiles are surveyed and measured.
A sketch of the survey of the steel window frames of phase 1 is represented underneath. The joint at the inside shows that the frame concerns a creased steel profile. The glazing beads are also made of steel and screwed on the window frames. The steel elements are painted dark green. The frames contain transparent thermal glazing.
The dimensions and details of the visible vertical profiles correspond with 'HOP tube profiles'. These profiles are in this study considered as a reference for the original profiles. The dimensions of the integrated profiles can be deducted out of the 'HOP tube profile' series.[1]
The detailed measurement of a windowsill (cfr. infra) and the dimensions of the vertical frame lead to a profile with a height of 2 cm.

1 http://www.mcbboek.nl

6. Inventory pathologies

The general interior and exterior pathologies are discussed in the next paragraphs. General inspections were carried out to get an overall impression of the materials and their pathologies. Only reference rooms are inspected because not all rooms are accessible and the building has a repetitive character. The inspected pathologies concern general pathologies linked to the material and are mainly the result of the intensive use (aging and wearing out of the material). The building is well maintained and the pathologies are not a direct threat to the building.
The pathologies are discussed in the following paragraphs and divided between interior and exterior pathologies.

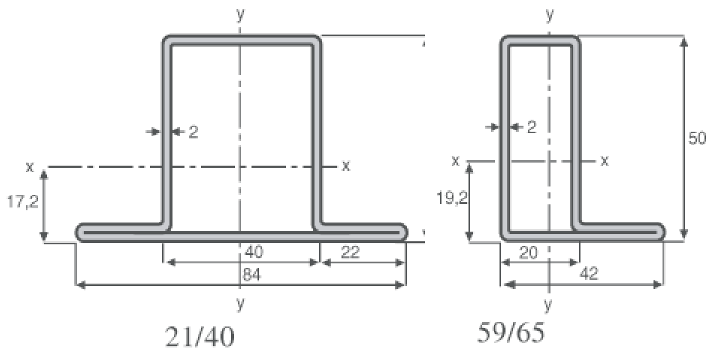
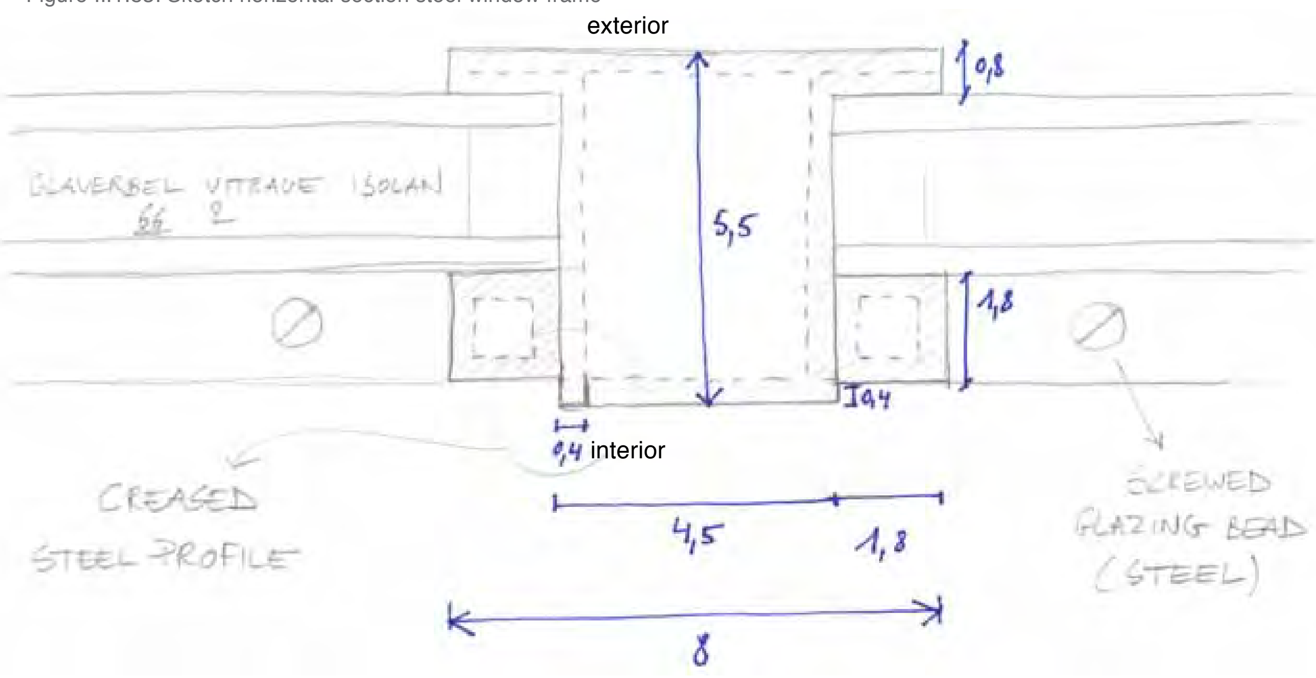


Figure II.1.84: Technical drawing window frame HOP (http://www.mcbboek.nl, 2015).

Figure II.1.83: Sketch horizontal section steel window frame



6.1. Interior materials

6.1.1. Floors

Linoleum: potholes

The linoleum in the hallways and the classrooms is damaged by the imprints of chairs, music instruments (ex. piano, see picture), high heels, ... The damage is more severe in the class rooms.

Figure II.1.85: potholes.

Linoleum: matte surface

The central parts of the hallways have become matte due to intense circulation. The edges near the walls are still glossy.

Figure II.1.86: matte surface.

Linoleum: damaged corners

Near corners and aluminium joint profiles, the linoleum is missing. These voids have however stayed local because the linoleum is integrally glued to the screed.

Figure II.1.87: damaged corner linoleum.

6.1.2. Walls

Wooden doors: sagging

The double doors between hallway and classroom are wide and heavy. The hinges of the doors are sagging. The door screeches the floor when used and creates half circular strips in the linoleum. A gap is visible between the upper edge of the door and the door frame. This is negative for the overall acoustic insulation of the classrooms.

Figure II.1.88: sagging doors.


Figure II.1.89: discolouration wood.

Wooden lamella (type a): discolouration

The wooden lamella are finished with a transparent varnish. The varnish and wood are discoloured due to exposure to intense sunlight.


Figure II.1.90: gravel nest.

Concrete: gravel nest

As the concrete concerns in-situ concrete, imperfections are visible at the surface. Occasionally a gravel nest occurs. Gavel nests are caused by a bad mixing of the concrete, sometimes combined with bad densification during construction. Gravel nests are only harmful to the integrity of the concrete if the concrete cover of the steel reinforcements is less than 25 mm.

6.1.3. Ceilings


Figure II.1.91: deformations lamella.

Aluminium lamella: deformations and peeling off paint

Some lamella are deformed or have zones without coating. This damage is caused by the removal of lamella elements during maintenance works. The planarity of the ceiling surface vanishes because of these irregularities.


Figure II.1.92: missing elements.

Aluminium lamella: missing elements

Some lamella have been removed (maintenance works, highly damaged elements, ...) and have never been replaced.

6.1.4. Damage caused by water infiltrations


Figure II.1.93: water infiltration at windowsill.

Infiltration at windowsill

At the east facade of block C, water infiltration has occurred in the past. Traces of moist are visible at the vertical edge of the windowsill. This infiltration was probably caused by a bad connection of the water-resistant seal between the drip sill and window.

Infiltration at connection roof-gutter and rainwater downpipe

At the north and east facades, the rainwater downpipes are positioned inside the building. The connection between roof-gutter and rainwater downpipe occurs in the plenum above the lowered ceiling (aluminium lamella). Leakages often occur at this connection, causing damage to the interior finishing materials.

Figure II.1.94: connection rainwater downpipe.

6.2. Exterior materials

Concrete: cracks

Near the connection between the concrete columns and the steel beams of the canopy at the entrance, cracks in the concrete are visible. These cracks are the result of the difference in thermal expansion of steel and concrete. The connection between column and beam probably doesn't allow the materials to move relatively to each other in the horizontal way.

Figure II.1.95: cracks in concrete canopy.

Concrete: concrete degradation

Concrete degradation is a general pathology; it was observed on many places. Concrete degradation is almost inherent to concrete. The cause can be plural:

- a poor concrete coverage of the reinforcing steel;
- cracks allowing water or damp reaching the reinforcing steel;
- carbonation;
- the presence of chlorides in the concrete.

The consequential damage of mentioned causes is the corrosion of the reinforcing steel. As corrosion in an expansive process, cracks in the concrete occur with push off of the concrete as final result.

In 2011 dr. ir. Bart Craeye (Industrial Sience, Artesis University College) carried out a study on the degradation of the concrete (entire building). He concludes that the degradation is considerable and mainly caused by a poor

Figure II.1.96: cracks due to concrete degradation.

Figure II.1.97: uncovered concrete.

concrete coverage.[1] An earlier study carried out by A. Blommaert in 1986 states that the structural quality of the concrete is sufficient, the level of chlorides is acceptable and most damage is caused by a poor concrete coverage.[2] Concrete renovation works have been carried out between 1991 and 1994.

1 Antwerp: deSingel, CRAEYE Bart, *Schadediagnose en herstel van beton*, unpublished study, 2011, p. 2.3.
2 Antwerp: deSingel, BLOMMAERT A., *deSingel betoncorrosie*, unpublished study, 1986, p. 1.

Figure II.1.98: bubble formation coating.

Concrete coating: bubble formation and peeling off

On several places the coating has bubbles or is peeling of. This can be caused by:

- the degradation of the underlying concrete (cracks);
- the quality of the paint;
- the quality of the application of the paint (preparation of the surface: removing loose and old layers of paint / repair work being dry enough).

An investigation into the composition of the paint and its effect on the concrete is recommended as the original paint is described as being based on PVC (specification). PVC contains chloride, a substance with an acid pH causing a decline in the base pH of the concrete. This results in a loss of the passivation effect base concrete has on steel: steel will not corrode in base concrete. Although the study of A. Blommaert states that the level of chlorides is acceptable[3], it is recommended to take a sample of the concrete of phase 1. As the study of A. Blommaert is carried out on the entire building, it is possible that the sample being investigated was taken from concrete from phase 2 or phase 3.

3 Antwerp: deSingel, BLOMMAERT A., *deSingel betoncorrosie*, unpublished study, 1986, p. 1.

Figure II.1.99: structural deformation.

Concrete: structural deformation

The concrete structure is generally slender. Some horizontal elements bend due to undersize height. The bending of beams with a large span length is visible.

Concrete: missing joint elements

On a few places joint elements are missing. By the absence of these elements water can infiltrate in the joint and cause damage to the structure.

Figure II.1.100: missing joint element.

Steel windows: corrosion

Water damage is observed at the lower parts of doors and opening windows. This damage first consists out of loss of paint, further deterioration results into corrosion of the steel. If the water damage has no structural cause, good maintenance of the paint can prevent corrosion.

Figure II.1.101: corrosion steel door frame.

Galvanised steel drip sill: corrosion

Corrosion occurs at the joint between two drip sill elements. Due to the deterioration of the joint filling, water infiltrates in the joint and causes corrosion of the steel.

Figure II.1.102: corrosion drip sill.

Glass: internal condensation

Internal condensation is caused by a leakage, a technical imperfection or a bad installation of the glass. This results in loss of transparency and descent of the insulation value of the glass.

Figure II.1.103: internal condensation glass.

7. Inventory small interventions

Little functional interventions have been carried out between the heyday and now. These adjustments were necessary to retain the function of the building. The interventions have been carried out within a practical or technical vision and were not conceived within the concept to retain the coherence of the building. The interventions have a minor architectural quality in relation to the original concept.
The following chapter gives an overview of these adjustments. The interventions are categorised in two big groups: architectural interventions and technical interventions. The inventory is not exhaustive but gives a general impression of the little changes. Together these little interventions change the overall impression of the building.

7.1. Architectural interventions

Doors of big classes (level 0, block E)

All classrooms of the conservatory have double wooden doors that create an acoustic lock between class and hallway. The doors are finished the same way as the walls: with wooden lamella (cfr. supra).
To **improve the acoustic separation** between class and hallway, the doors of two big classrooms in hallway E are replaced by new doors.

The new doors are at the inside covered with an absorbing material and have a double seal.
The new doors break the continuity of the inside facade and details (vertical lamella, plinth, frame, ..).

Figure II.1.104: original door to class in hallway E (MH, 06/03/2015).

Figure II.1.105: new door to class in hallway E (MH, 06/03/2015).

Door furniture

The original door handles concern cast aluminium conic elements with circular rose. The metal lock plate with cylinder lock (missing in this picture) is integrated in the plane of the door. Both inside (classroom) and outside (hallway) doors have a lock.

To guarantee the **safe close up of the classrooms**, all outside door handles and locks have been replaced by new ones: aluminium door handle and cylinder lock with rectangular covering plate. Some inside doors still have original hardware.

Figure II.1.106: original door furniture.

Figure II.1.107: new door furniture.

Entrance doors

The entrance to the main hall occurs through a double set of glazed doors. The space in between serves as an air lock. The original doors are fully glazed and have no frame.

The original doors are still present but a vertical frame has been installed between the doors. This intervention is presumably made to make the doors windproof.
The transparency is reduced by this intervention.

Figure II.1.108: entrance doors (Antwerp: APA).

Figure II.1.109: entrance doors.

Windowsill

The plans on scale 1/50 made for the submission of works are detailed enough to investigate the finishing of the windowsills.
The plans show that both the horizontal as the vertical plane of the windowsill are finished with a panel. The material of the panel is not indicated on the drawing.
On a picture of 1967 (picture of the first lesson in the new building) the windowsill of hallway E is visible. The finishing material has a light colour. The existing finishing with blue limestone is probably not original. A part of a windowsill in hallway E is finished with light blue laminate. It is doubtable but possible that this is the original finishing material.
The report of a meeting[1] (dd. 17/12/1971) concerning the flaws of phase 1 gives a description of the water infiltration at the windows and the consequential **damage of the windowsills (swell)** as they are not water resistant. The report states that the windowsills have to be replaced if they can not be repaired.

1 Antwerpen: RdGA,Antwerpen – KVMC – P31/BG5/11611 – 1e schijf: overeenkomst

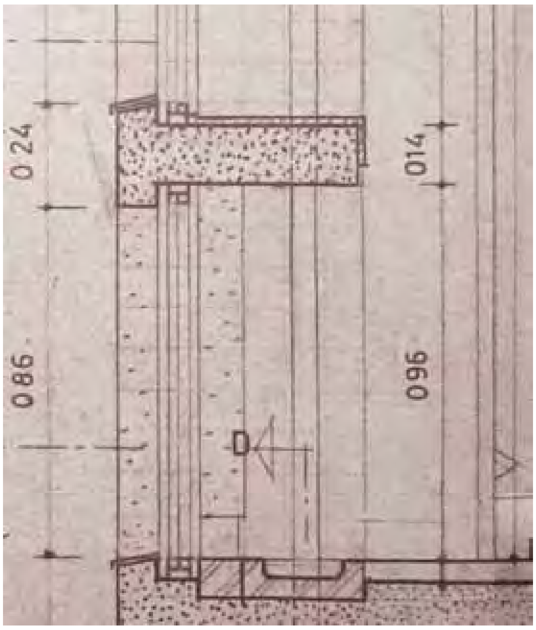


Figure II.1.110: Detail section BB (Antwerp: deSingel).

Figure II.1.111 & II.1.112: Windowsill level +1 hallway F .

Figure II.1.113: Windowsill level +1 hallway E.

Figure II.1.114: class in 1967 (PERSOONS 1998, p. 106).

Sunshades

The sunshades at the windows of the classrooms of hallway D have been installed in 1995. Steel frames filled in with expanded metal are positioned parallel and at a certain distance to the facade. A horizontal version is applied at the offices on the first floor of hallway A.
The sunshades hide the rhythm of the facade and disturb the coherence of the facade.

However **intense sunlight and excessive heating** are problems the south and west oriented rooms are dealing with; resulting in reduced comfort in the rooms and a negative climate/environment for the musical instruments. (The west oriented facade of phase 3 has automated outer sunscreens.)

Figure II.1.115: south facade block D (MH, 23/05/2014).

Figure II.1.116: canopy after completion phase 1 (Antwerp: deSingel).

Figure II.1.117: canopy (MH, 23/05/2014).

Canopy

The original canopy had following flaws[1]:

- free expansion of the steel beams was not possible, resulting in buckling;
- free thermal expansion of the domes was not possible, resulting in cracks and tearing off;
- the domes had no fall, resulting in no water evacuation;

These flaws resulted in **heavy leakages**.

The canopy has been adapted to fix these flaws. The domes are replaced and turned around. The joints between the domes are finished with a visible profile. A gutter is installed between two domes / on top of every steel beam. The colour of the steel beams has changed from light to dark. Also the floor below the canopy has been changed (original marble 'Saint-Anne') because it was to slippery.

1 report L. CASSIMAN dd. 19/10/1972 (Antwerpen: RdGA, Antwerpen – KVMC – P31/ BG5/11611 – 1e schijf: overeenkomst)

7.2. Technical interventions

Light elements (interior)

The light elements are originally integrated in the lowered ceiling (perforated aluminium lamella, cfr. supra). They are designed to be part of a continuous plane.

To **optimise the lightning**, in some classes the lights are replaced (or covered) by a painted multiplex plate with fluorescent tubes.

Figure II.1.118: Hallway D.

Figure II.1.119: Classroom in hallway D.

Light elements (exterior)

The same concept as inside is applied outside: integrated light elements. Circular cut-aways are made in the concrete in order to integrate light elements.
Extra lightning elements with visible wiring are attached to the underside of the concrete floor slabs to **provide enough light**.

Figure II.1.120: view underneath block F (Antwerp: APA).

Figure II.1.121 & II.1.122: view underneath block C (MH, 23/05/2014).

Heating

A heating system used to be integrated in the floor: convectors covered with a metal grid. This system had a **low performance** because the floor pit was not insulated at the bottom.
The integrated channels are now used for the pipe lines of the heating system. The grids are covered with a multiplex (painted black). Radiators are installed in the classes.

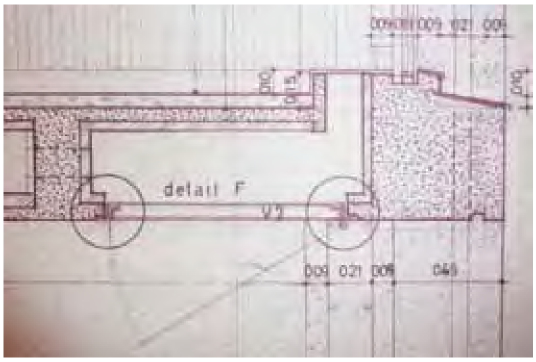


Figure II.1.124: Detail section BB (Antwerp: deSingel)

Figure II.1.123: grid.

Figure II.1.125: new radiator.

8. Exemplary section

The following paragraph gives a summary of the previous observations. An exemplary section is created and the original situation is confronted with the current situation. Finally two exemplary details are investigated.

8.1. Selection section

Each of the six wings of the original low-rise building (phase 1) has a different transversal section (cfr. overview). The sections respond to the orientation and the relationship with the surroundings (cfr. Chaper I.3: Architectural and Functional Analysis). The section of block A has two levels, a ground level and level +1. On the ground level the administrative offices are situated. This section is still intact today but concerns an exception because it has two levels. Block B has a hallway in the middle. Little classes were (and still are) present here. This section is also an exception because the hallway is positioned in the middle, furthermore is the section transformed due to addition of phase 3. The central hallway is present in block C. This section is unique because no classes are present. Block D has the most basic section. The wing has only one level (level +1), the roof is flat and the hallway is situated on one side of the wing. Today, this section is not present anymore because offices were built underneath this wing. The big auditoria are located in block E. A hallway is present on both the ground level and level +1. This situation is unique and together with block A the only block touching the ground. Block F concerns a variation on the most basic section (cfr. block D). The roof makes a shift near the separation hallway-classroom and a higher window allows northern light entering the classroom. This section still exists and the situation of block F is considered as 'the most original'.
Section F is selected as 'exemplary section' because it is the most original and it has the most complete and repetitive boundary conditions: only one level, hallway situated on one side and a shift in the roof. Unfortunately the original detailed drawing (scale 1-50) of this section was not present in the archive of deSingel. The exemplary section is created by combining the detailed drawing of block A with the drawing of block D. This is possible because the same details and connections are consequently applied through the whole building. The original drawings are represented on the following pages.

8.2. Exemplary section

8.2.1. Original section

The first drawing concerns a drawing of the original situation and the information derives from the original drawings (cfr. supra). The drawing shows that the roof was covered with zinc with standing seam. This situation is not visible on original photographs, but is very plausible because the roof drawings show parallel lines (standing seam), a ventilated cavity is present (ventilation grilles are visible in the façades), the roof material is mentioned in a damage report of 1971[2] and described in the text of Marie-Thérèse Buyssens[3]. The material has been replaced due to heavy leakages.
A particular roof detail is represented in the drawing. This detail was not confirmed and probably executed differently (cfr. infra, roof detail).
As mentioned previously, the window frames are integrated and thus not visible. This detail represents the concept of the building and is studied in the next paragraph (cfr. infra).

8.2.2. Current section

This section shows the actual situation. The alterations are indicated in red. The roof is insulated and covered with EPDM. The roof detail has disappeared and the eave is finished with a white aluminium profile. The small interventions are indicated in the drawing.

2 Antwerp: RdGA,Antwerpen – KVMC – P31/ BG5/11611 – 1e schijf: overeenkomst
3 BUYSSENS Marie-Thérèse, *75 Jaar Koninklijk Vlaams Muziekconservatorium* 1898-1973, Antwerpen: KVMC, 1973, p. 14.

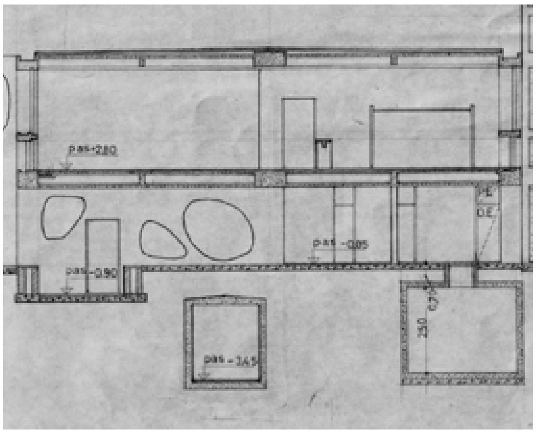


Figure II.1.126: Section block C (Antwerp: deSingel).

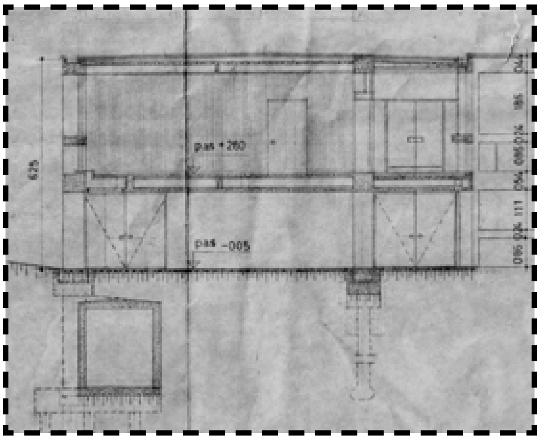


Figure II.1.129: Section block D (Antwerp: deSingel).

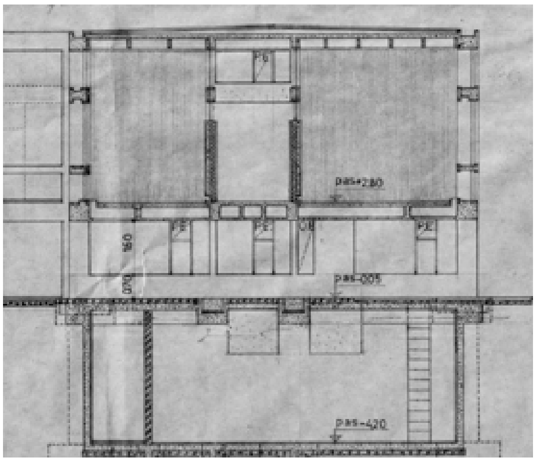


Figure II.1.127: Section block B (Antwerp: deSingel).

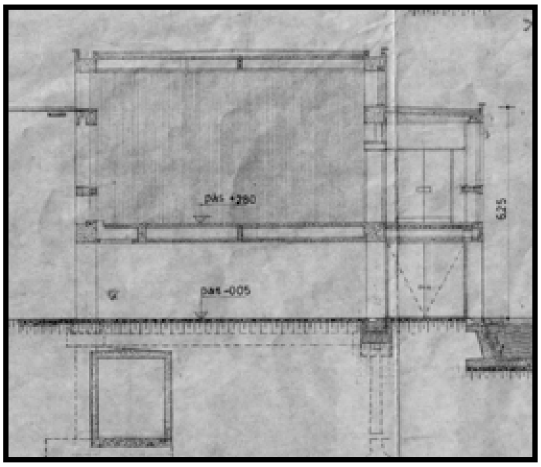


Figure II.1.130: Section block F (Antwerp: deSingel).

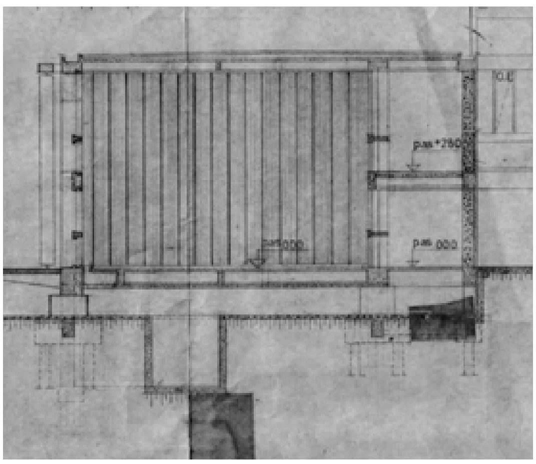


Figure II.1.128: Section block E (Antwerp: deSingel).

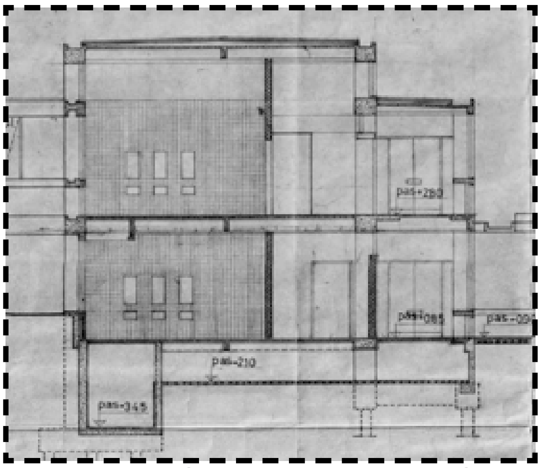
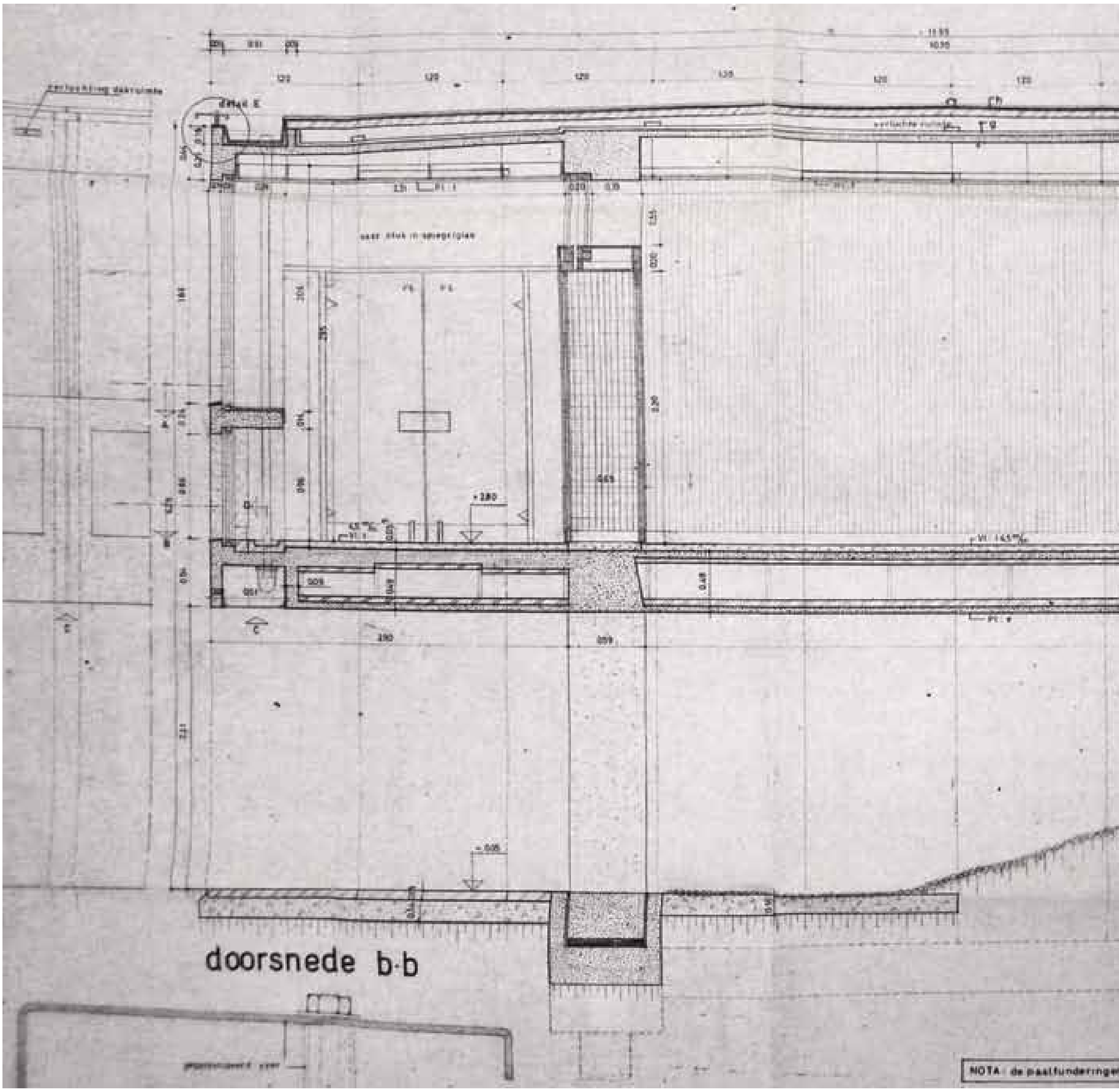


Figure II.1.131: Section block A (Antwerp: deSingel).

Original section block D (1-50)



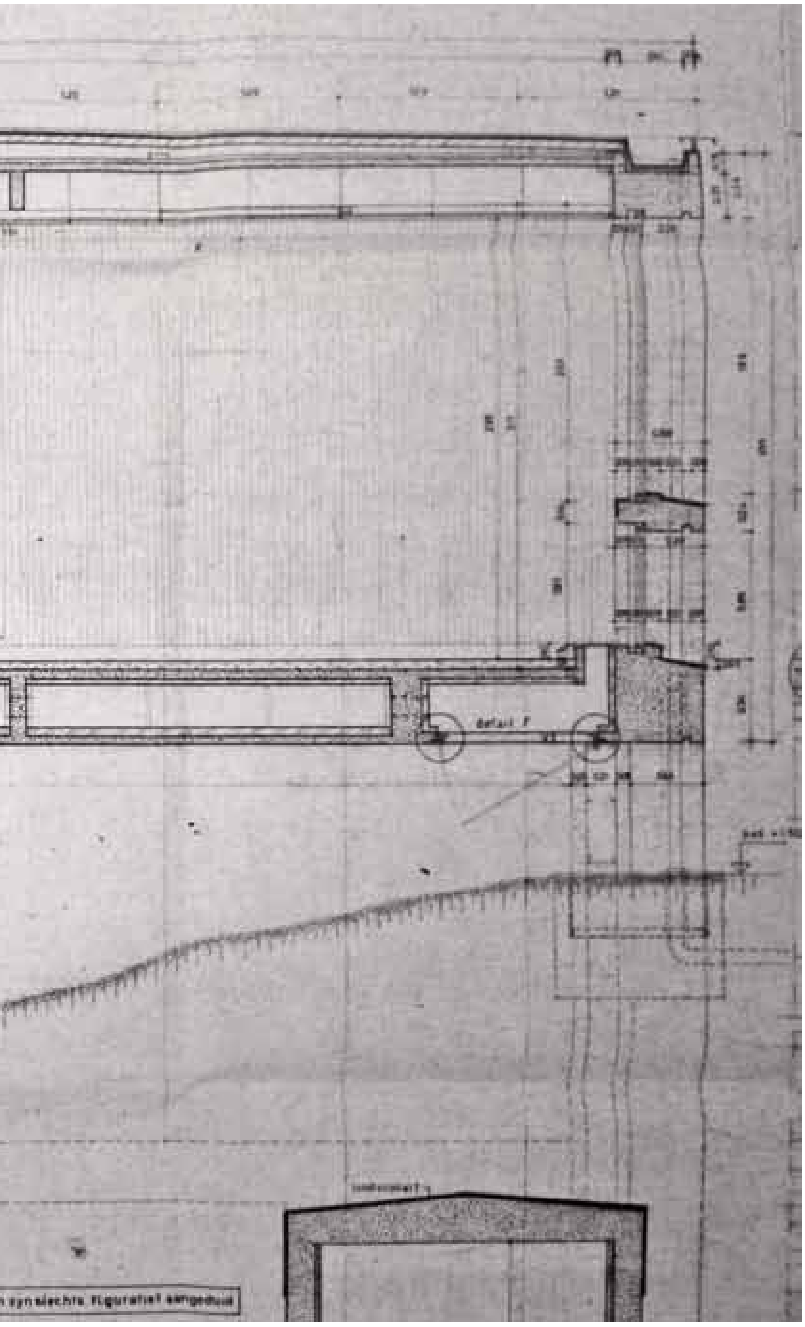


Figure II.1.132: Section block D (Antwerp: deSingel).

Figure II.1.133: Legend materials (Antwerp: deSingel).

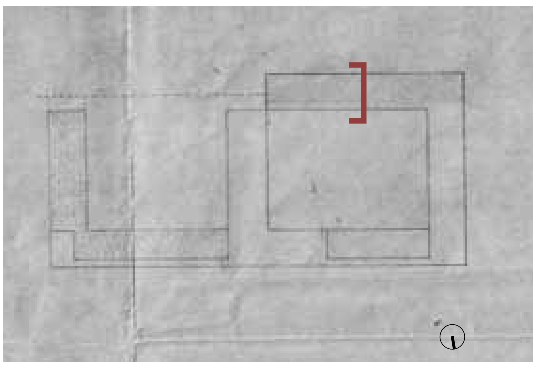
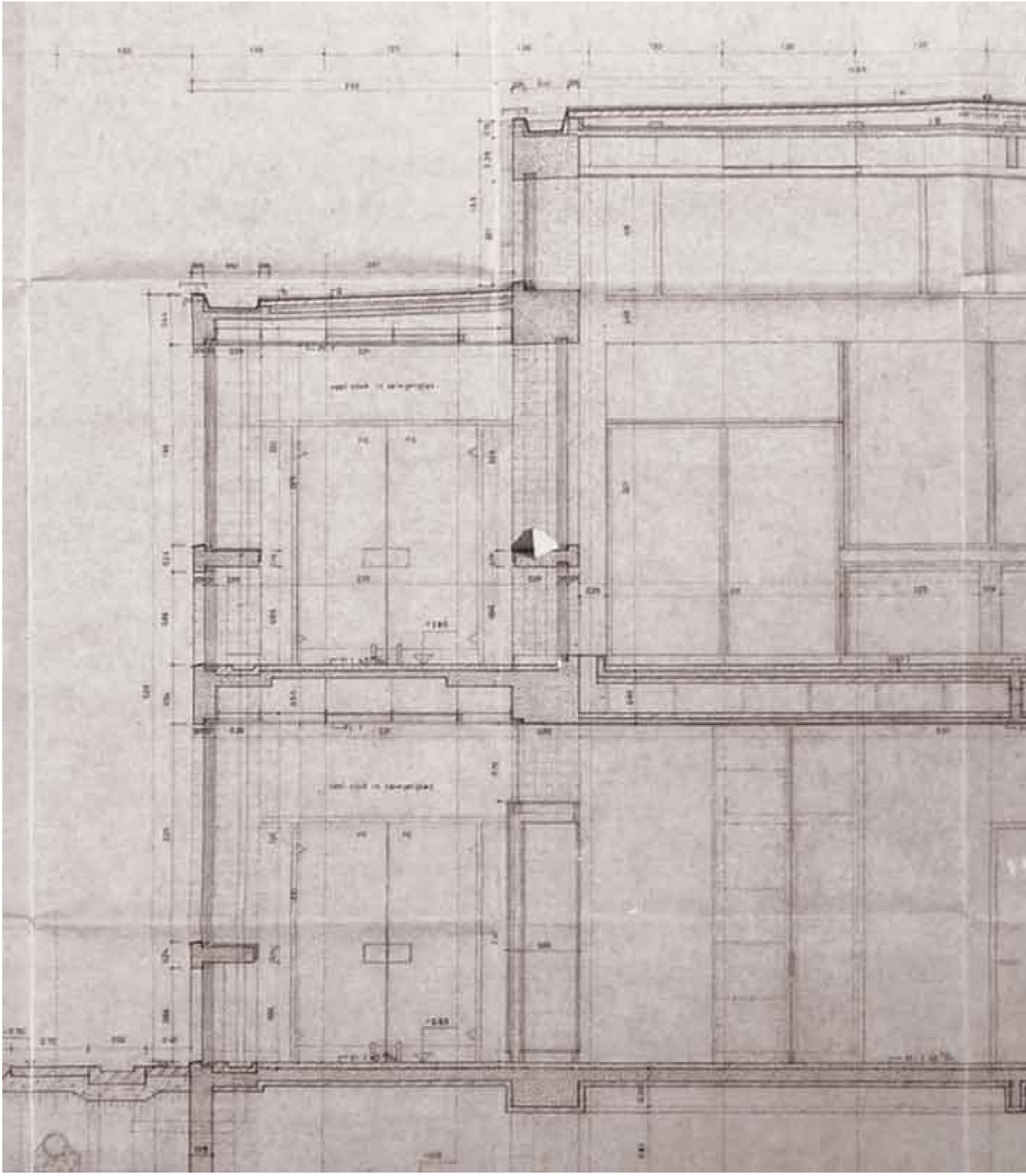


Figure II.1.134: Indication section (adapted from Antwerp: deSingel).

Original Section block A (1-50)



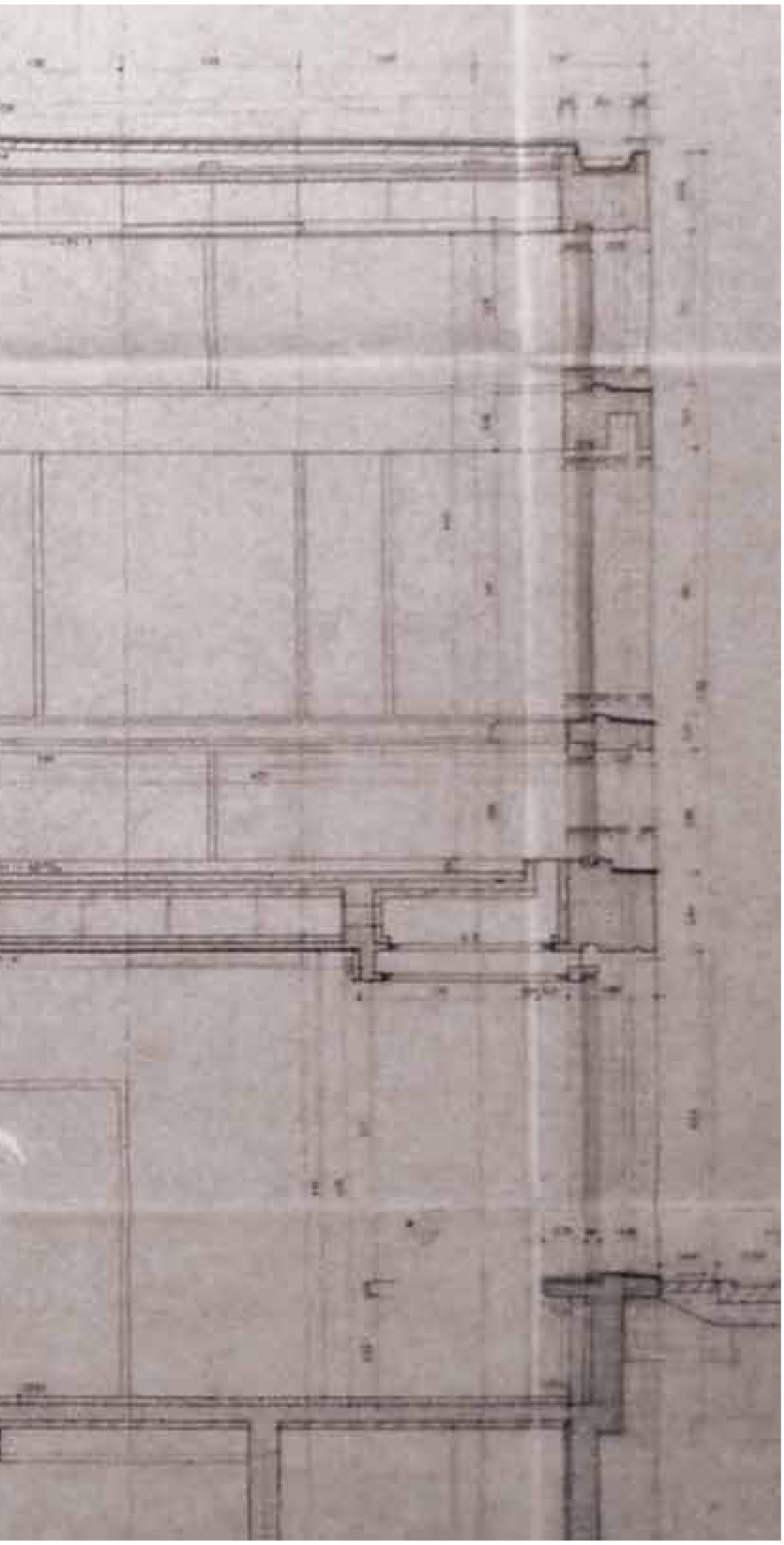


Figure II.1.135: Section block A (Antwerp: deSingel).

Figure II.1.136: Legend materials (Antwerp: deSingel).

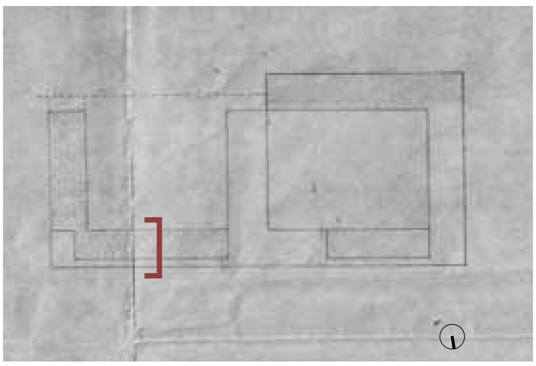
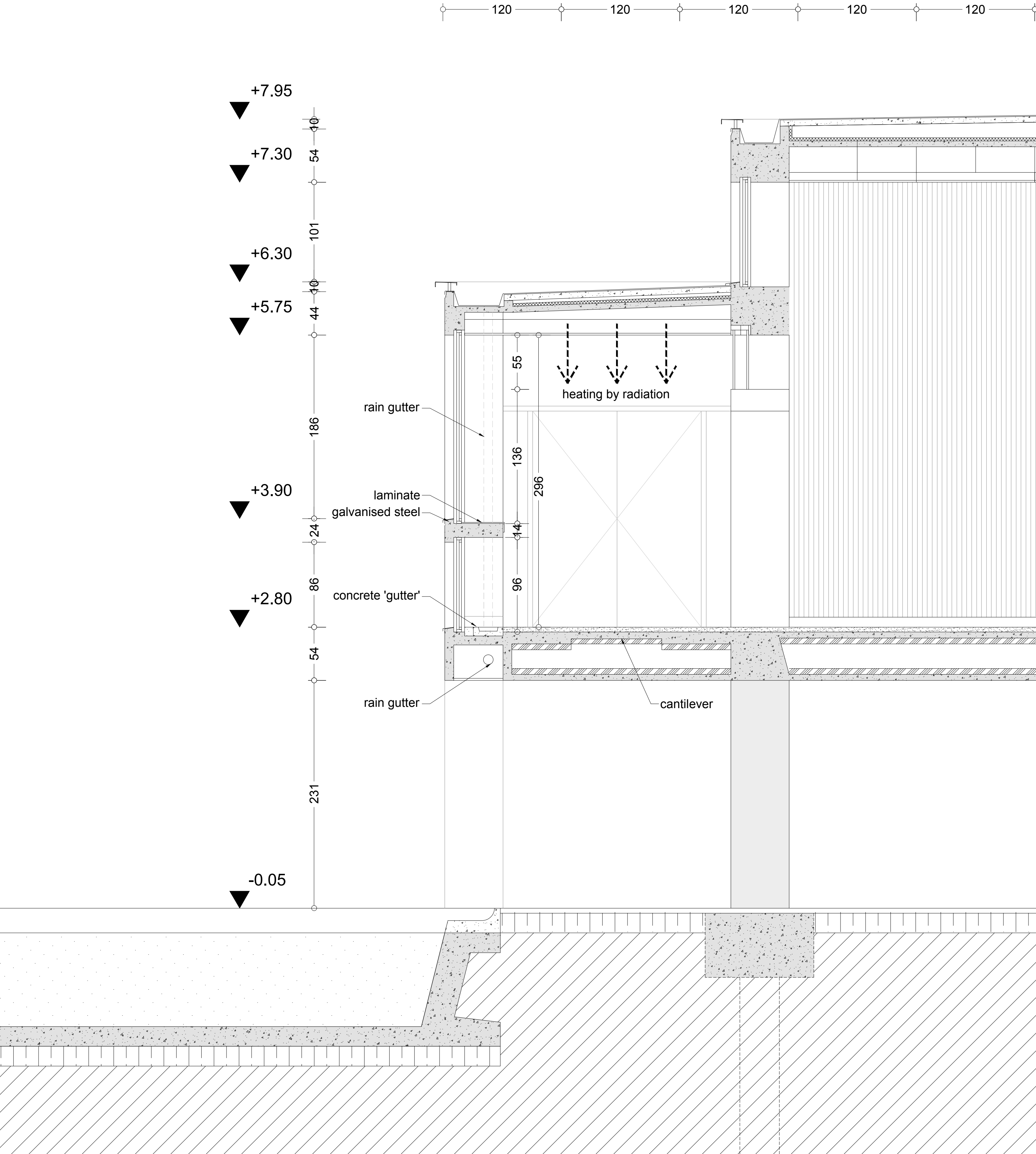
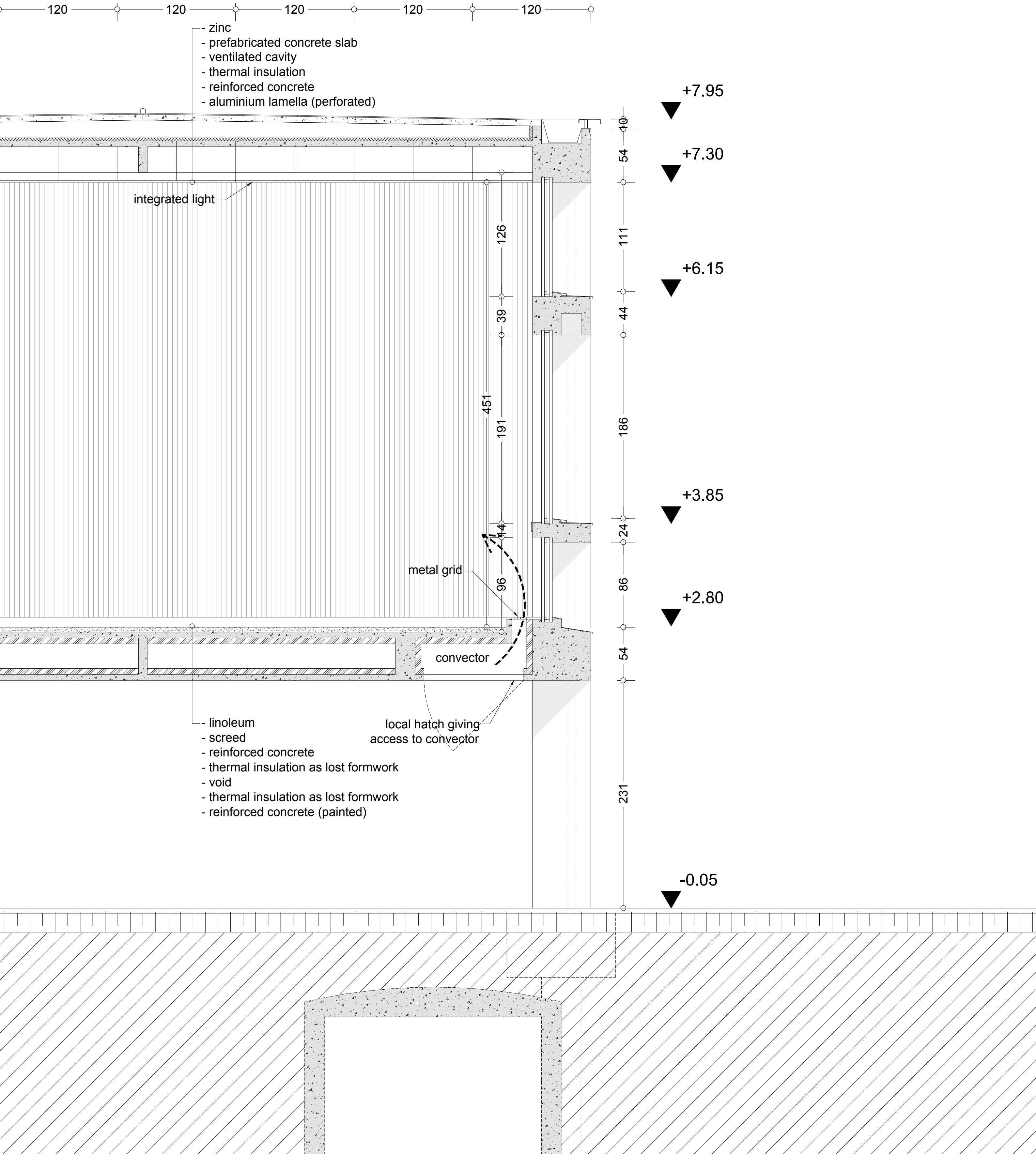


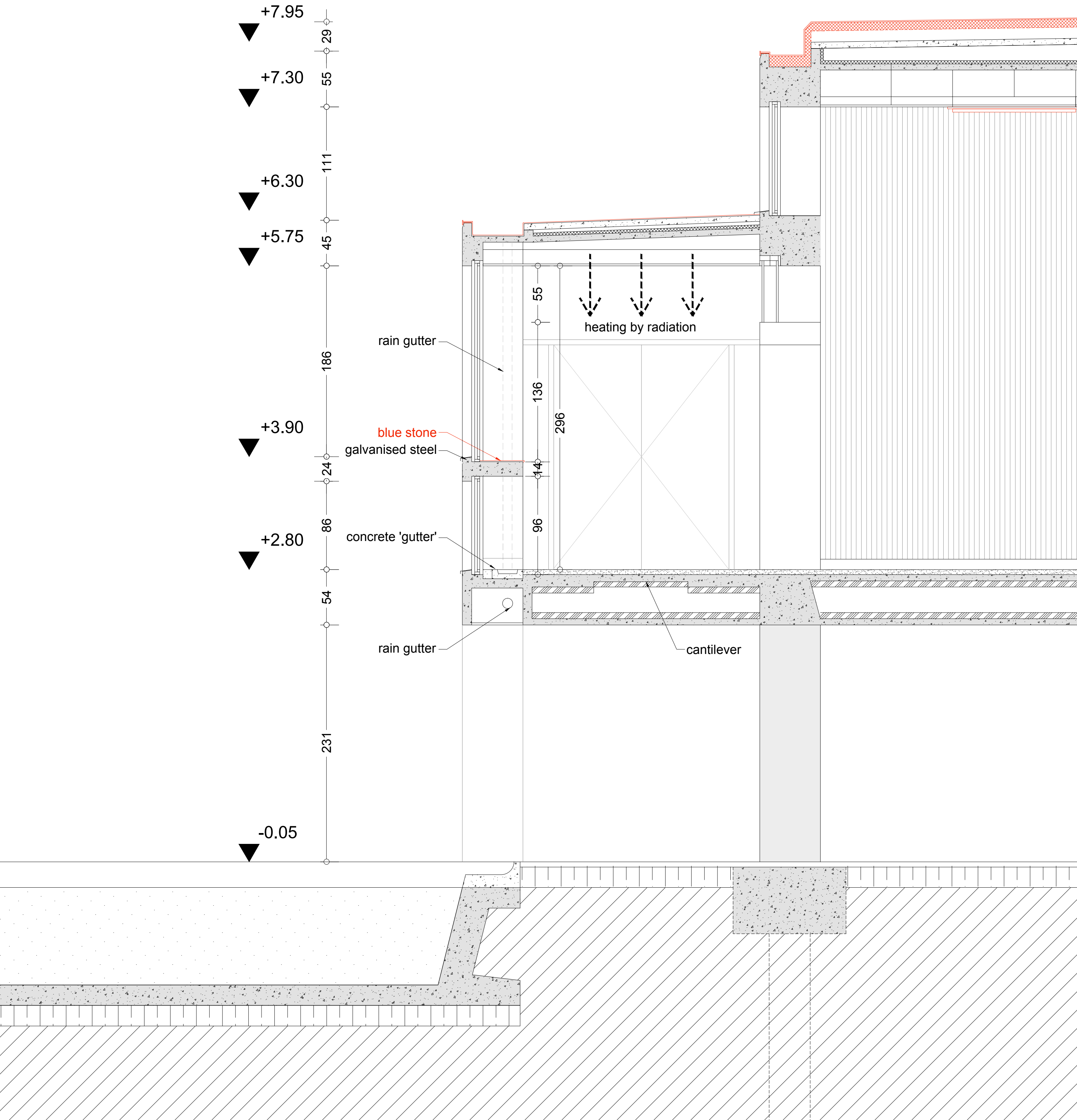
Figure II.1.137: Indication section (adapted from Antwerp: deSingel).

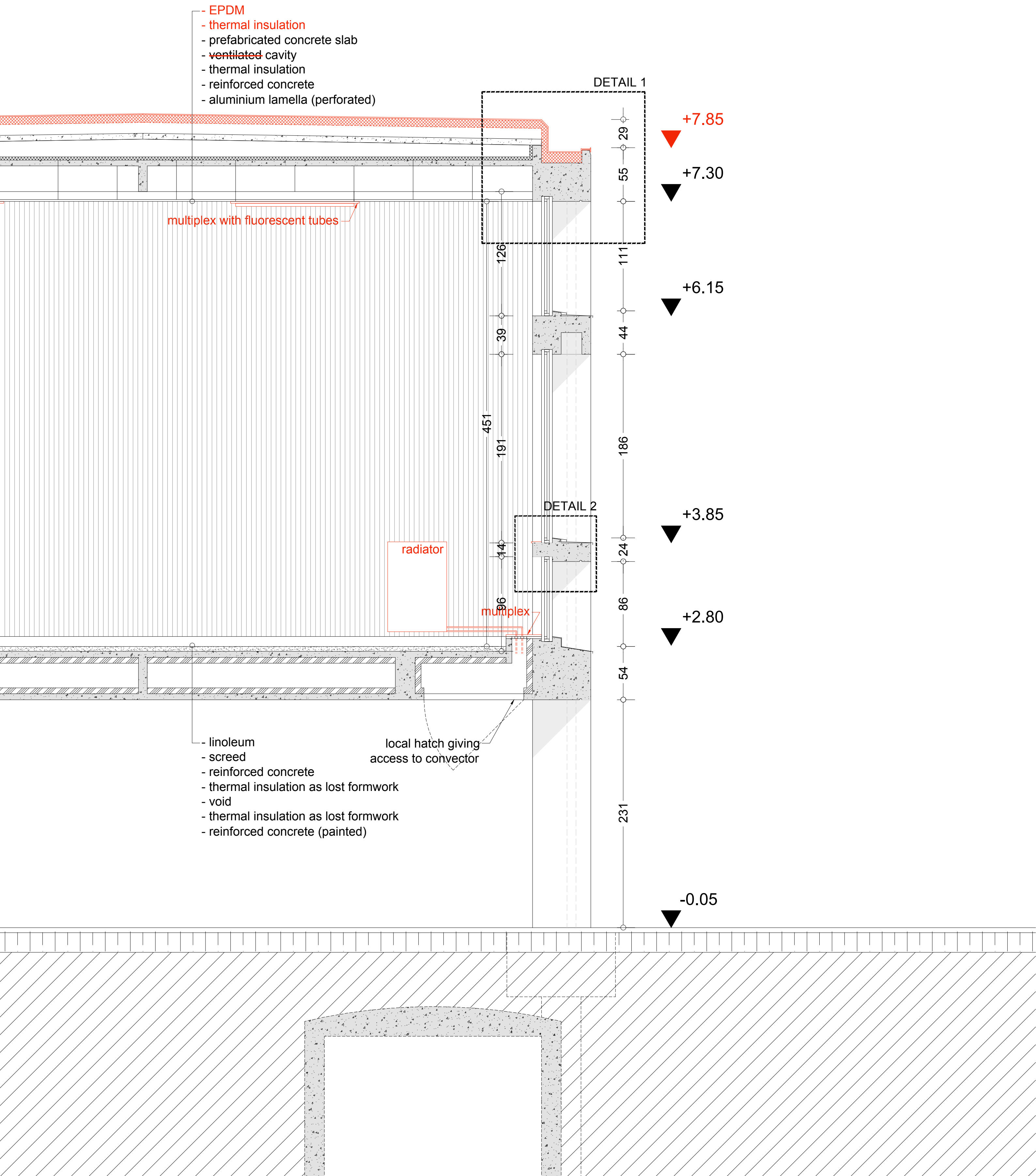
Exemplary section block F (1-50): original situation




120
120
120
120
120
- zinc
- prefabricated concrete slab
- ventilated cavity
- thermal insulation
- reinforced concrete
- aluminium lamella (perforated)
+7.95
+7.30
+6.15
+3.85
+2.80
-0.05
10
54
111
44
186
24
86
54
231
126
39
451
191
14
96
integrated light
metal grid
convector
local hatch giving
access to convector
- linoleum
- screed
- reinforced concrete
- thermal insulation as lost formwork
- void
- thermal insulation as lost formwork
- reinforced concrete (painted)

Exemplary section block F (1-50): current situation




- EPDM
- thermal insulation
- prefabricated concrete slab
- ~~ventilated~~ cavity
- thermal insulation
- reinforced concrete
- aluminium lamella (perforated)
DETAIL 1
+7.85
+7.30
+6.15
+3.85
+2.80
-0.05
29
55
111
44
186
24
86
54
231
126
39
451
191
14
96
multiplex with fluorescent tubes
DETAIL 2
radiator
multiplex
- linoleum
- screed
- reinforced concrete
- thermal insulation as lost formwork
- void
- thermal insulation as lost formwork
- reinforced concrete (painted)
local hatch giving
access to convector

8.3. Exemplary details

8.3.1. Eave

A particular roof detail is visible on the original drawings. This detail is represented on the next page. A zinc covering cap floats 10cm above the roof edge and is fixed with vertical steel pins. The height of the cap corresponds to the height of the roof gutter. The gutter makes a shift near the start of the prefabricated concrete slabs (ventilated roof) and the roof detail aims to visually hide this shift (cfr. exemplary section original situation).

The following pictures are represented on the next pages:
1 – View on block F after completion phase 1 (Antwerp: APA)
2 – View on block F in 2014 (MH, 23/05/2014)
3 – View on block C after completion phase 1 (Antwerp: APA)
4 – View on block C in 1990 (Antwerp: deSingel)
5 – Detail eave block C in 1990 (Antwerp: deSingel)

The eave was never executed this way. A vertical element is visible on photographs of the original situation and on photographs attached to a report on the state of the concrete (1990)[4] . Each element is fixed with two vertical pins. The length of the elements corresponds to the rhythm of the visible vertical window frames.
The element has been removed from the eave of the roofs of phase 1, but is still present at a part of the roof of phase 2. A picture of 1999 shows that this element used to be continuous and the same on the roofs of phase 1 and phase 2 (Figure II.1.143). This element has been measured during the survey.

The current state of the eave of phase 1 is also measured during the survey. Because only the outside measures were taken, the information is put in context with the information of the exemplary section. This measurement gives an indication of the current roof profile. The thickness of the applied insulation concerns 8 cm (PUR). The current roof profile is represented in the exemplary section of the current situation (cfr. supra).

Figure II.1.138: Eave roof phase 2.

Figure II.1.139: Eave roof phase 2.

8.3.2. Windowsill

The detail of the windowsill is a 'technical summary' of the building. The detail shows the effort to create continuity and transparency between inside and outside. The detail is pure and experimental.
As described in previous the window frames are integrated. The study of the vertical steel window frames makes it possible to estimate the profile of the integrated window frames. Measurements of both inside and outside were carried out during the survey. This information allows to reproduce the actual detail of the windowsill. The detail is represented on the last page of this chapter.

4 Antwerp: deSingel, anonymous, *Toestand beton*, unpublished study, 1990, p. 2.

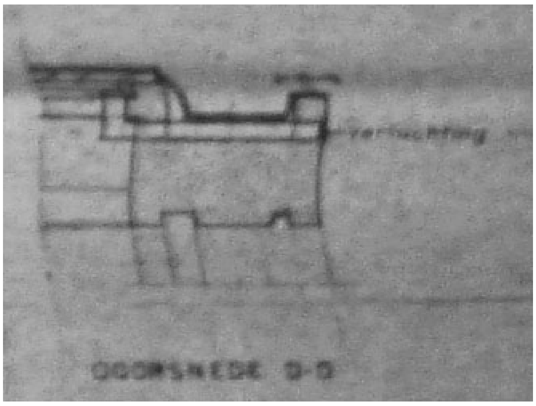


Figure II.1.140: Detail ventilation roof (Antwerp: deSingel).

Figure II.1.141: Ventilation grille.

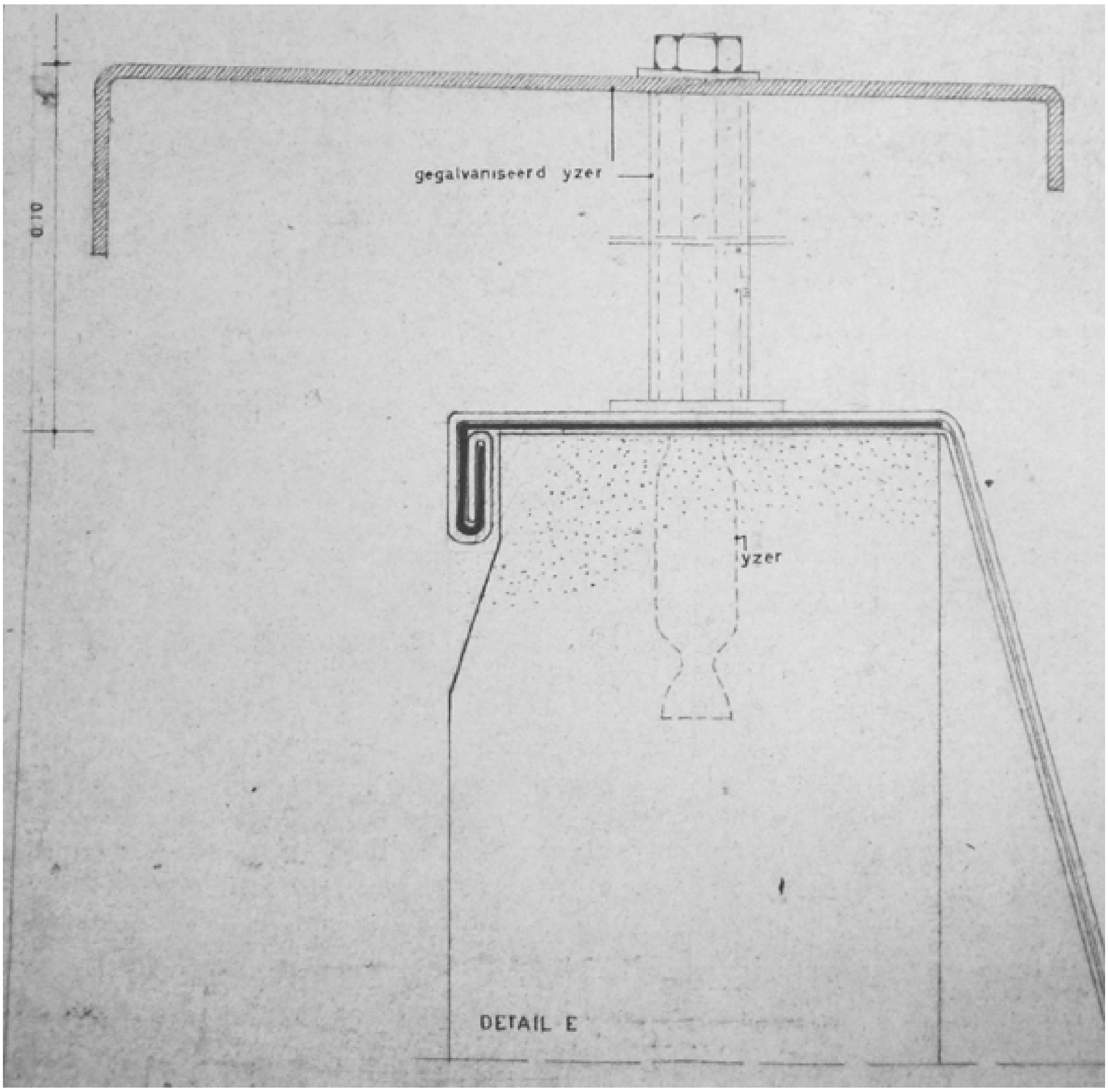


Figure II.1.141: Detail eave, scale 1/2 (Antwerp: deSingel).

1

2

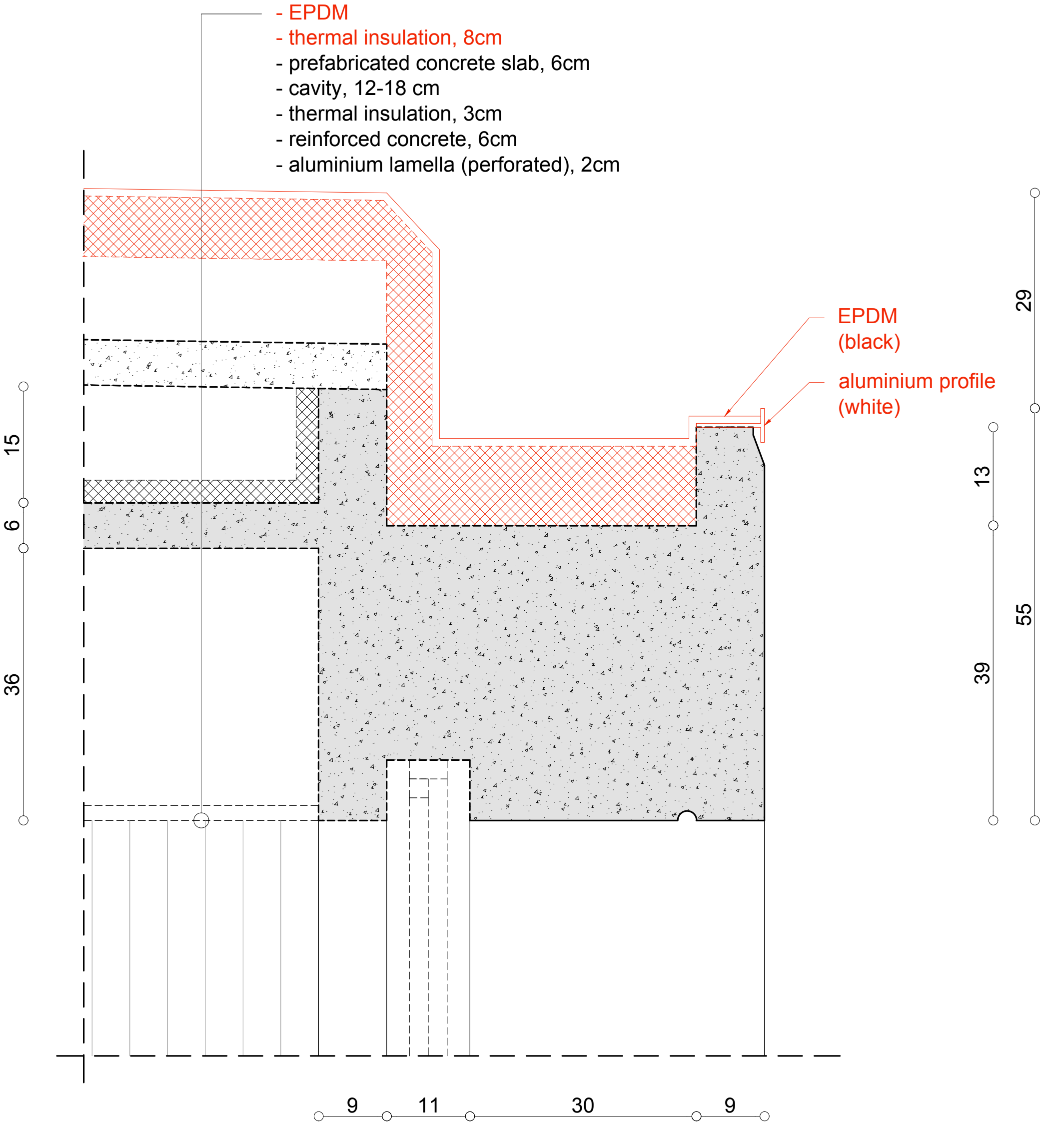
3

4

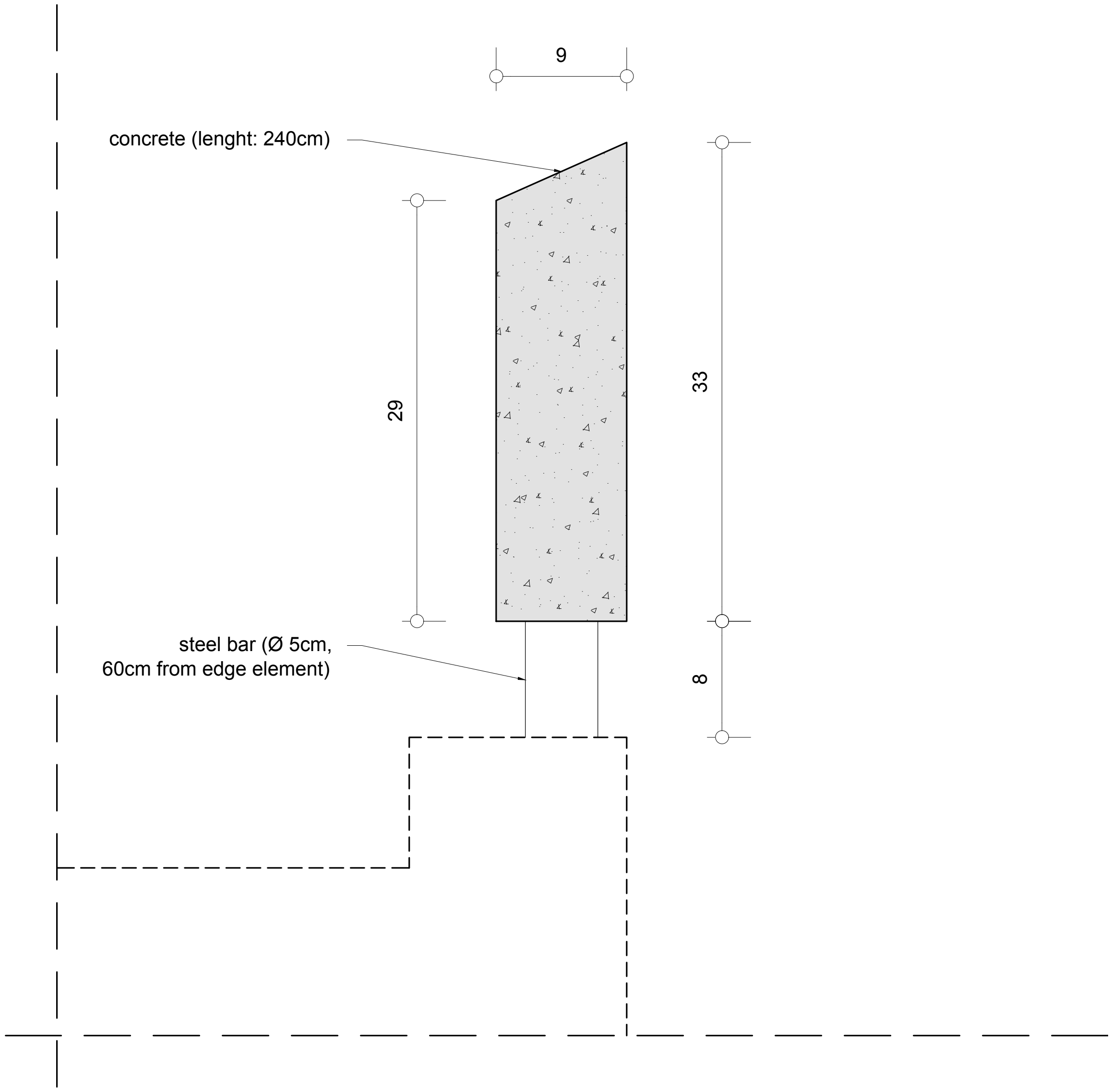
5

Figure II.1.143: Situation 1999 with continuous eave element (© Jan Kempenaers, Antwerp: deSingel).

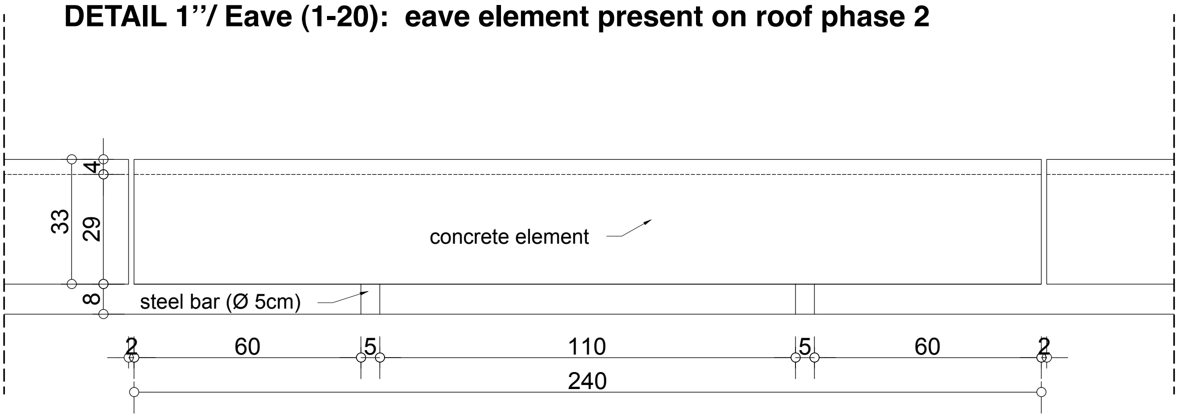
DETAIL 1/ Eave (1-10): current situation



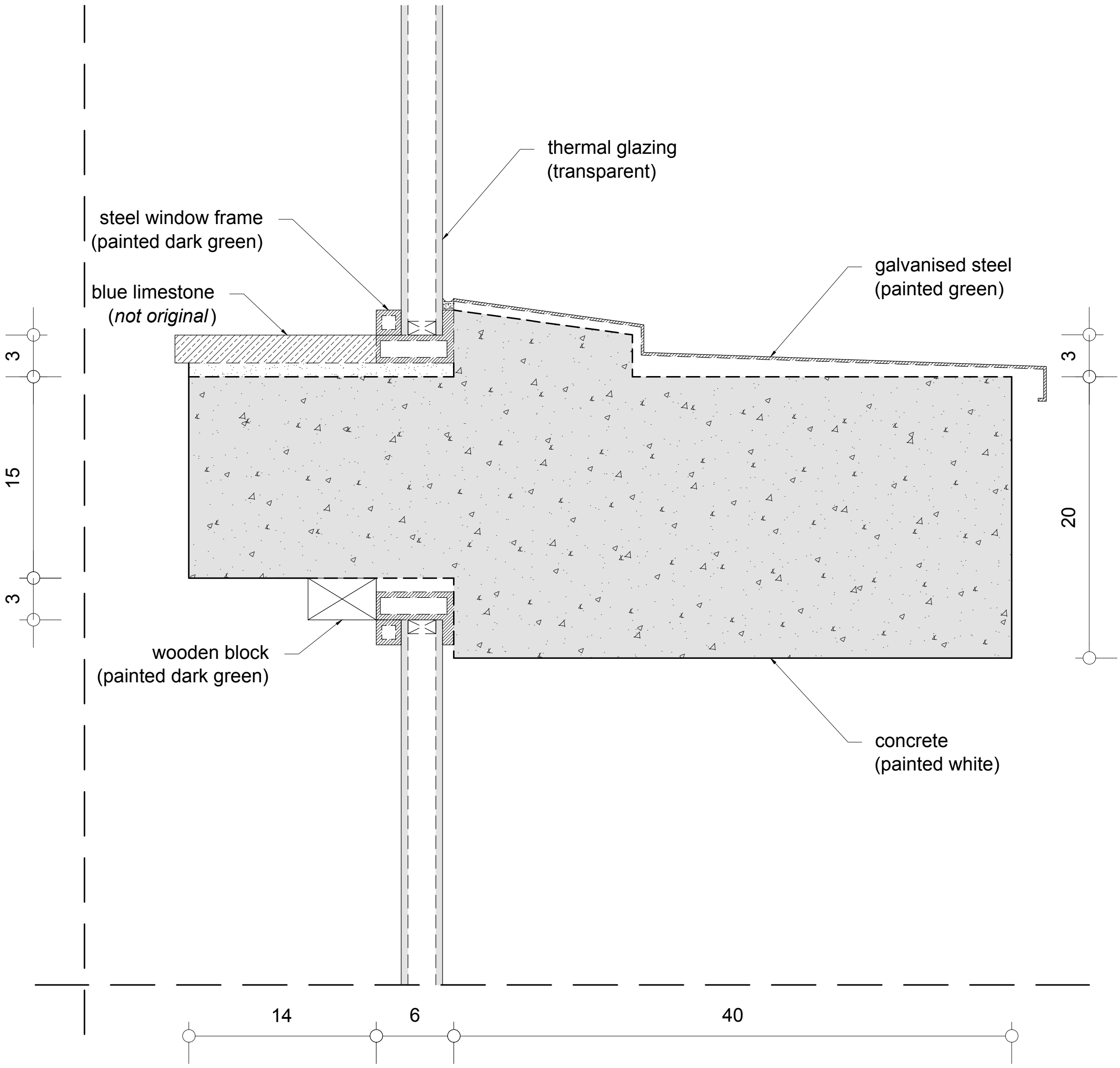
DETAIL 1'/ Eave (1-5): eave element present on roof phase 2



DETAIL 1''/ Eave (1-20): eave element present on roof phase 2



DETAIL 2/ Windowsill (1-5): current situation



KEY POINTS OF THE CHAPTER

- Every effort is made to maximum integrate the technical installations. A particularly pipeline system that does not disturb the acoustics between the classrooms is developed.
- The interior surfaces are materialised as continuous planes without visuals obstructions.
- The building has a high transparency due to the integrated steel window frames and the transparent glazing.
- The building is in good condition and well maintained. The observed pathologies are mainly caused by use and aging of the materials.
- Small functional interventions blear the original qualities of the building.
- A particular concrete roof element was present on the eave of phase 1 and phase 2 and created a continuity between the buildings. The element also visually hides the roof profile.

PART II
CHAPTER 2: MASTERPLAN OF RESTORATION

In this chapter a reflection is made on the current state of the building. The evaluation of the building is the link between the historic, architectural and technical analysis and the masterplan of restoration.
The heyday of the building has been defined as the original concept of Stynen and De Meyer (phase 1 and phase 2) and existed right after the completion of the second phase. This situation has never really existed because from the beginning the building fulfilled more than its original purpose.
The evolution of the programme of the Conservatoire and deSingel has resulted in many expansions of the building. Internal reorganisations or subdivision of existing spaces occurred exceptionally because the building is a freestanding complex and it was always possible to add more space; this at the expense of the original overall concept of the building.
Today the building has a rich and vital programme and this state could be destined as the functional heyday. The many extensions of the building make the fulfilment of this programme of an International Arts Campus possible. Moreover these extensions have a certain architectural vision and are thus not arbitrarily been added to the building.
This evaluation starts with the acceptance of the current situation. To go back to the heyday is today impossible and moreover irrelevant because a vital function ensures the continued existence of a building. Moreover the decision to 'be' an International Arts Campus has been made and is implemented in the latest masterplan and extensions designed by Stéphane Beel.

The evaluation plans verify the impact of the transformations on the original building and the relations between the new extensions and the original building. The intervention plans create a vision to revaluate the original building and define boundaries for future alterations.
The evaluation and intervention plans have been made for a part of the building (phase 1)

and can, after a detailed study of phase 2, be extrapolated for the whole building following the same methodology. The methodology Barbara Van der Wee developed for the Centre for Fine Arts in Brussels is customized and applied on this building.[1]

1. Evaluation plan

The previous analysis (Part I and Part II) has investigated the original concept of the building (heyday) and its evolution. The strengths of the original building can be summarised as follows:

- the strong unity between the building and the landscape
- the well-defined functional zoning
- the clear circulation and orientation
- the unity of the total complex despite the duality of the building volumes
- the human scale and proportions
- the integrated technical concept and acoustic measurements

The following evaluation plans verify if those qualities are still present in the building and which new transformations reinforce or devaluate these qualities.

1.1. Spaces in original condition (phase 1: 1963-1967)

This concerns the spaces in the original volume of the building that besides little reversible interventions are still in the original condition. The division is made between principal spaces and secondary spaces.

1.1.1. Original principal spaces with high historic and architectural value

This includes all the representative areas (entrance, hallway) and all principal 'residence rooms' (classes, offices).

1 VAN DER WEE Barbara, "De uitdaging van een allesomvattend project", in: DE DECKER Jacques, DUPLAT Guy, FRANCK Jacques, JACOBS Steven, SYMONS Thérèse, VAN APELDOORN Robert, VAN DER WEE Barbara, VAN DER WEE Herman, *Bozar LXXX*, Tielt: Lannoo, 2008, pp. 329-383.

1.1.2. Original secondary spaces with historic and architectural value

This covers all functional spaces; from technical rooms to dressing rooms and restrooms.

1.2. Transformations: adaptations and extensions

1.2.1. Transformations reinforcing the original concept (added value)

The transformations that add architectural and functional value to the original building are classified in this category.

1.2.2. Transformations respecting the original concept (neutral value)

This covers the transformations that do not add value to the original building, but respect the original concept by not disturbing or vanishing its qualities.

1.2.3. Transformations disturbing the original concept

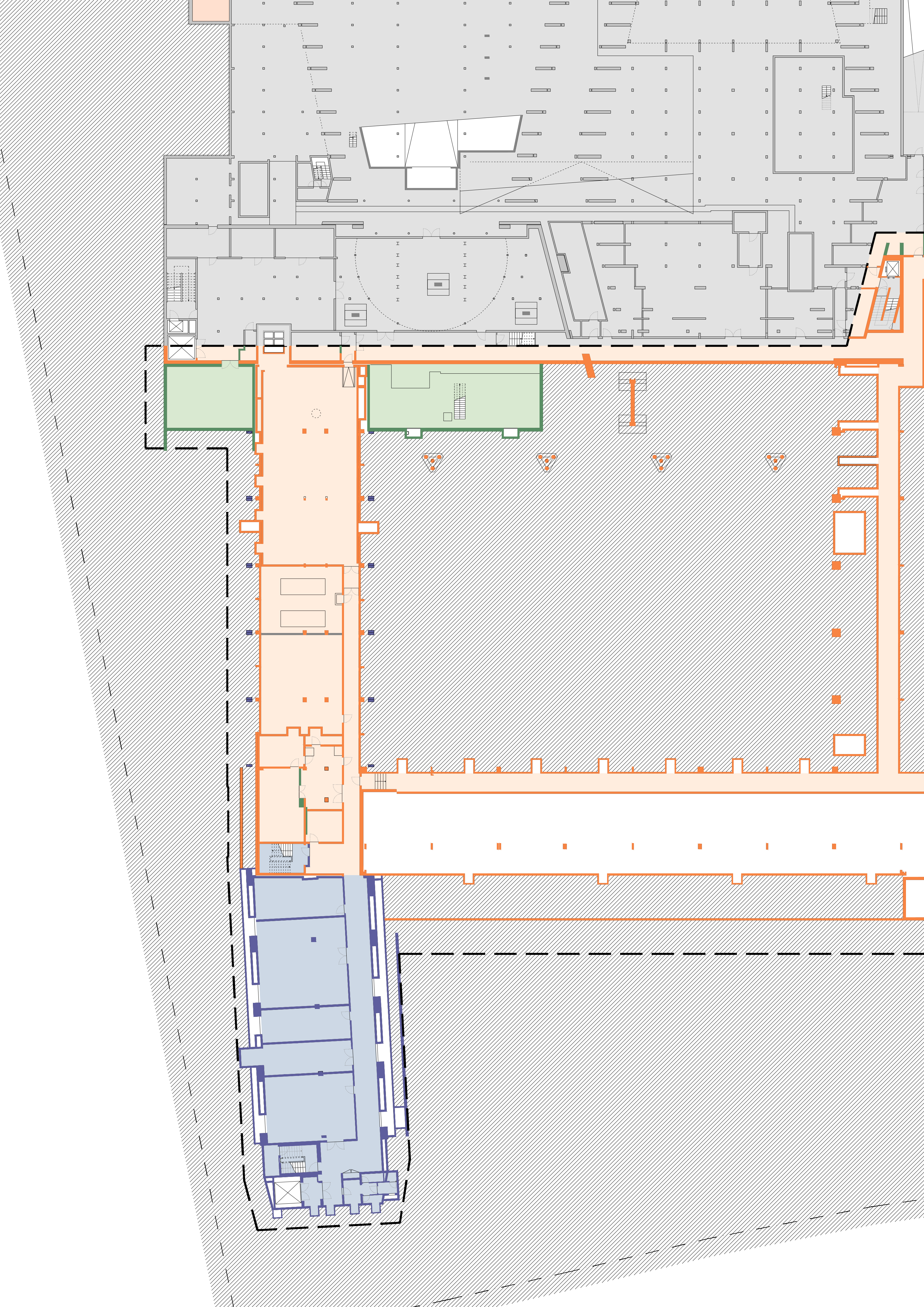
This includes the transformations that vanish the value of the original building.

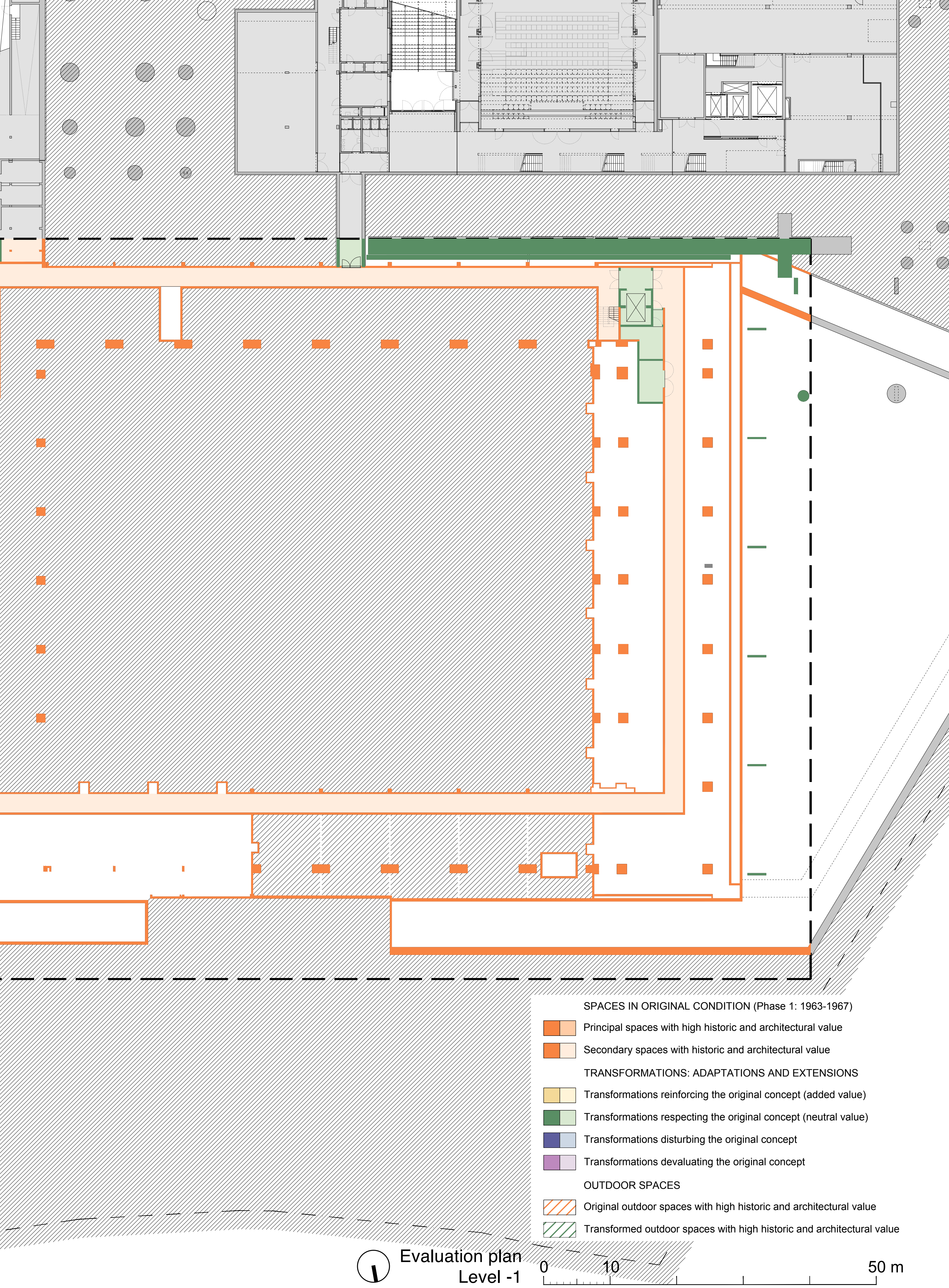
1.2.4. Transformations devaluating the original concept

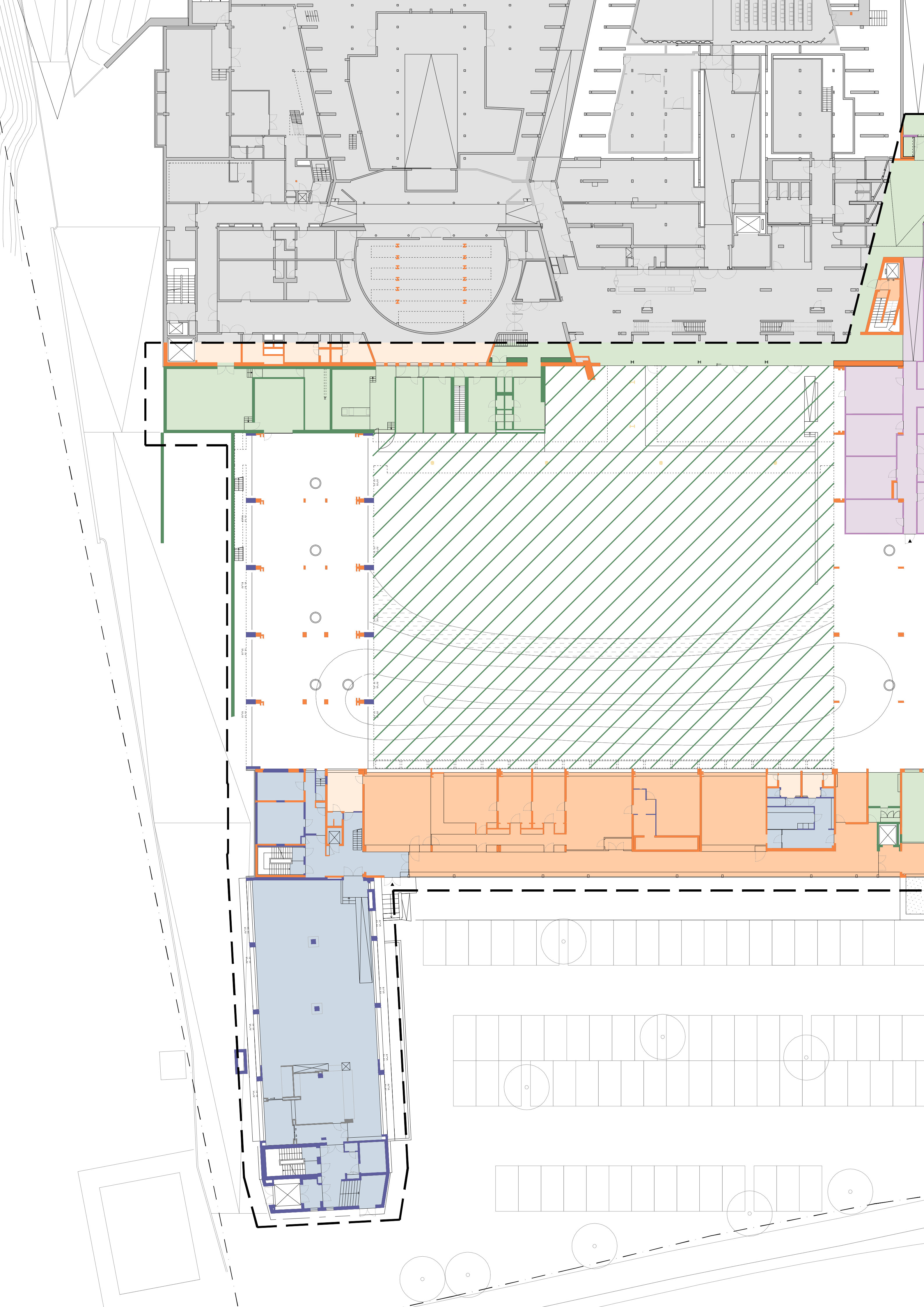
The transformations that are in contrast with the principal concepts of the building are classified in this category.

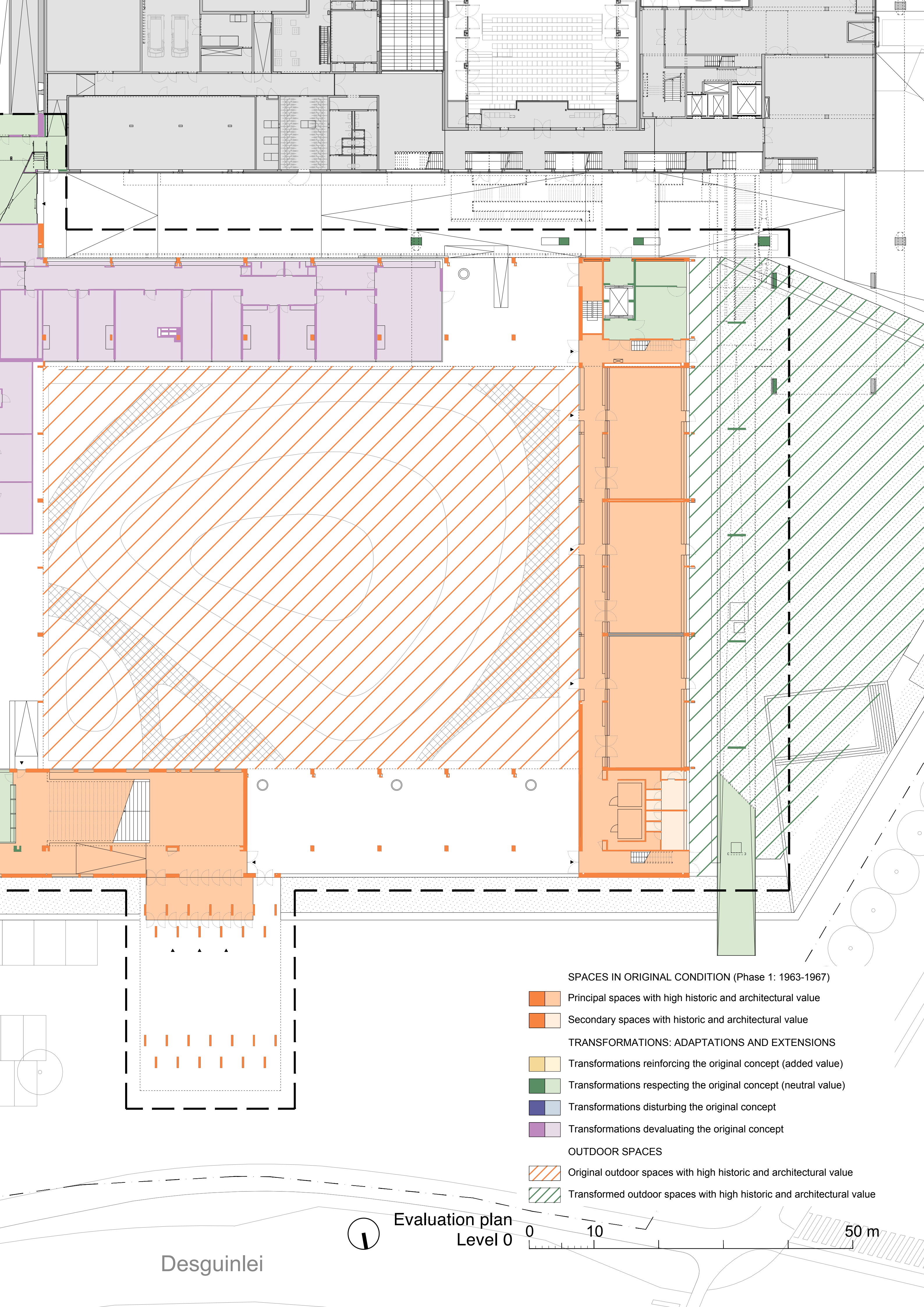
1.2.5. Outdoor spaces

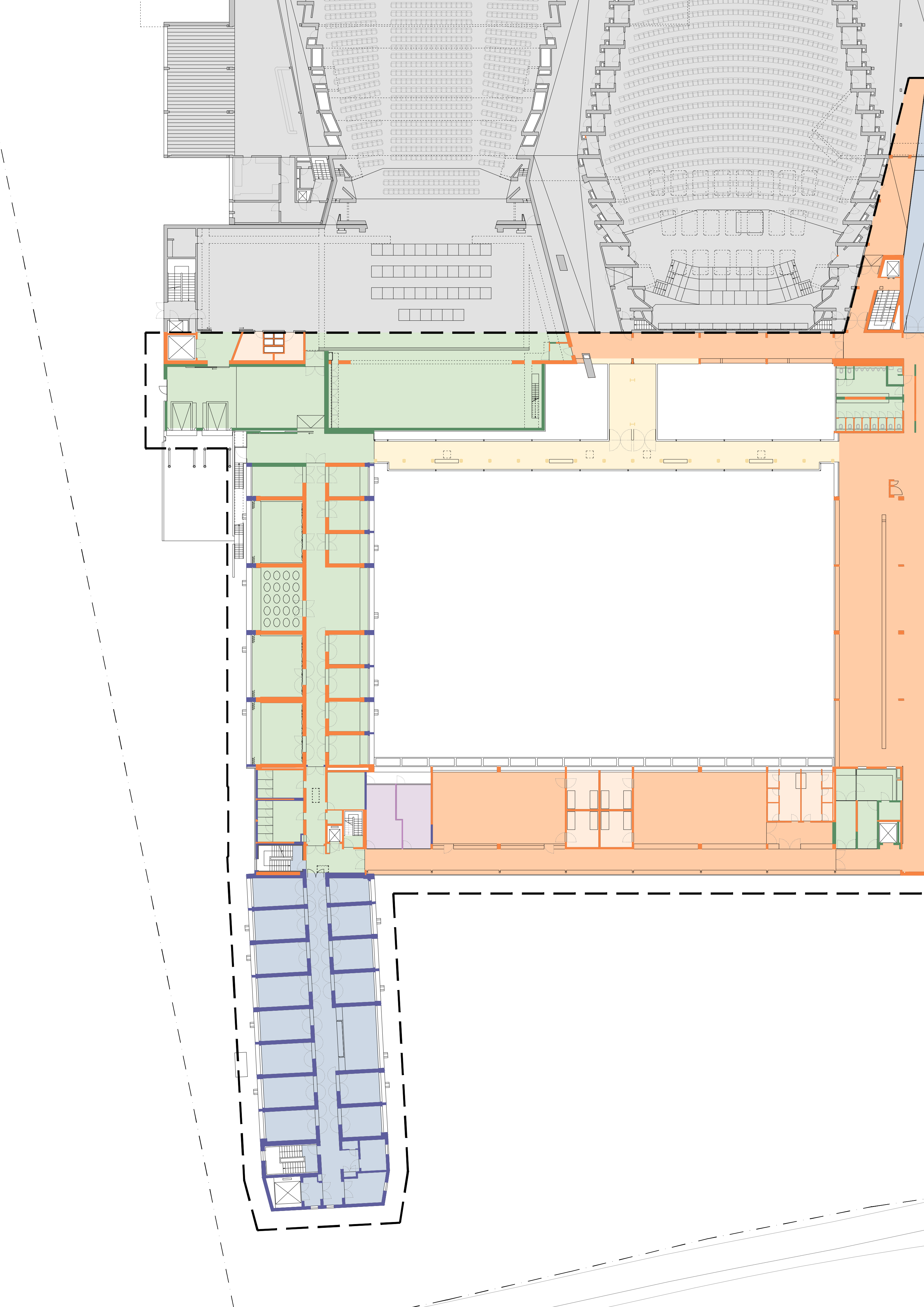
The valuable outdoor spaces are indicated according to the same principles.

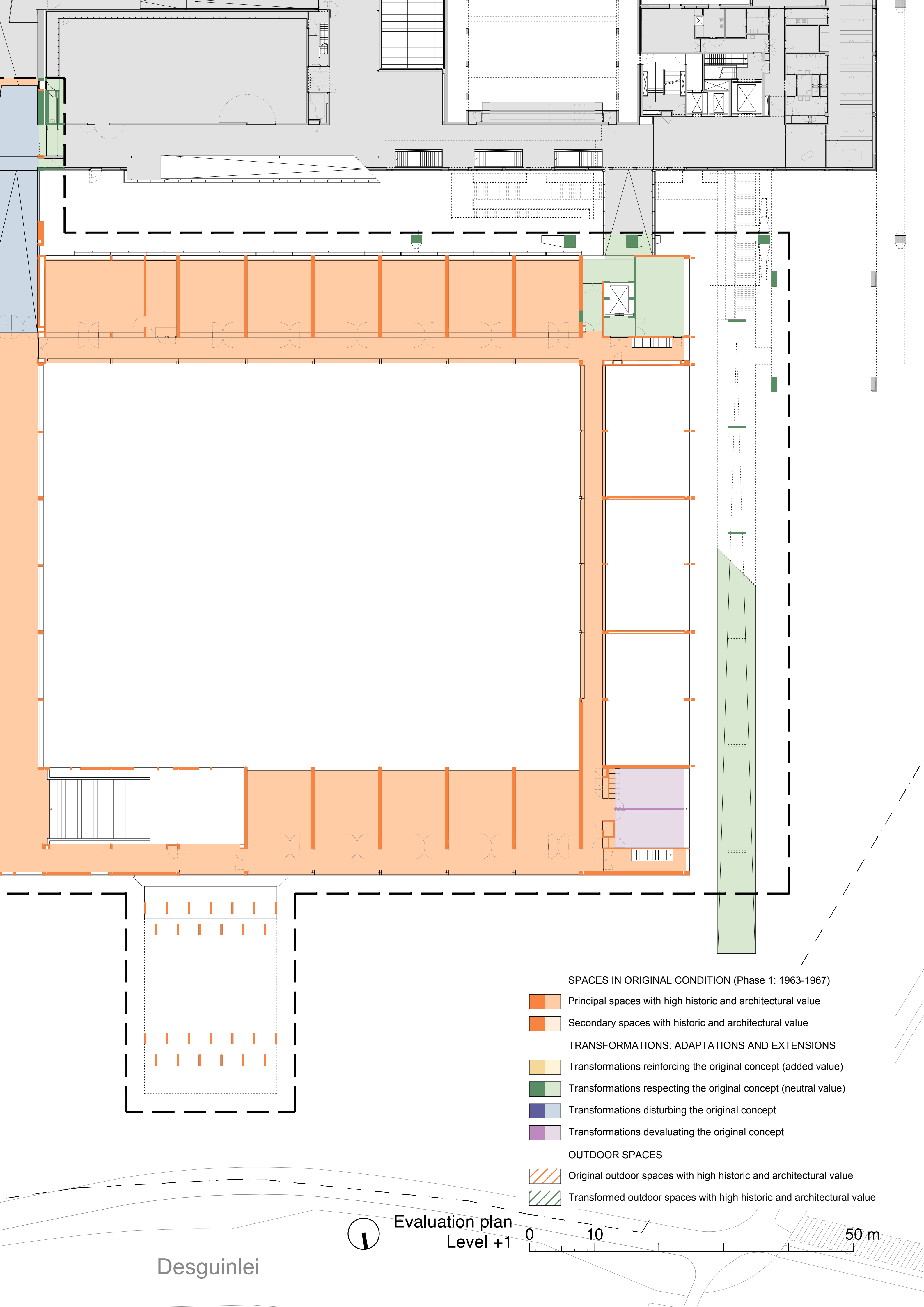


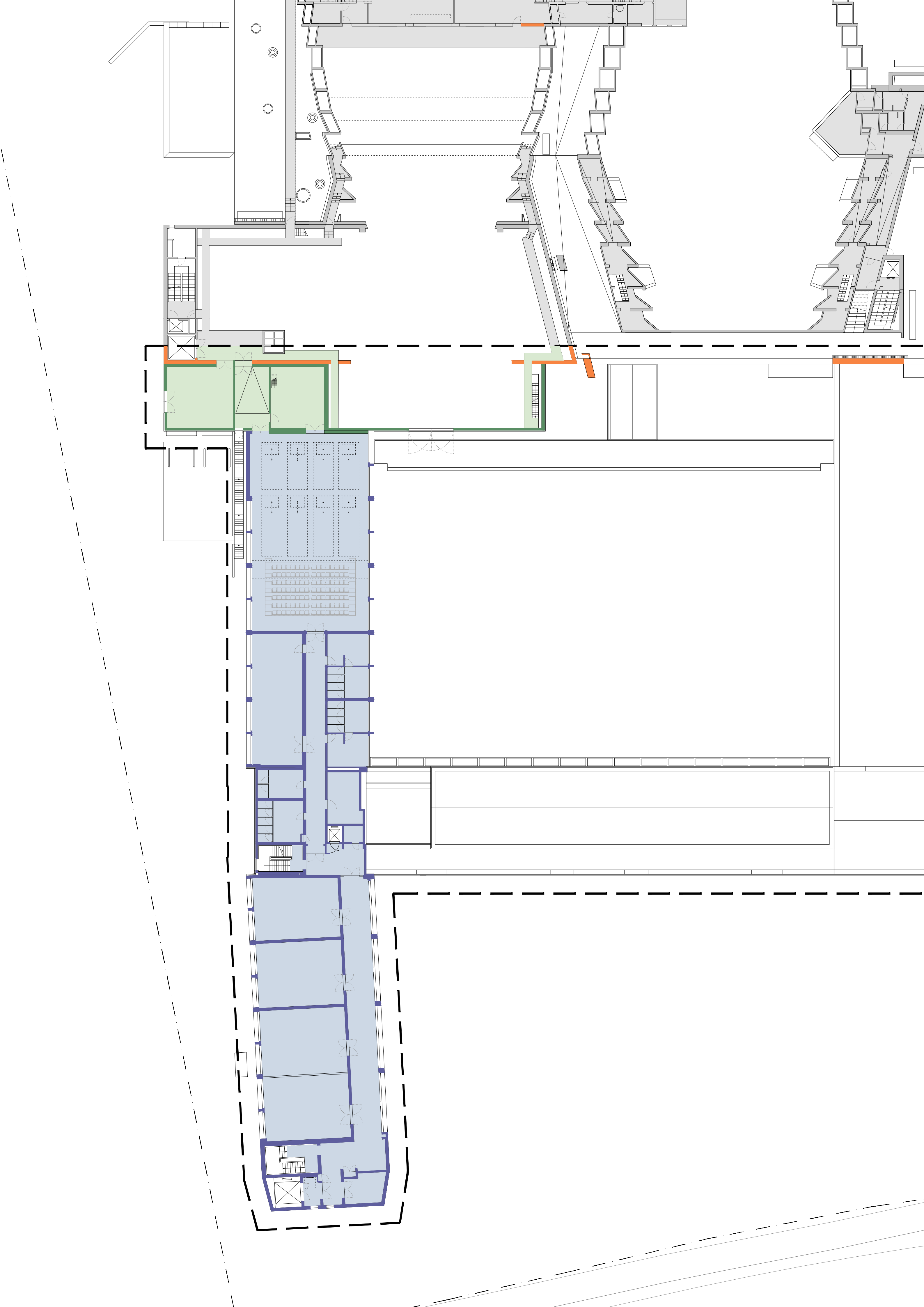

SPACES IN ORIGINAL CONDITION (Phase 1: 1963-1967)
Principal spaces with high historic and architectural value
Secondary spaces with historic and architectural value
TRANSFORMATIONS: ADAPTATIONS AND EXTENSIONS
Transformations reinforcing the original concept (added value)
Transformations respecting the original concept (neutral value)
Transformations disturbing the original concept
Transformations devaluating the original concept
OUTDOOR SPACES
Original outdoor spaces with high historic and architectural value
Transformed outdoor spaces with high historic and architectural value
Evaluation plan
Level -1
0
10
50 m

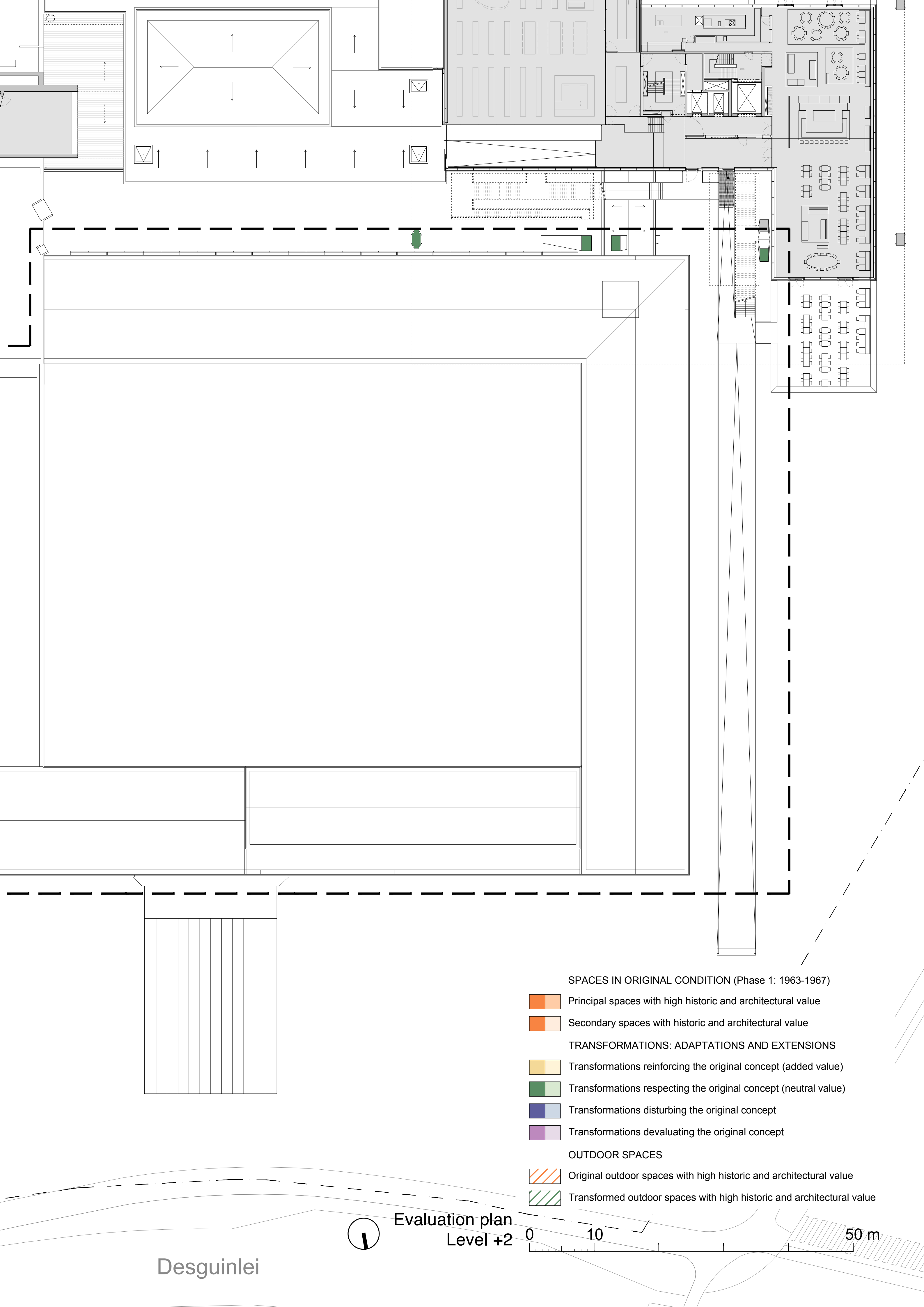



SPACES IN ORIGINAL CONDITION (Phase 1: 1963-1967)
Principal spaces with high historic and architectural value
Secondary spaces with historic and architectural value
TRANSFORMATIONS: ADAPTATIONS AND EXTENSIONS
Transformations reinforcing the original concept (added value)
Transformations respecting the original concept (neutral value)
Transformations disturbing the original concept
Transformations devaluating the original concept
OUTDOOR SPACES
Original outdoor spaces with high historic and architectural value
Transformed outdoor spaces with high historic and architectural value
Evaluation plan
Level 0
0
10
50 m
Desguinlei

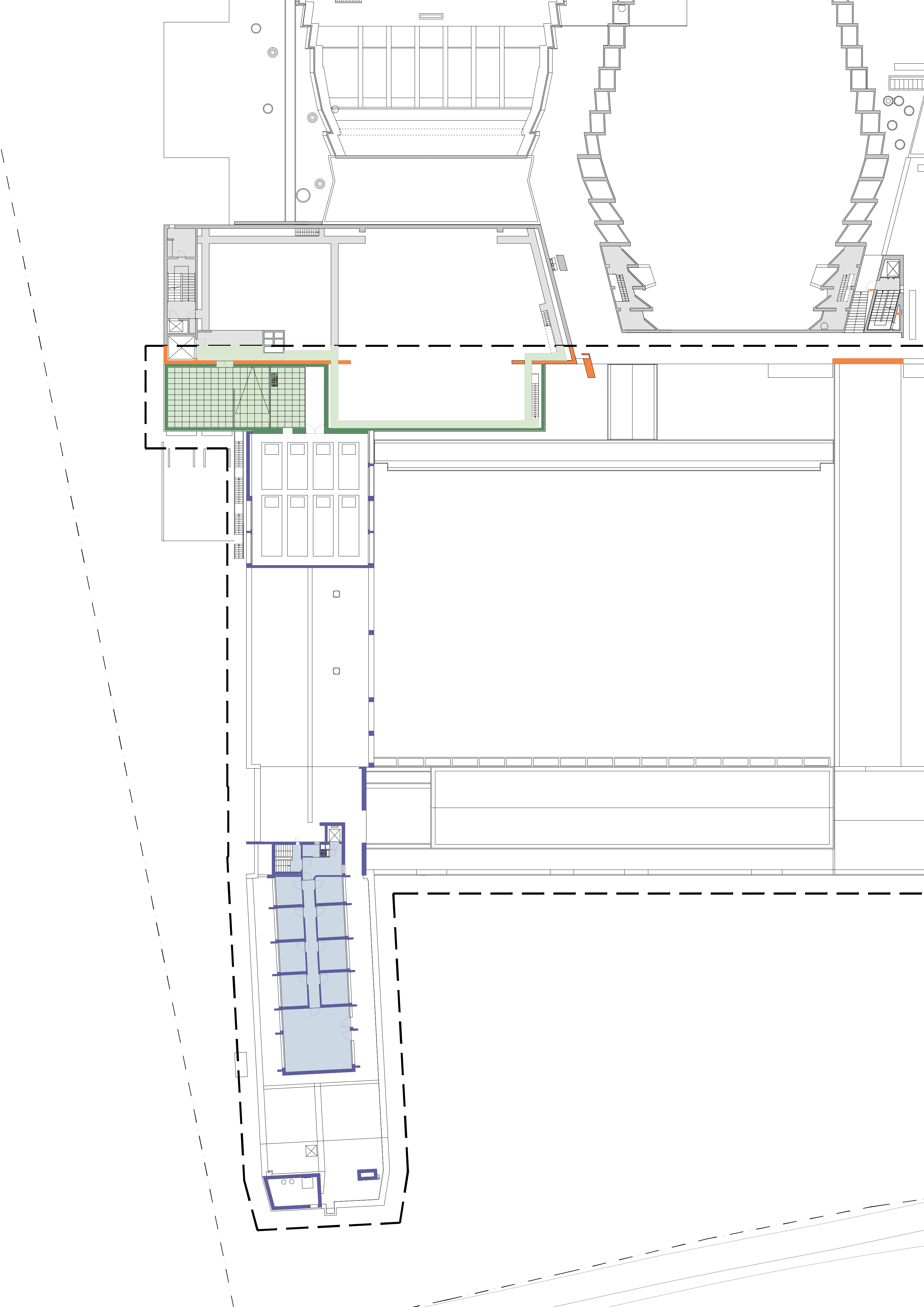


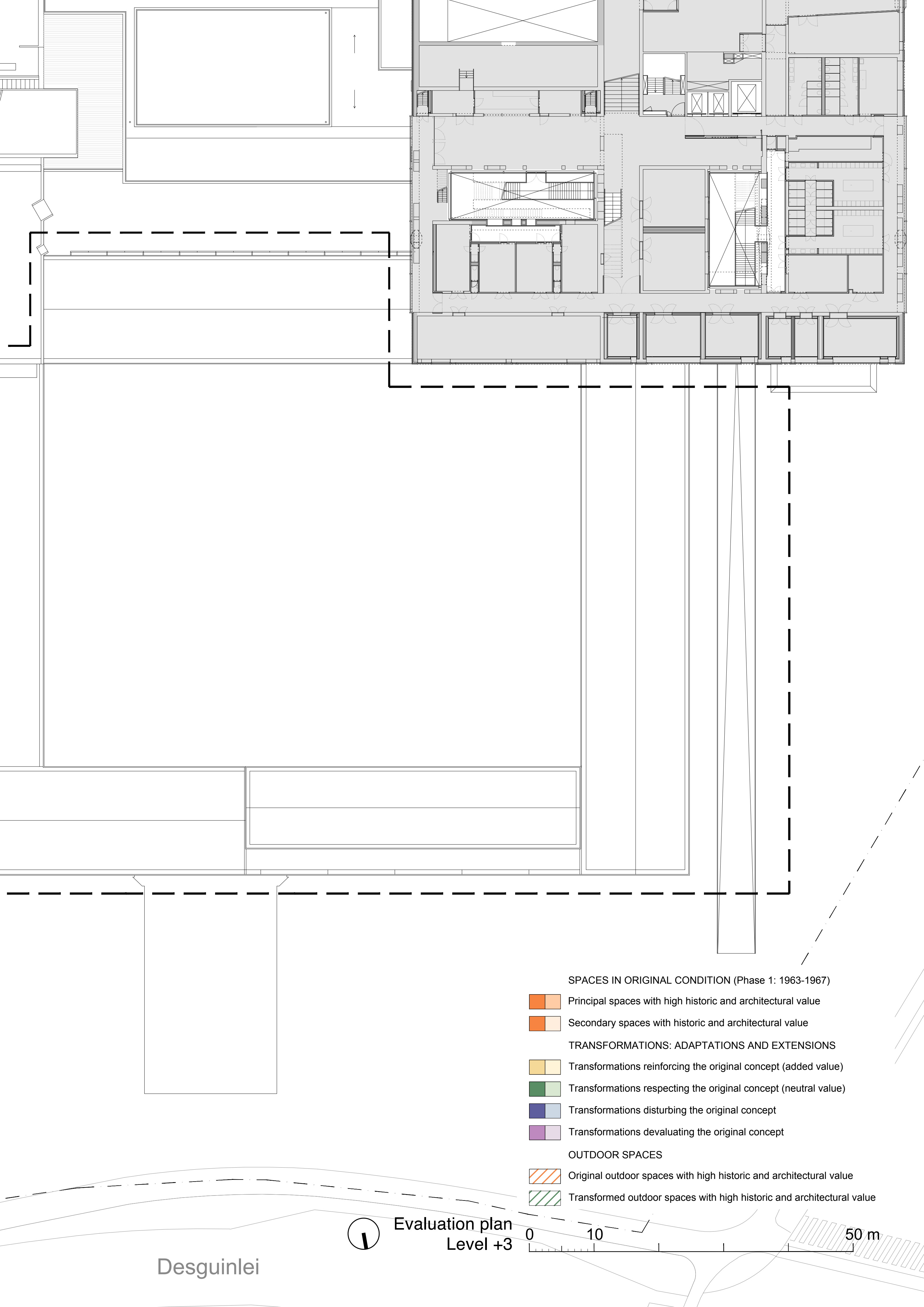

SPACES IN ORIGINAL CONDITION (Phase 1: 1963-1967)
Principal spaces with high historic and architectural value
Secondary spaces with historic and architectural value
TRANSFORMATIONS: ADAPTATIONS AND EXTENSIONS
Transformations reinforcing the original concept (added value)
Transformations respecting the original concept (neutral value)
Transformations disturbing the original concept
Transformations devaluating the original concept
OUTDOOR SPACES
Original outdoor spaces with high historic and architectural value
Transformed outdoor spaces with high historic and architectural value
Evaluation plan
Level +1
0
10
50 m
Desguinlei





SPACES IN ORIGINAL CONDITION (Phase 1: 1963-1967)
Principal spaces with high historic and architectural value
Secondary spaces with historic and architectural value
TRANSFORMATIONS: ADAPTATIONS AND EXTENSIONS
Transformations reinforcing the original concept (added value)
Transformations respecting the original concept (neutral value)
Transformations disturbing the original concept
Transformations devaluating the original concept
OUTDOOR SPACES
Original outdoor spaces with high historic and architectural value
Transformed outdoor spaces with high historic and architectural value
Evaluation plan
Level +2
0
10
50 m
Desguinlei




SPACES IN ORIGINAL CONDITION (Phase 1: 1963-1967)
Principal spaces with high historic and architectural value
Secondary spaces with historic and architectural value
TRANSFORMATIONS: ADAPTATIONS AND EXTENSIONS
Transformations reinforcing the original concept (added value)
Transformations respecting the original concept (neutral value)
Transformations disturbing the original concept
Transformations devaluating the original concept
OUTDOOR SPACES
Original outdoor spaces with high historic and architectural value
Transformed outdoor spaces with high historic and architectural value
Evaluation plan
Level +3
0
10
50 m
Desguinlei

A classroom on the first floor of the east wing (block B) has been adapted to meet up with the acoustic requirements for harpsichord. This classroom is called 'classroom Van Immerseel'. The masterplan of intervention creates the freedom to install specific classrooms in the east wing following this example. The circulation within the original building has to be maintained. The circulation and division of rooms in the added volume can be transformed.

Figure II.2.1: Classroom Van Immerseel (flickr.com, 2015).

2. Intervention plan

The plan of intervention draws up a global vision on future interventions within the idea to consolidate or restore the original qualities of the building and to incorporate necessary adaptations to improve the use and comfort of the building.

2.1. Restoration of the principal spaces with respectful integration of techniques to improve comfort

The principal spaces that are still in the original condition or are in a transformed but reversible condition are classified in this category. A precise restoration following the identified principles and original use of materials is valid here. The integration of techniques has to be respectful and the necessary transformations to achieve this integration have to be coherent and serene.

2.2. Restoration of the secondary spaces with respectful integration of techniques to improve comfort

The functional rooms have to be restored within the global vision of the original building. The overall geometry, circulation and connections with the principal spaces have to be respected. New functional techniques can be integrated to improve comfort.

2.3. Renovation with respect for the original spatial concept

Principal rooms that have irreversibly been transformed and original technical rooms are classified in this category. The rooms can be adapted within the indicated boundaries and with respect for the connections with the principal spaces. The boundary with the principal spaces has to comply with the principals of restoration.

2.4. Transformations to optimise the use and functionality

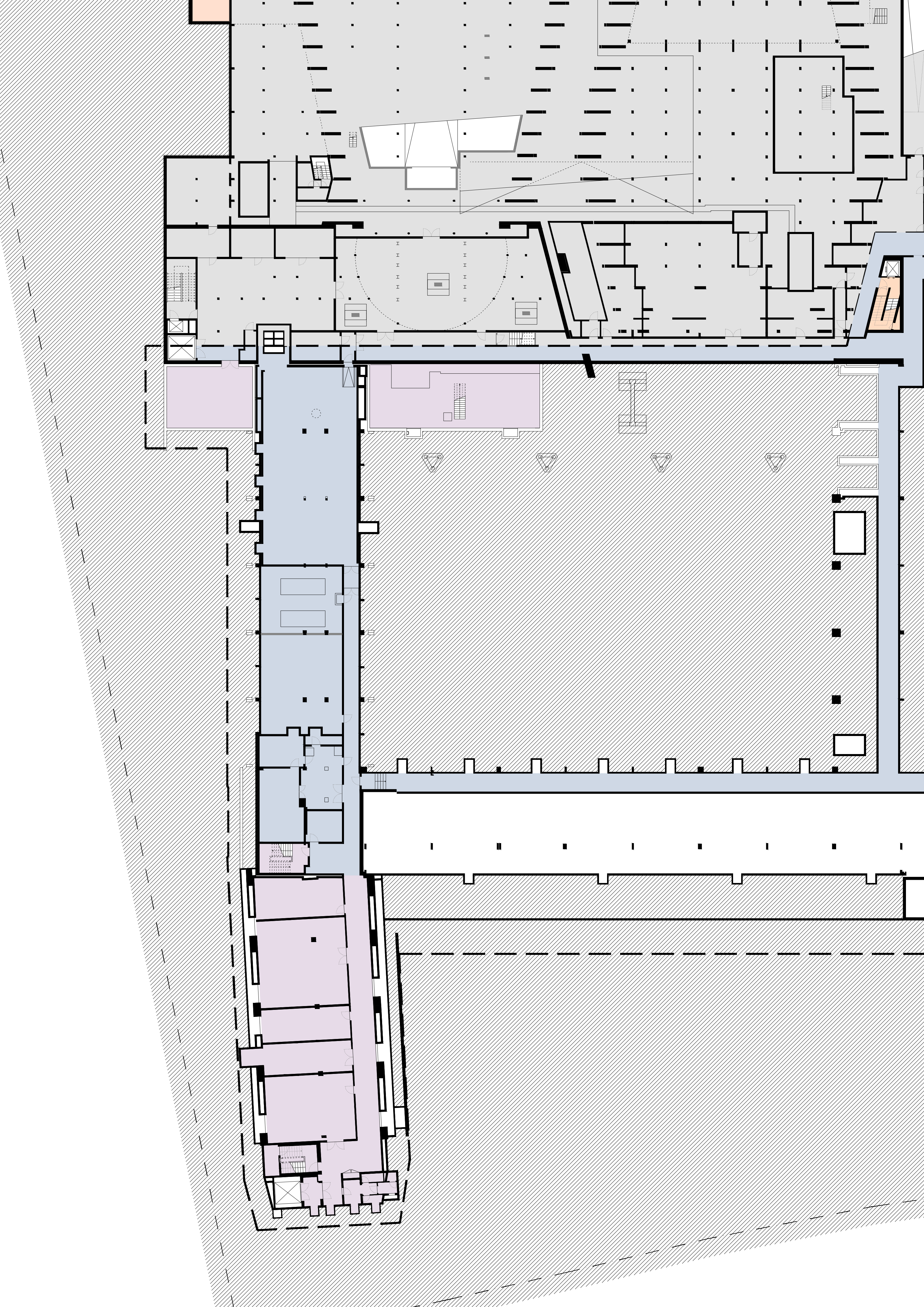
This category covers the transformations originated from high functional reasons and the transformations that disturb the original concept. High functional interventions are classified in this category because the reason of these interventions can change over time. The spaces can be adapted following the current functional needs within the existing boundaries of the volume. Particular adaptations to install specified rooms can be applied in this zone to safeguard the original principal rooms. The overall volumes can be removed when they are no longer functionally needed because they do not contribute to the overall value of the complex.

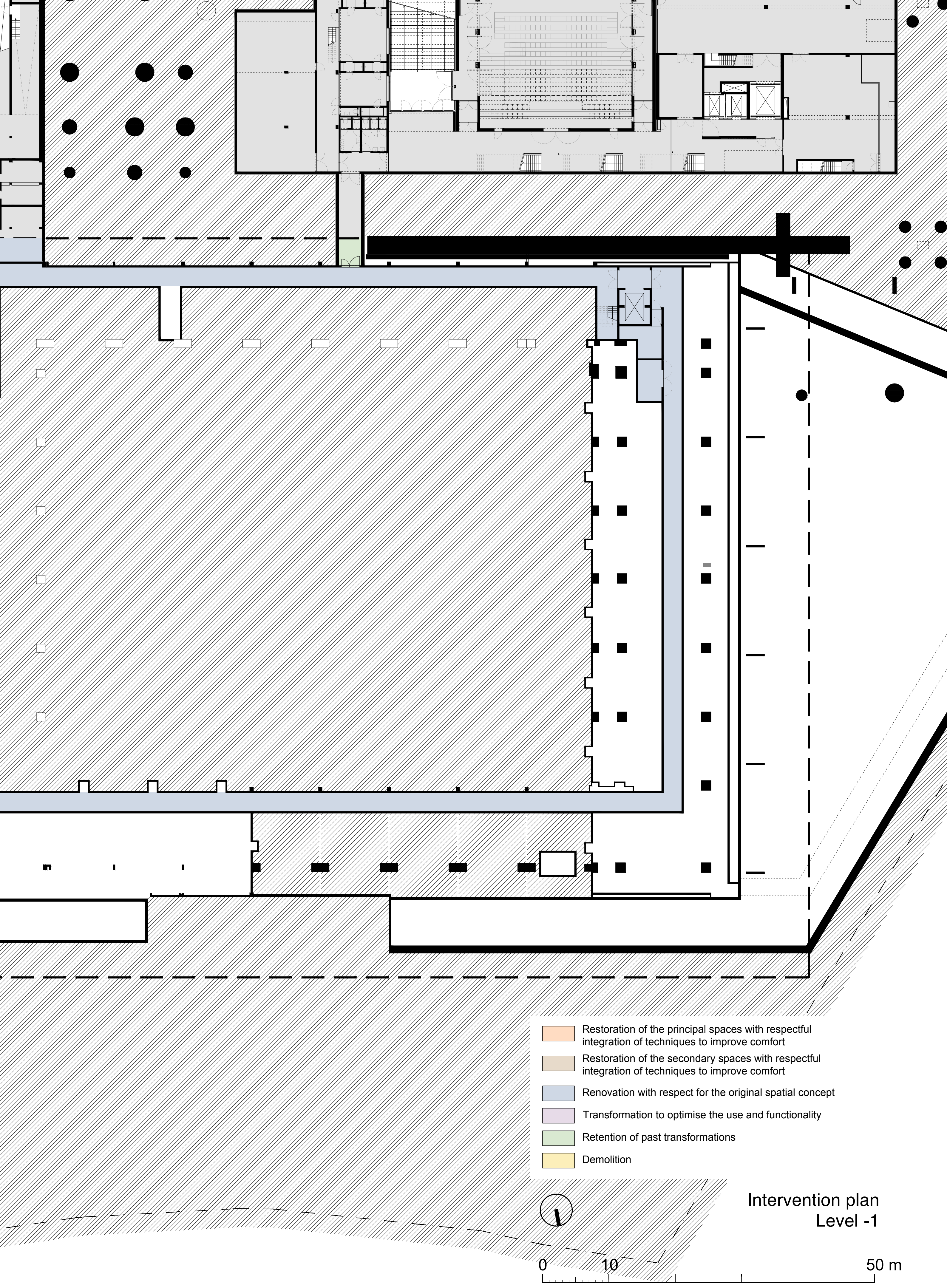
2.5. Retention of transformations

The transformations that add value to the building and the transformations that are an independent entity are classified in this category. These transformations are consolidated in their current state.

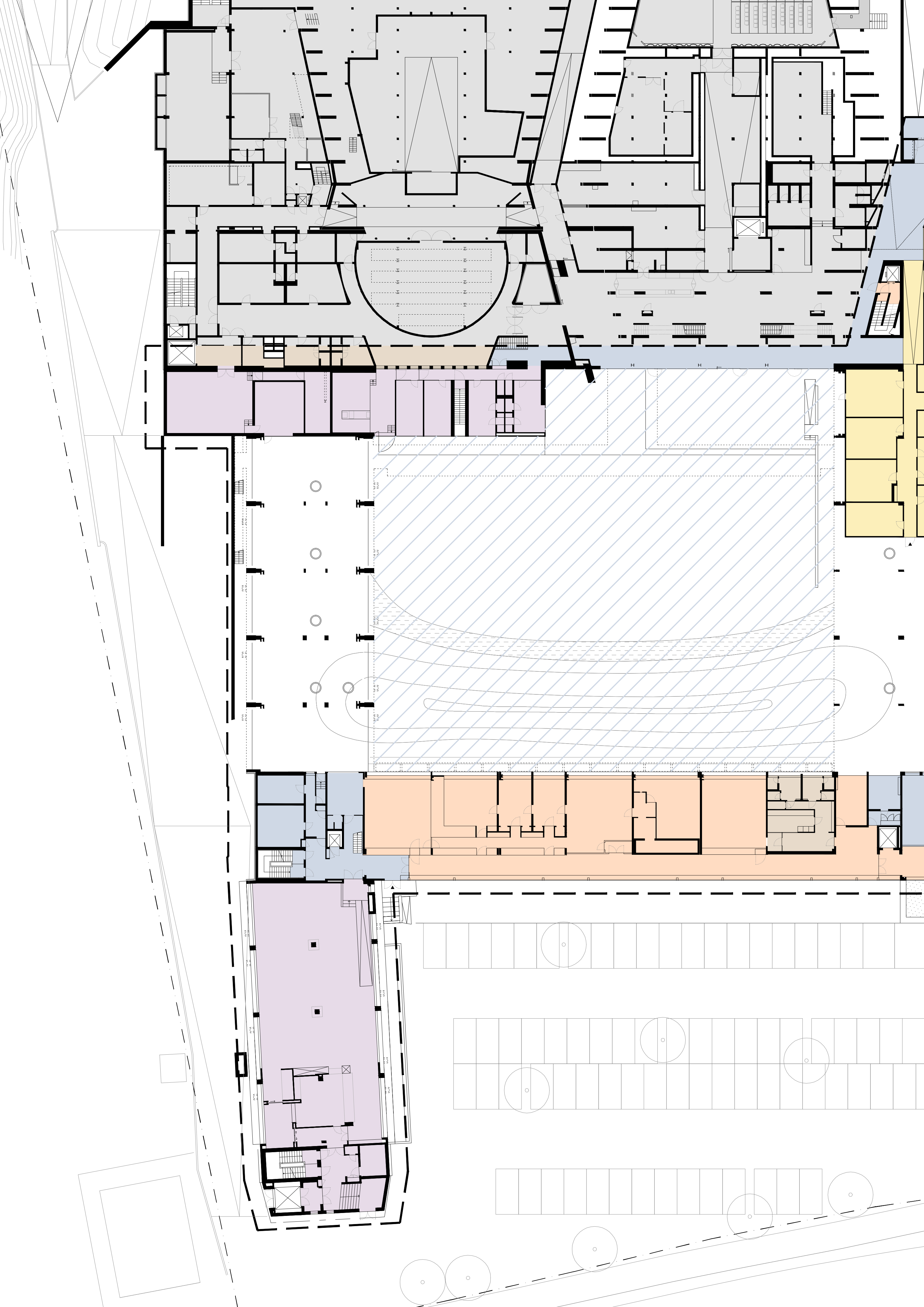
2.6. Demolition

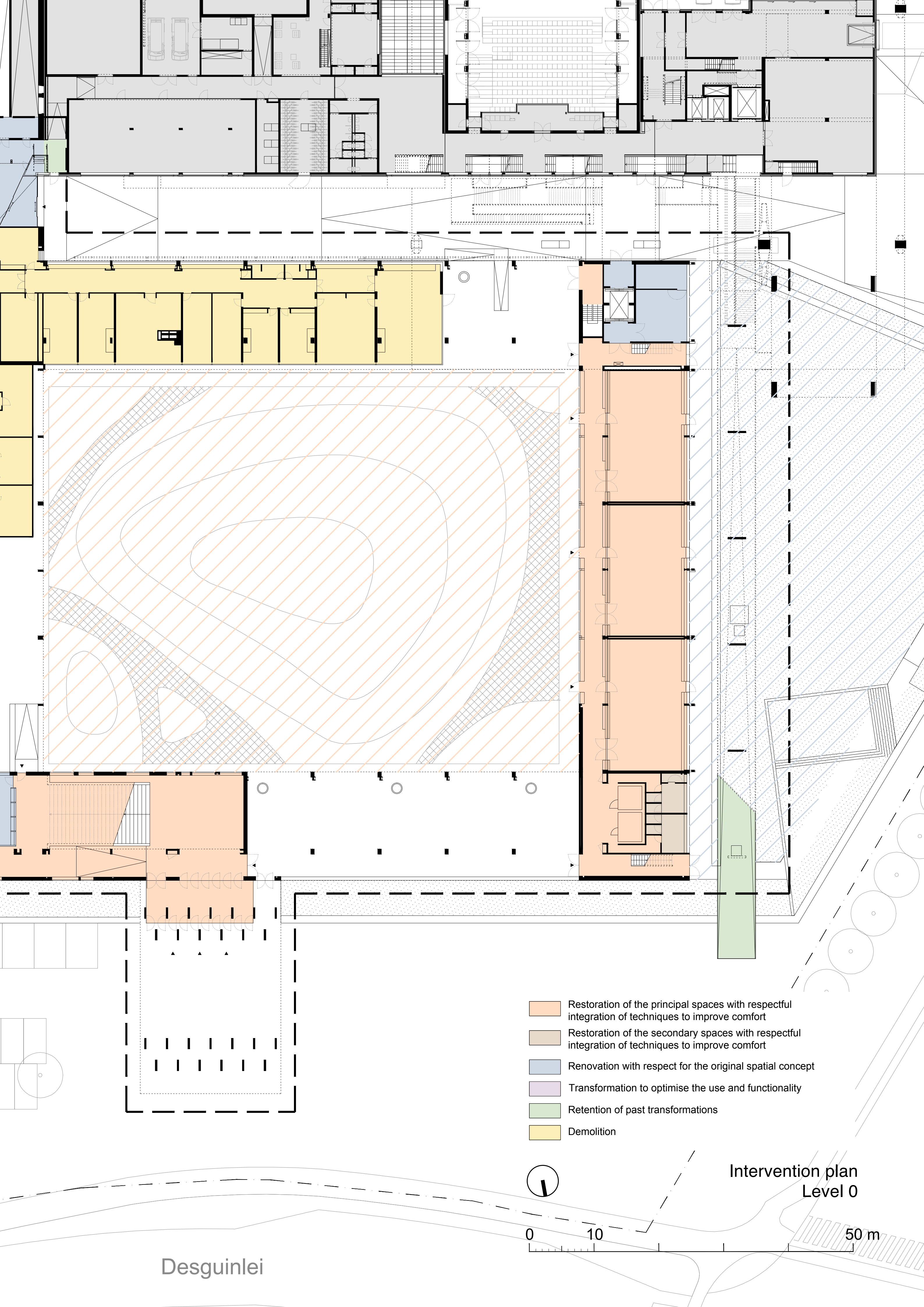
This covers the transformations that devaluate the building. These transformations have to be removed to restore the basic qualities of the original building.



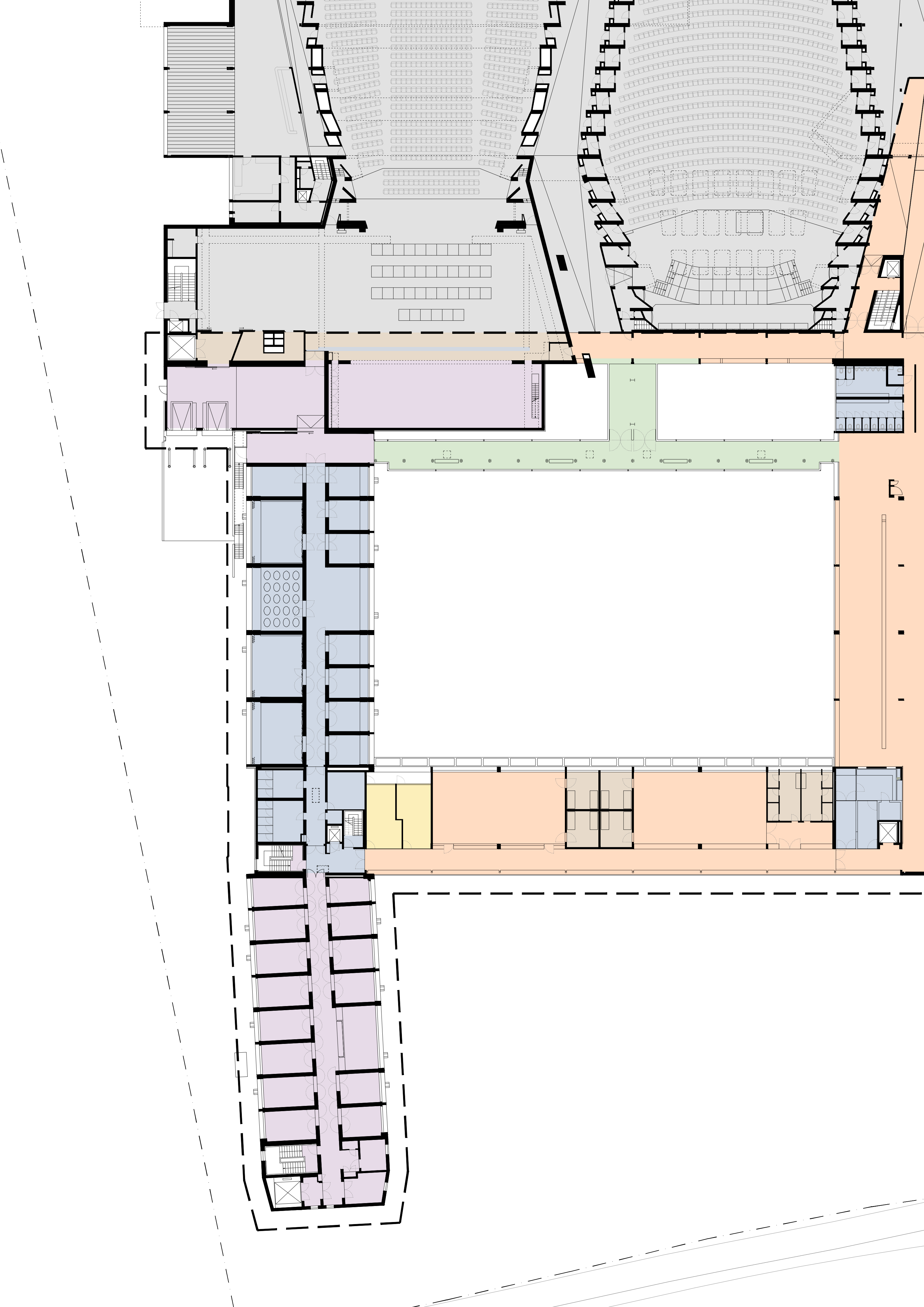


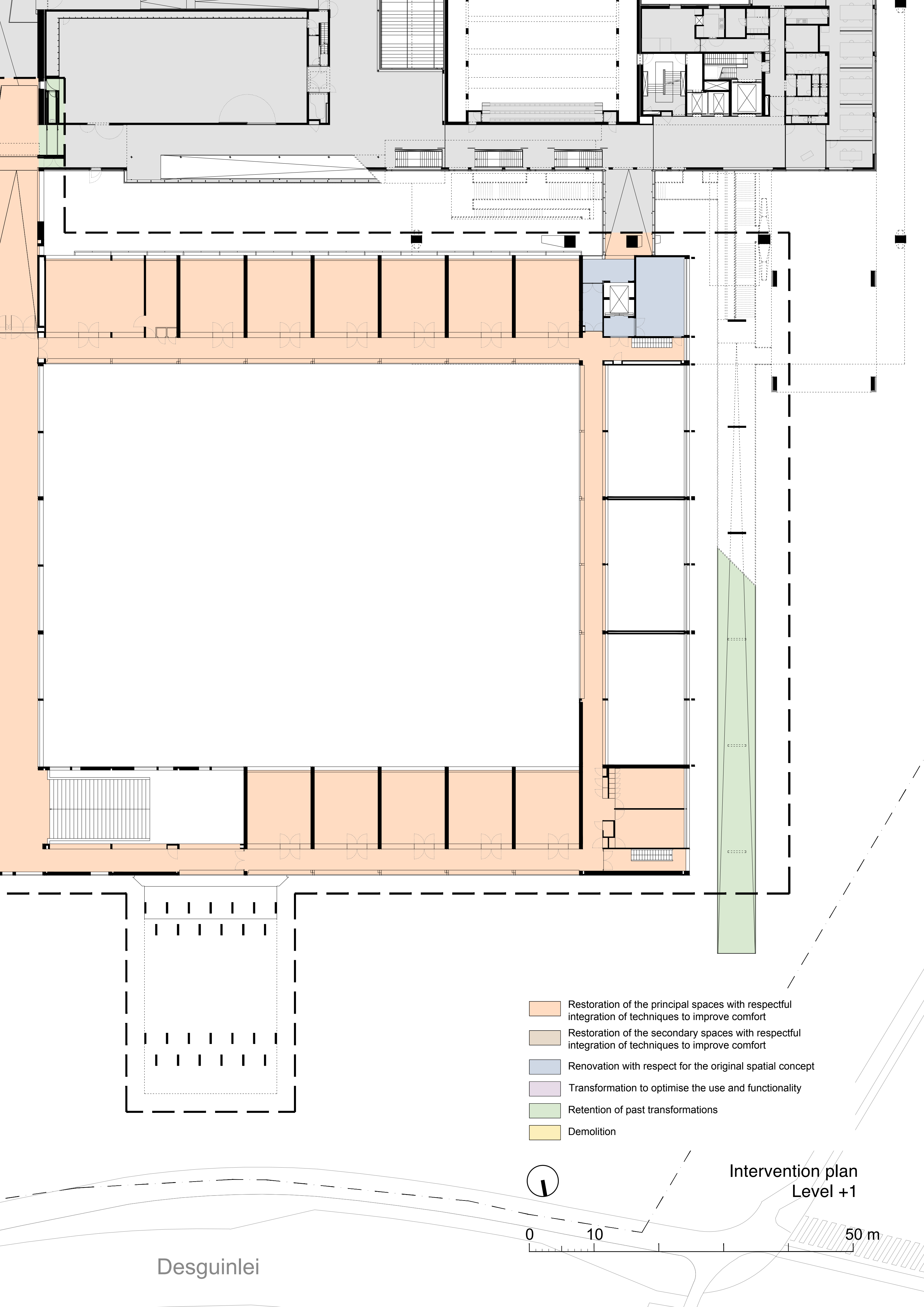
Intervention plan
Level -1



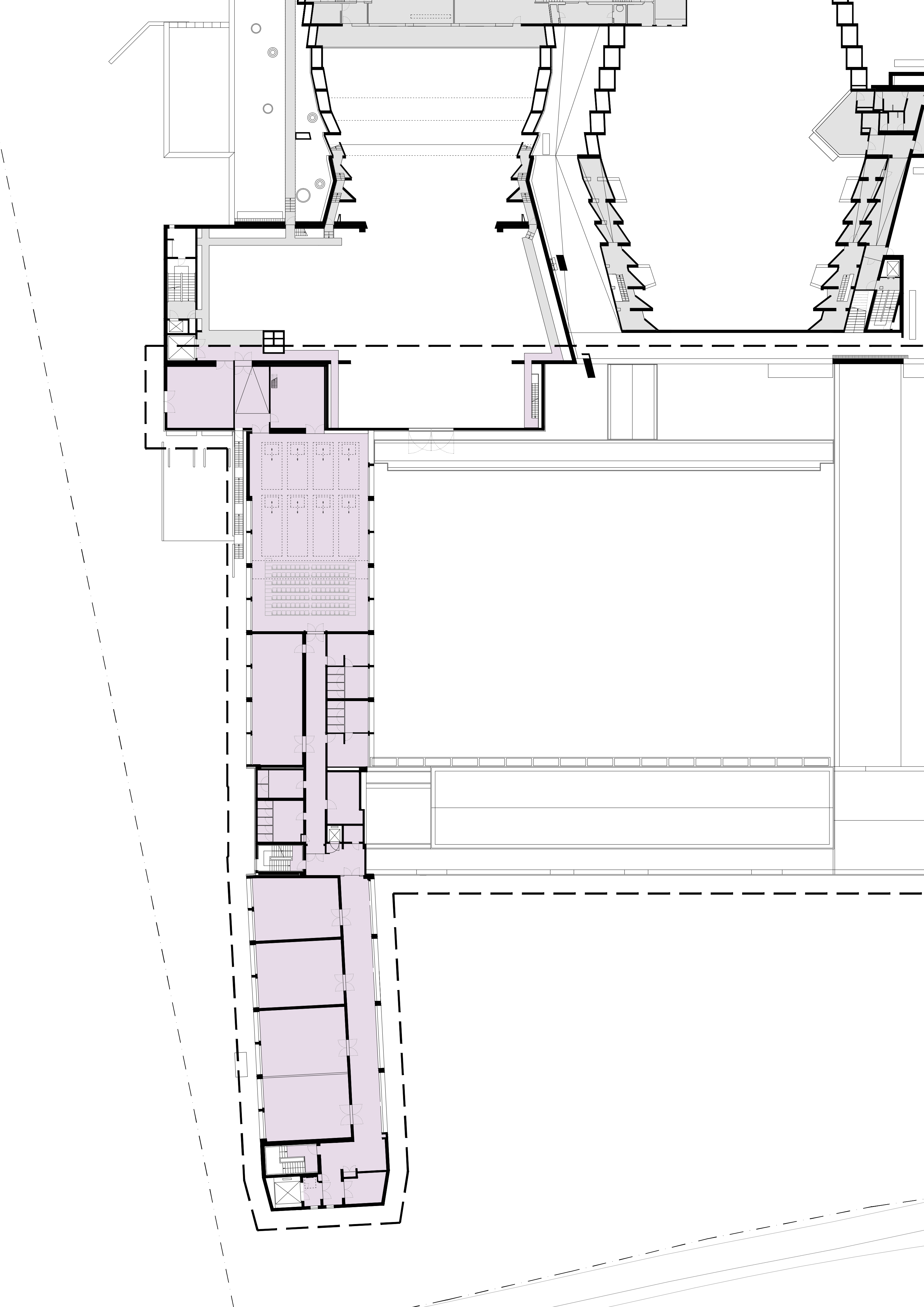


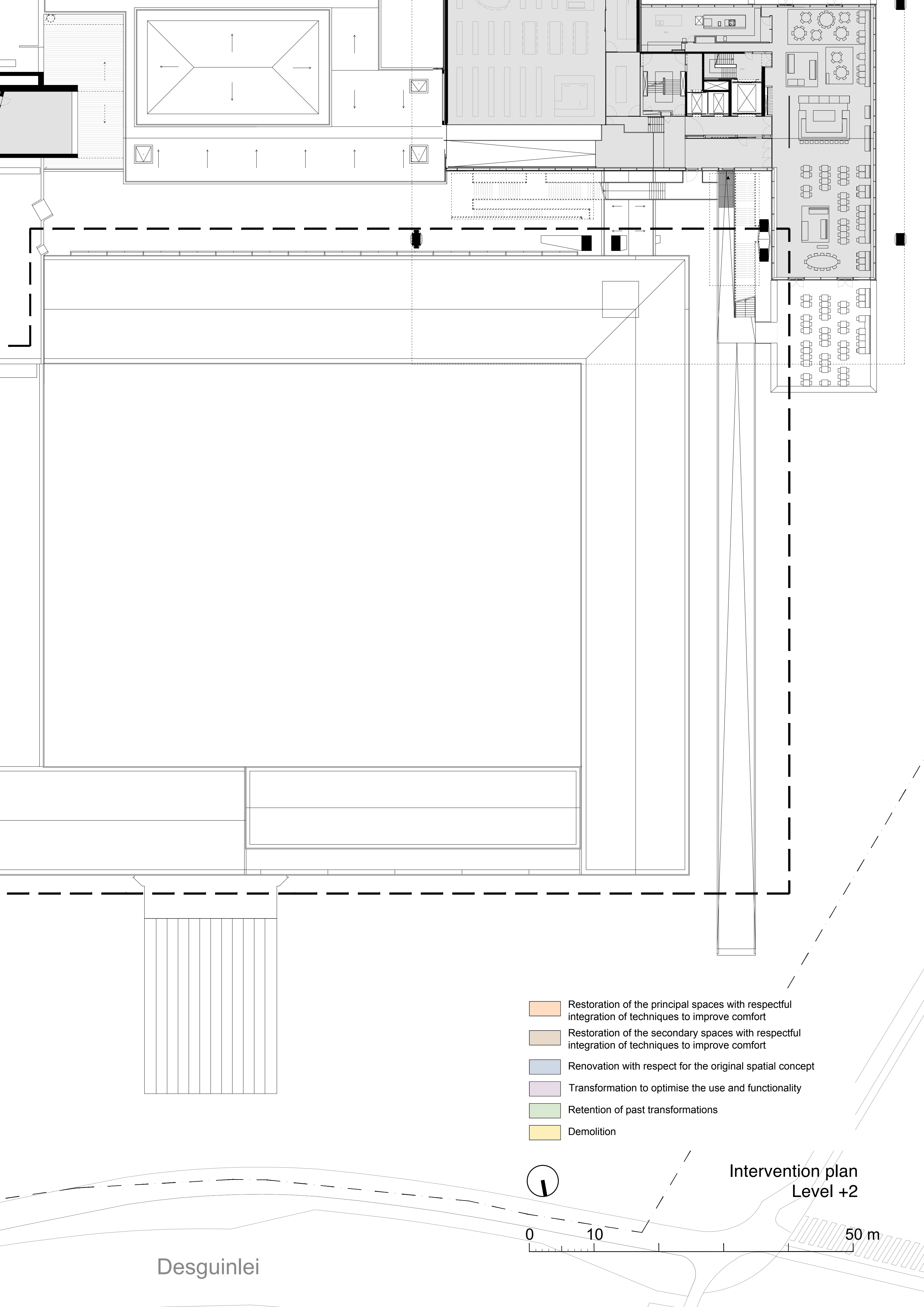
Intervention plan
Level 0



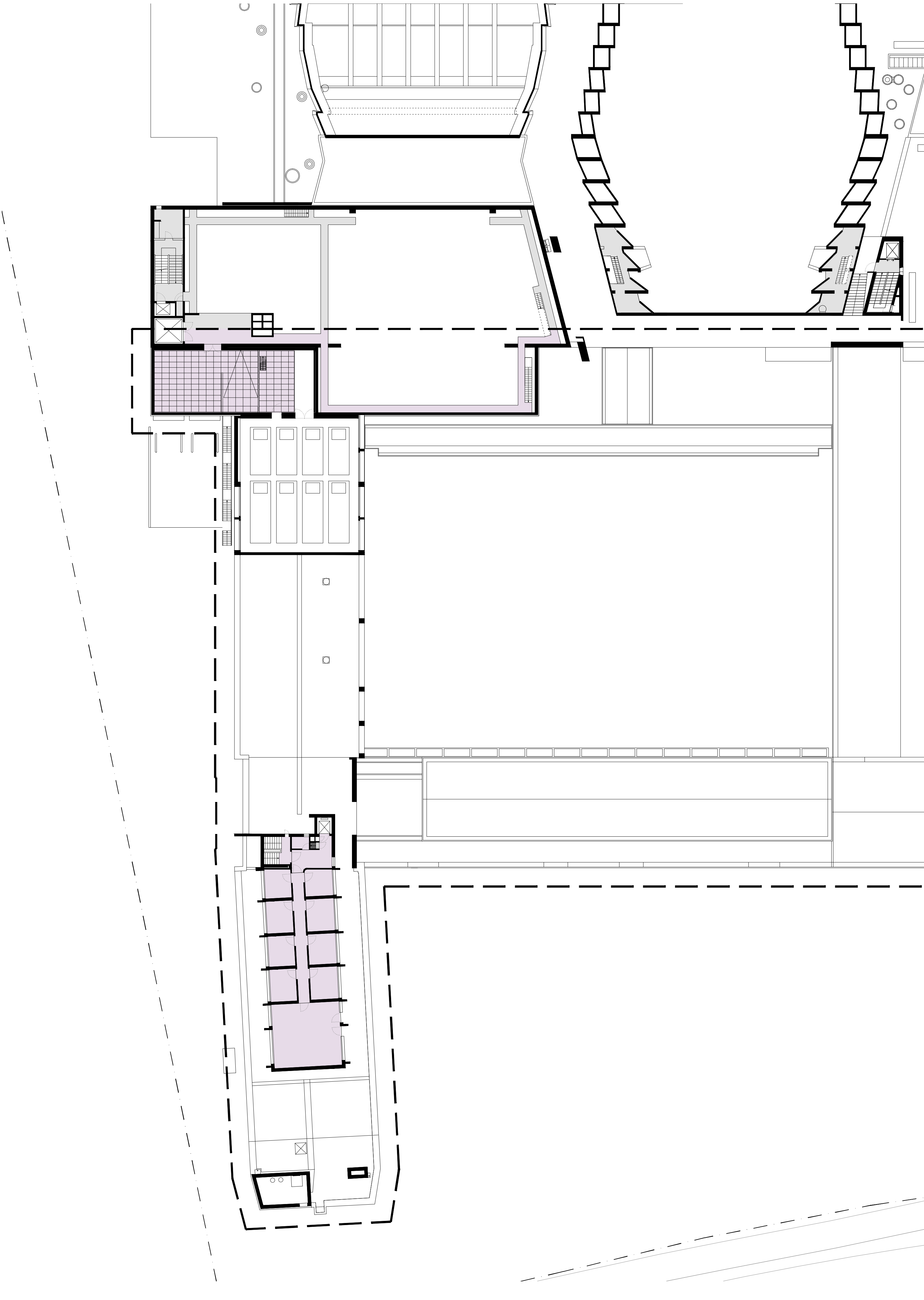


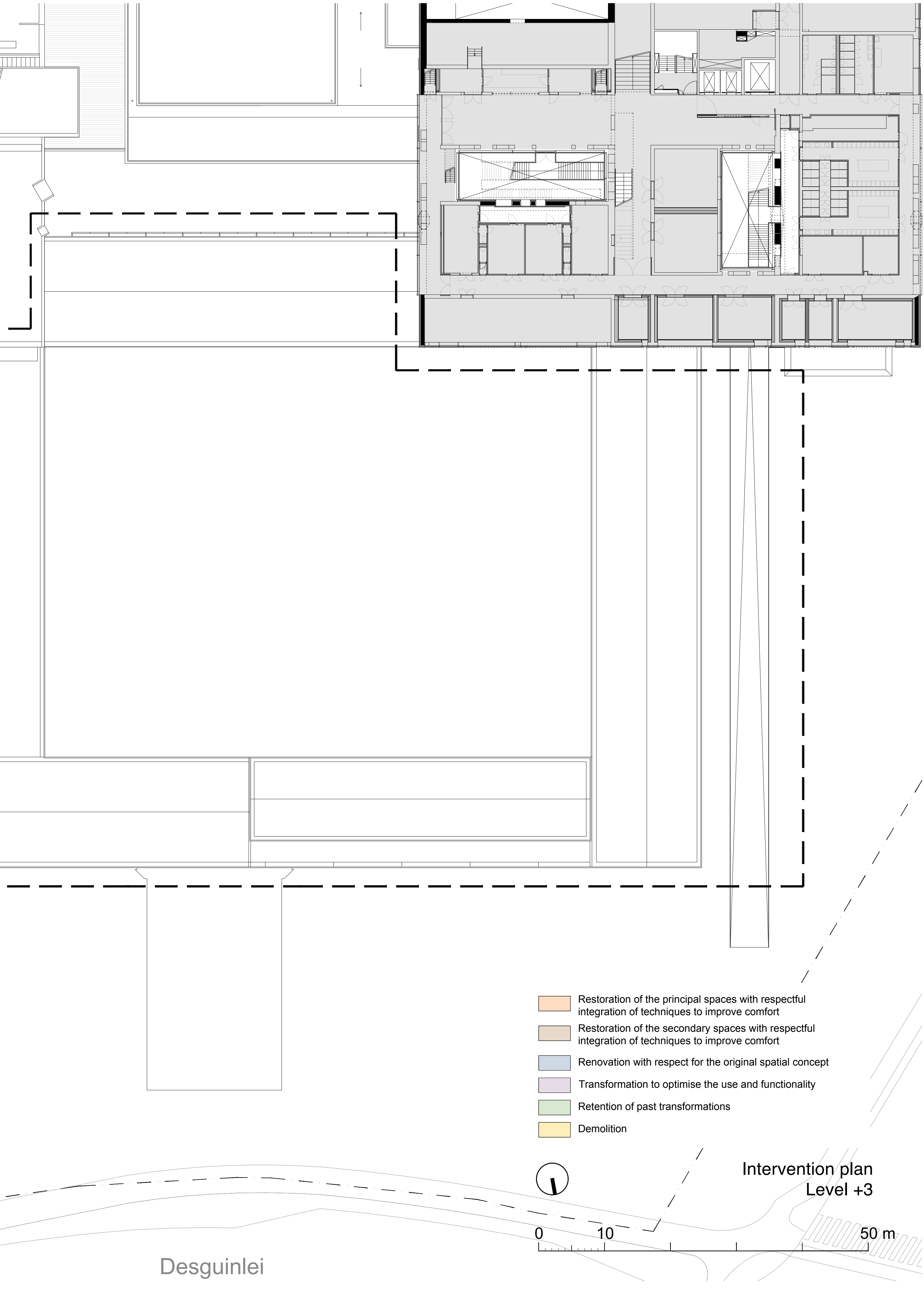
Intervention plan
Level +1





Intervention plan
Level +2



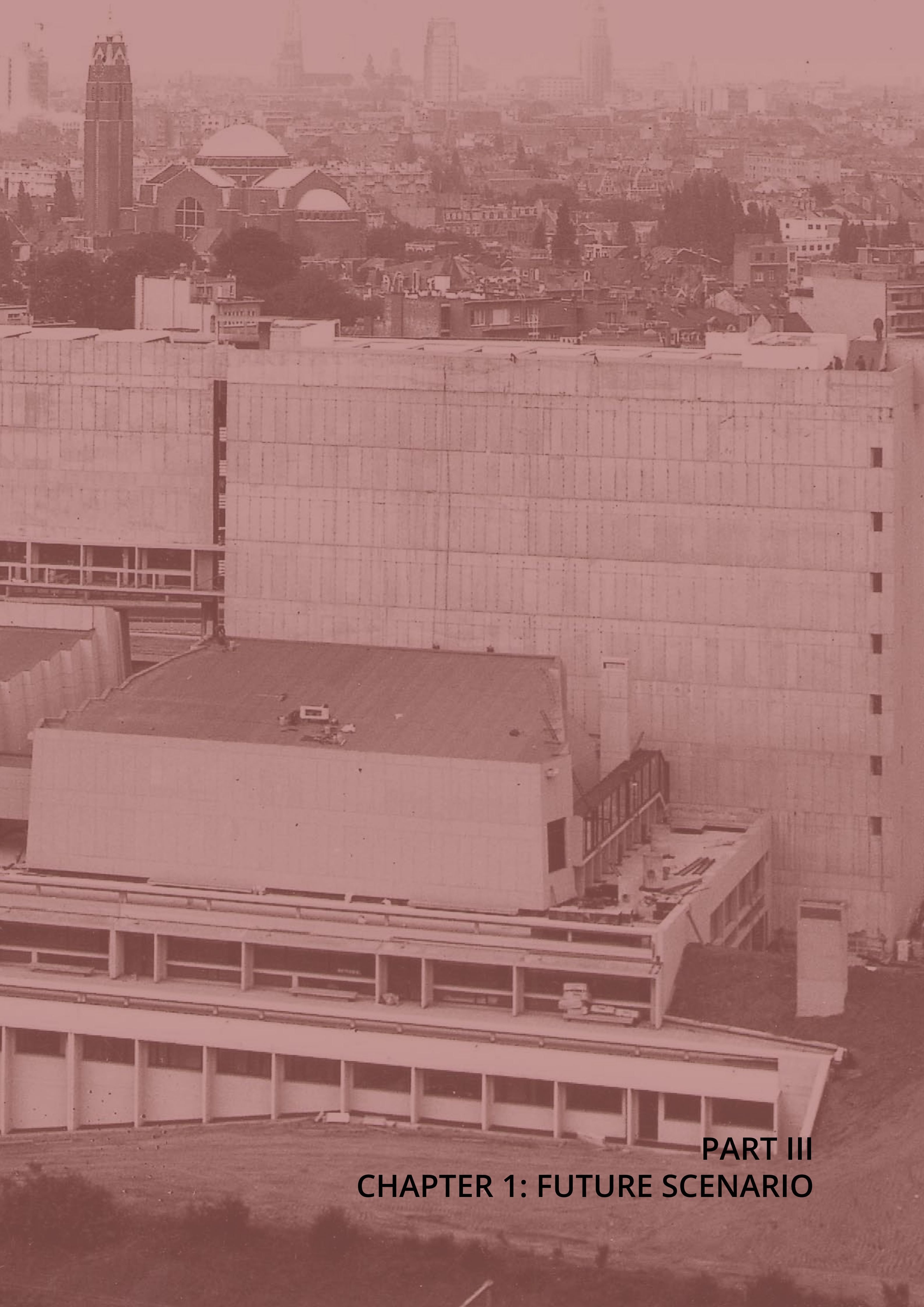


Intervention plan
Level +3

PART III
PROPOSAL

Long-term vision: operational master plan

The first part of this study illustrates how the building has evolved from a music Conservatoire to an International Arts Campus (cfr. Part I: General Study of the Entire Building and Site).
During the construction of the building an extra user, Radio 2, was added to the programme to meet up with the budgetary resources. After the completion of the building a managing organisation, deSingel, was established to fully exploit the capacities of the building.
The heyday of the building has been defined as the original concept of Stynen and De Meyer. However the heyday of the function of the building is today, deSingel International Arts Campus where a vital synergy exists between the Conservatoire and deSingel. The original building has been enriched with a cultural programme and every opportunity should be taken to embrace this situation and enhance the symbiosis between the Conservatoire and deSingel.
An operational master plan has to create the right balance between the use of the building and the architectural value of the building.
After the evaluation of the building (evaluation plan) the possible and necessary architectural interventions are defined in a **plan of intervention** (cfr. Part II, Chapter 2: Evaluation and Intervention). This plan serves as a neutral reference for future decisions. In this dissertation an evaluation and intervention plan are made for phase 1. The methodology can be extrapolated to phase 2.
The users have gathered their operational needs in a global **plan of infrastructure** (1992). Architect Stéphane Beel developed a master plan for the building. The two most recent building phases, phase 4.1 and phase 4.2, are the result of this plan. The building has expanded considerably and little alterations and functional interventions in the existing building were executed. The plan however did not evaluate the existing building and an integrated restoration and revaluation of the original building was not part of the master plan.
In best practice the revaluation of the building (plan of intervention) and the operational needs (plan of infrastructure) are united in an **operational master plan**. The situation in this case is rather reverse.
The definition of a long-term vision on the total complex approaches this best practice. This concept incorporates architectural, technical, functional and operational ambitions and is applied on the current situation. The future interventions are framed within the boundaries of the plan of intervention and are executed in different phases.
This vision can only be created by intense consultations between the different users and different experts (architect, structural engineer, technical engineer, city service for Historic Preservation, …).
The draw-up of such an integrated operational master plan exceeds the scope of this dissertation. The following two proposals are two sub-studies of an operational master plan. The first proposal gives an incentive for the approach of a long-term vision and incorporates functional and architectural ambitions. It integrates different results of this study and creates a framework.
The second proposal focuses on a repetitive module of the building: a classroom. In this proposal a strategy for thermal, technical and aesthetic improvements is developed within the original architectural concept of the building.



PART III
CHAPTER 1: FUTURE SCENARIO

The following proposal creates an architectural and functional framework for future developments of the entire site. The scenario is a hypothesis based on the results of this study and serves as a tool to promote a wider perspective.

1. Coexistence vs. symbiosis

Three users are present in the complex. Each user occupies a different part of the building and the functioning of the different programmes is attuned to each other, however the interrelation between the different users is not uniform.

Radio 2 is housed in the original building (phase 2). Its accommodation is architecturally integrated but it is designed as an isolated part in the building. It is an independent function without spatial or programmatic interaction with the rest of the building and the other users. Radio 2 'lives in coexistence' with the Conservatoire and deSingel.
This isolation is confirmed by the latest interventions. The borders of the function became stronger. The entrance to the building has moved to the south façade and the connections within the building are suppressed. Furthermore is the programme of Radio 2 rather shrinking than growing. Only a garage is present in the new building (phase 4.2) and a part of the offices is used by deSingel.

deSingel is an additional programme to the original building programme but is fully integrated and compatible. The offices of deSingel are added to the building (underneath wing D) and have a 'temporary' character. Over time the Conservatoire and deSingel evolved together to an International Arts Campus. The institution has formulated the essential trinity 'instruction-production-presentation' of art as the overall mission of the complex. This mission is translated in the latest extension of the building (phase 4.2). This extension resulted in an equally growth of both the Conservatoire and deSingel. The Conservatoire and deSingel 'live in symbiosis'.

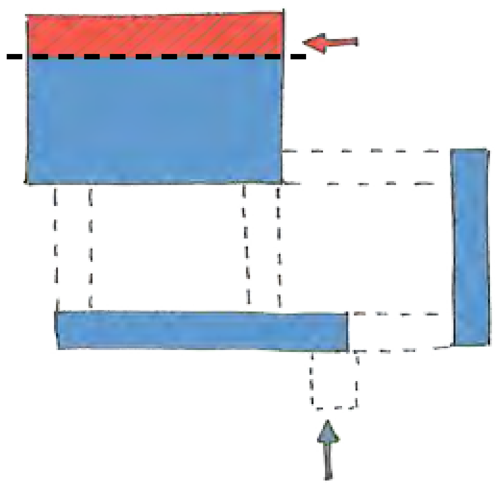


Figure III.1.1: Scheme coexistence (MH).

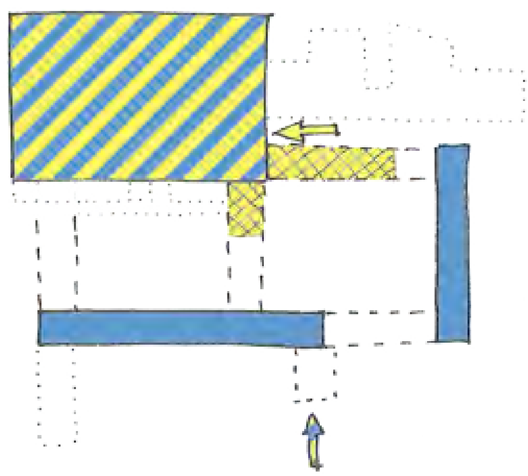


Figure III.1.2: Scheme symbiosis (MH).

Figure III.1.3: Entrance Radio 2 (MH, 23/05/2014).


Figure III.1.4: Space between old and new building (MH 23/05/2015).

2. Deviation from the original qualities

Stynen and De Meyer designed a building in close relation with the relief of the site. A big part of the building was constructed on pilotis to guard the landscape and let this landscape continue underneath the building. This created wide perspectives in and outside the building. Today this concept is vanished due to the changed surroundings of the plot (ring road, railway and swimming pool) and the extensions of the building itself. The impact of these extensions on the original concept is evaluated in this study (cfr. Chapter II.2 Evaluation and Intervention).

The most devaluating extension concerns the offices constructed underneath the wings of the low-rise building (wing C and wing D). Because they are located on a central position, they obstruct the views within the boundaries of the complex. Furthermore came a bothersome alley into existence as a result of the construction of the new building (phase 4.2). The entrance of deSingel is not appealing and the dialogue between the original and new building cannot be fully appreciated. The original building does not contrast ‘in its full grace’ next to the new building.

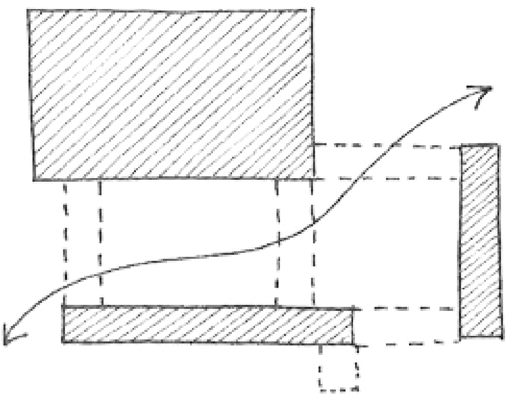


Figure III.1.5: Fordable site (MH).

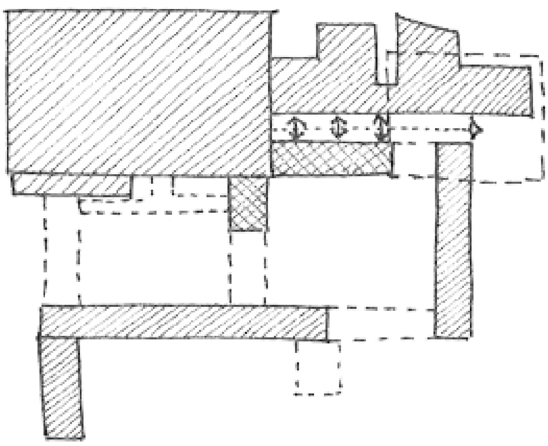


Figure III.1.6: Blocked site (MH).

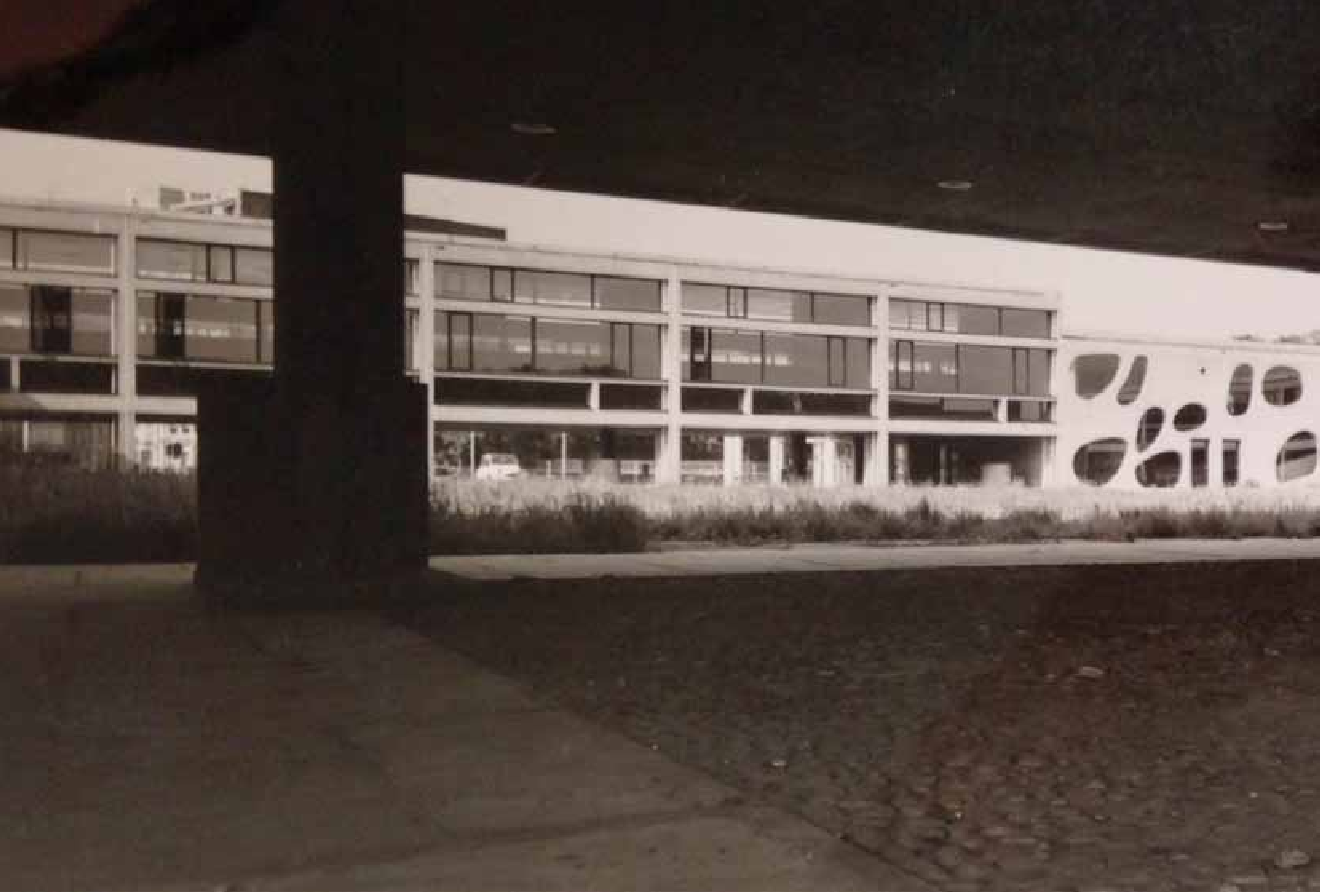
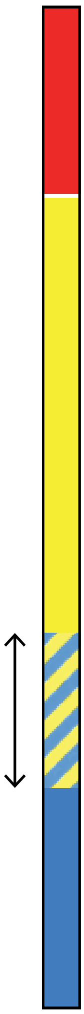


Figure III.1.7: View on block D from underneath central hall, after 1967 (Antwerp: APA).

Figure III.1.8: View on west courtyard from underneath block D, after 1967 (Antwerp: APA).

Figure III.1.9: View on underneath block D, after 1967 (Antwerp: APA).

3. Programme reduction



Radio 2 is an isolated programme in the building. Radio 2 owns the accommodations, but the ground is leased. A leasehold estate contract is valid until 2028. Either the contract is extended or ended in 2028. When the contract is ended the ground owner (Flemish Community) gets the first option on buying the building.
Radio 2 is a radio station striving for close contact with the listeners. Radio 2 Antwerp is a regional radio with poor visibility. The station is anonymous in the building.

deSingel never really got a place in the building and its offices have a 'temporary' character. The partners of deSingel are spread through the building, sometimes at the expense of rooms of the Conservatoire.

deSingel and the Conservatoire have a common ground and share facilities.

The **Conservatoire** is the original function and the building was designed for it.
The Conservatoire has to compete with the needs of deSingel.

The building is used at its maximum capacity. Furthermore a certain pressure is present in the building because the different building programmes want to develop. This results in ad-hoc interventions and alterations. Creating space and reducing the complexity can moderate this pressure. Furthermore gives this space the leeway to reorganise and restructure the building.
Evolving from a three-user structure to a two-user structure creates those benefits. Ending the contract with Radio 2 enhances a total symbiosis of the Conservatoire and deSingel. The radio station does not benefit from its position in the building and can be sited on another location. The vacancy of the offices of Radio 2 provides a practical advantage during the phased restoration works. Functions housed in zones of restoration can temporarily move to the available space.
Besides this practical advantage the opportunity is created to fully integrate the offices of deSingel in the building and remove the devaluating extensions. The offices of deSingel are relocated in the accommodations of Radio 2 and the constructions underneath the wings of the low-rise building can be demolished. The dialogue between the original and the new building will spark and the site will be experienced as a unity again.

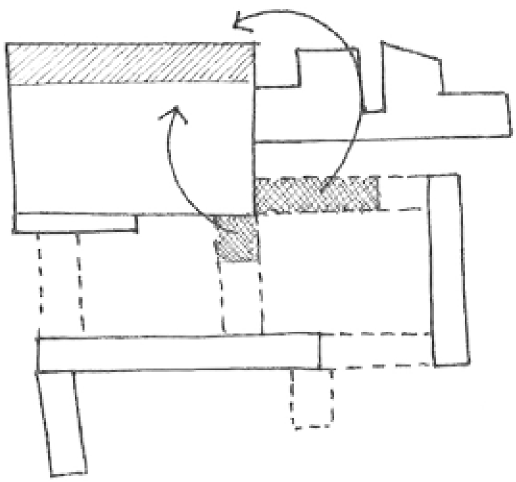


Figure III.1.10: Scheme relocation (MH).

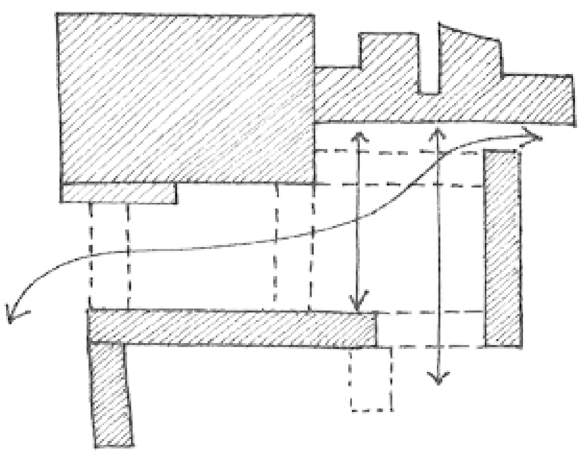
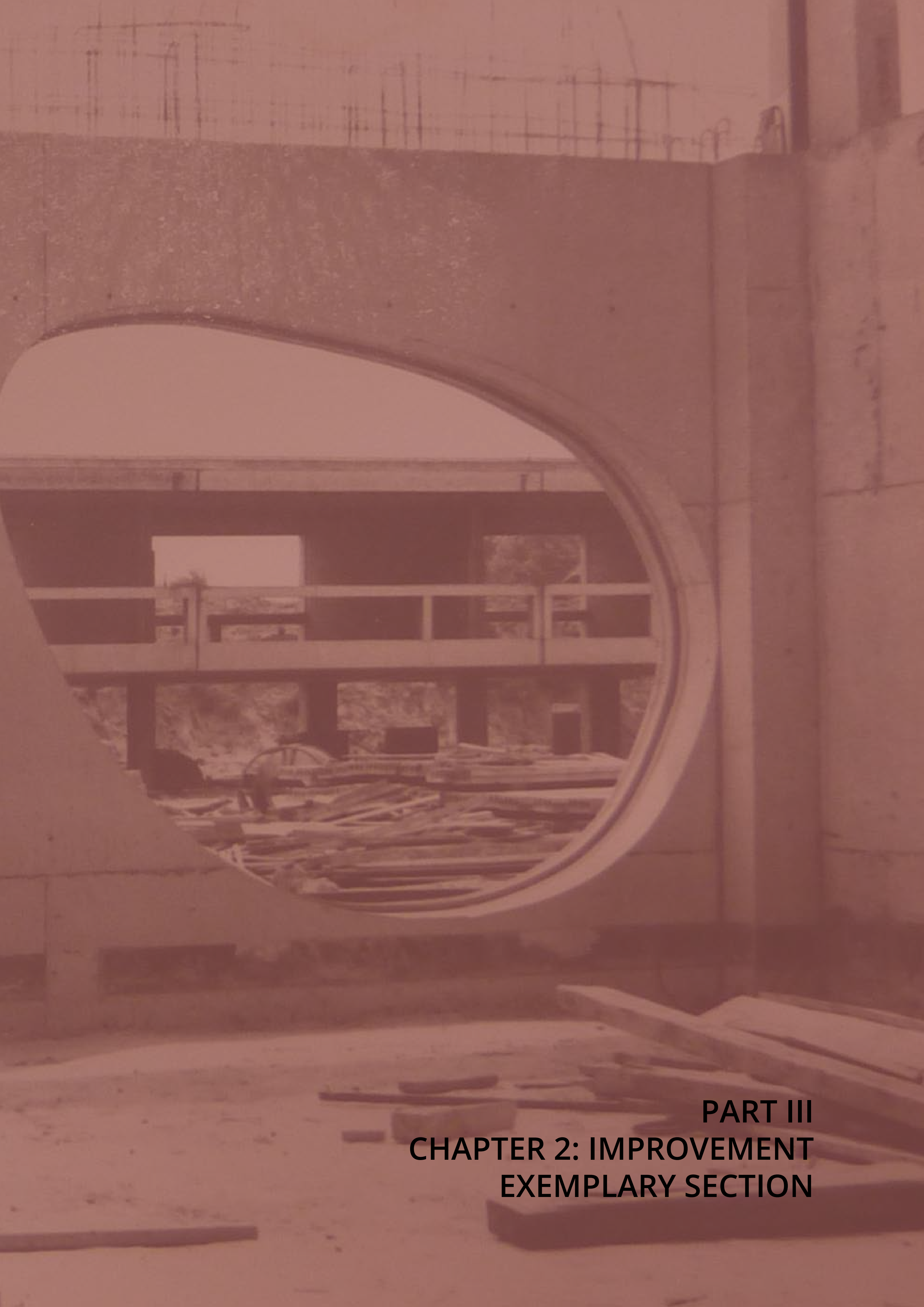


Figure III.1.11: Scheme reopened situation (MH).

Figure III.1.12: Current entrance (MH).

Figure III.1.13: Collage reopened situation (MH).



PART III
CHAPTER 2: IMPROVEMENT
EXEMPLARY SECTION

The second part of this study focuses on phase 1, the low-rise building containing the classes of the Conservatoire (cfr. Part II: Detailed Study of Phase 1). In this chapter the original materials and architectural concepts are examined, the small interventions to improve the use and comfort of the building are listed and evaluated. All these results are summarised in an ‘exemplary section’. This chapter continuous on this section and investigates the options for integrated thermal, technical and aesthetic improvements of the low-rise building. The defined architectural principles and original conditions are used as a reference. The interventions strive to maintain or restore the assessed values.
The drawing on the next page gives a summary of the proposal. The interventions are grouped in two categories: thermal improvements (orange colour) and technical improvements (blue colour). The proposals create an overview of the possibilities to improve the performance and comfort of the building.

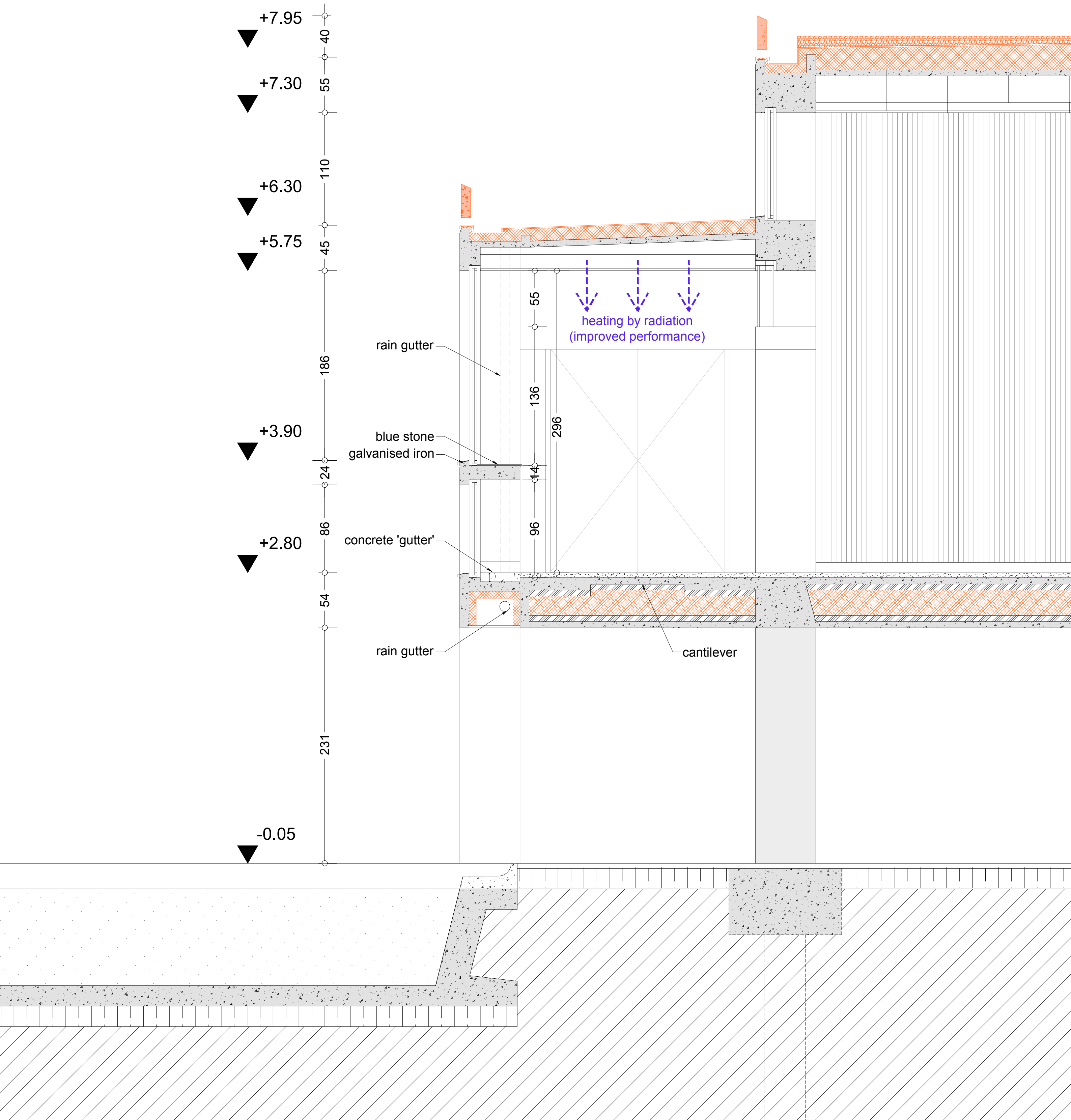
1. Thermal improvement

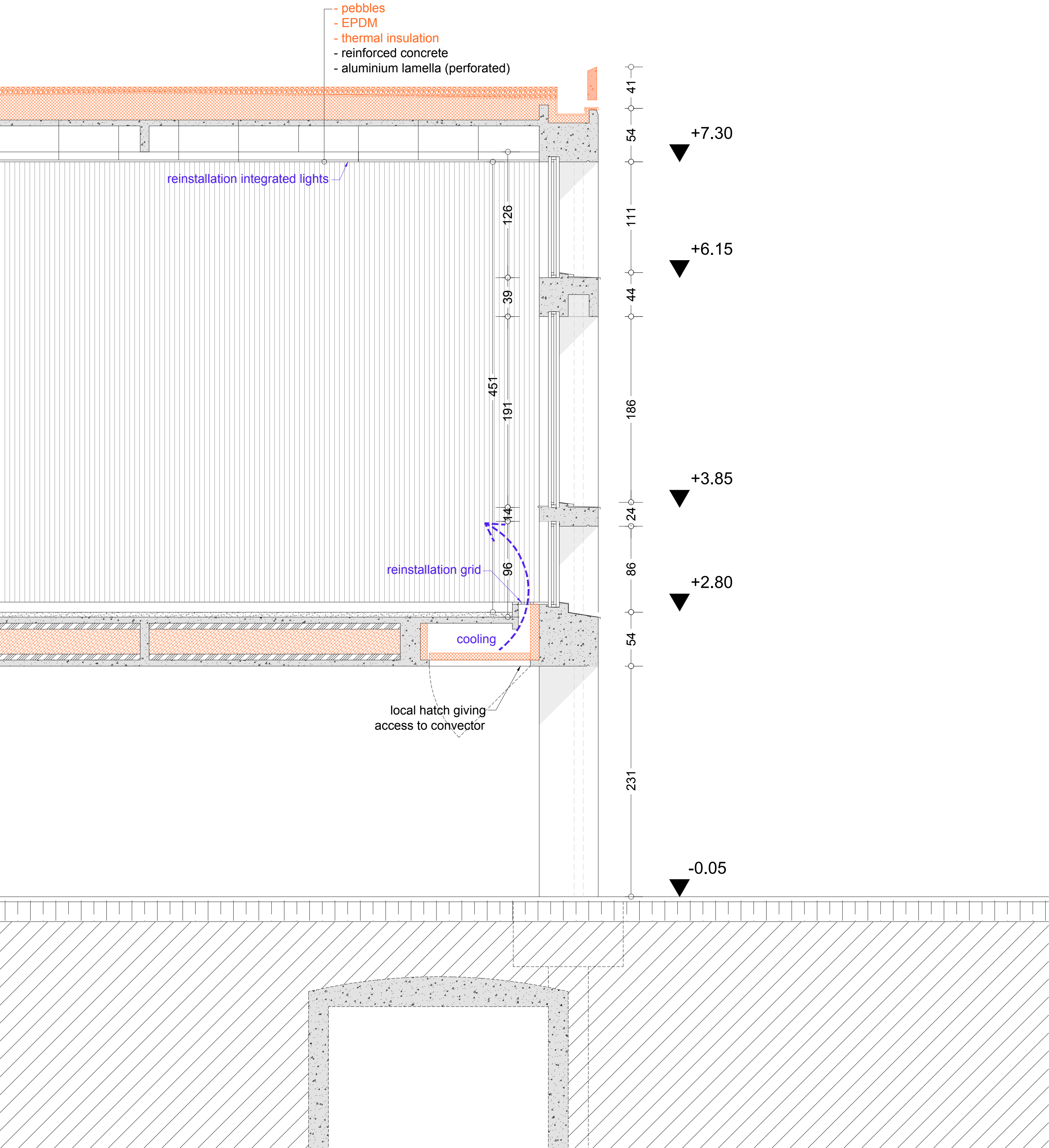
1.1. Roof

The roof of the low-rise building has become a fifth façade. The circulation of the public part of the new building (phase 4.2) passes adjacent to the original building and offers a close look on the roofs.
The original roof was a minimal insulated roof with zinc finishing. Prefabricated concrete slabs were installed on top of the structural roof plate to create a ventilated cavity. Today the roofs are insulated on top of the prefabricated slabs

Figure III.2.1: view on the roof low-rise building (MH,09/05/2014).

Exemplary section block F (1-50): project





- pebbles
- EPDM
- thermal insulation
- reinforced concrete
- aluminium lamella (perforated)
reinstallation integrated lights
reinstallation grid
cooling
local hatch giving access to convector
+7.30
+6.15
+3.85
+2.80
-0.05
41
54
111
44
186
24
86
54
231
126
39
451
191
14
96

and covered with black EPDM. The ventilation grilles are closed and the original roof edge is removed.
The following proposal offers an improvement of the thermal performance and visual appearance of the roof. The EPDM, insulation, prefabricated slabs and original thermal insulation are removed and new thermal insulation (incl. vapour barrier) is applied directly on the structural roof plate. Suppressing the cavity and applying a vapour barrier directly on the 'hot' structure improve the performance of the insulation. Airflows or internal condensation can no longer appear. The insulation follows the original profile of the roofs and the position of the gutters is maintained. Zinc used to be the original roof finishing but is technically not the most suited finishing material for flat roofs. Today the naked black EPDM contributes to the overheating in summer. An EPDM covered with white pebbles offers a good alternative. The light coloured covering prevents the warming up of the roof. Furthermore gives this material an aesthetic advantage.
The eave is reconstructed and fulfils its original purpose: to visually hide the gutter and shift in the roof and create continuity between the different parts of the building.

1.2. Floor

As the building concerns a floating entity and is not in contact with the ground, the floor is a surface with direct heat losses. Since the

Figure III.2.2: view on the building during construction phase 2, 1980 (Antwerp: deSingel).

bottom surface is a visual concrete surface and the floor level is a continuous plane inside, both additional inside and outside insulation are excluded. The overall heath losses through the floor can be reduced by insulating the voids between the ribs of the concrete floor slabs with blown thermal insulation.
Many thermal bridges stay present near the ribs. The capacity of the thermal insulation should be in balance with the dimensions and thermal conductivity of the concrete floors to prevent big temperature differences between the insulated (voids) and not insulated (ribs) parts of the floor. An alternative is to replace the existing screed by insulating screed. The combination of blown insulation with insulating screed provides the best thermal result.

1.3. Wall

The outer walls concern big glazed surfaces separated by structural concrete elements.
The not insulated steel frames contain thermal glazing. Replacing the glass by improved thermal glazing can increase the thermal performance of the walls. It is important that this glass is very transparent and corresponds to the original glass. It is recommended to use ultra clear glass containing a low amount of iron (Fe_2O_3< 2%).
The outer walls of the classes can acoustically be improved by making the glass plates asymmetrical (different thickness). Furthermore can solar controlled glazing be installed in the south and west-orientated façades if this does not affect the transparency and the colour of the glass.

1.4. Thermal bridges

Thermal bridges are inevitable is this situation. The thermal bridges near the roof edges are present today and are not improved by the new intervention.[1] Other thermal bridges exist near the parapets (concrete façade beams) and near the floors. It is not possible to insulate the parapets because they are visible both inside and outside. Because they are visible and air circulation occurs at the inside, the chance of moulds is small. Furthermore no moulds are present today.
The overall condition of the floor is discussed in previous (cfr. supra).
It is possible to insulate the thermal bridges near the roofs at the inside over a length of 1 m. The space between the ribs and the lowered ceiling is 5cm. If no technical pipes pass in this zone the ribs can entirely be encapsulated with insulation. A critical spot near the connection with the window frame is created. In order to evaluate this intervention, a three-dimensional thermal calculation is needed.
Such a study has been carried out in the past and is added to this dissertation.[2] The general conclusion of this study is that the additional insulation of the thermal bridges makes no real improvement. Furthermore are no critical temperatures present near the existing thermal bridges when additional roof insulation is applied.

2. Technical improvements

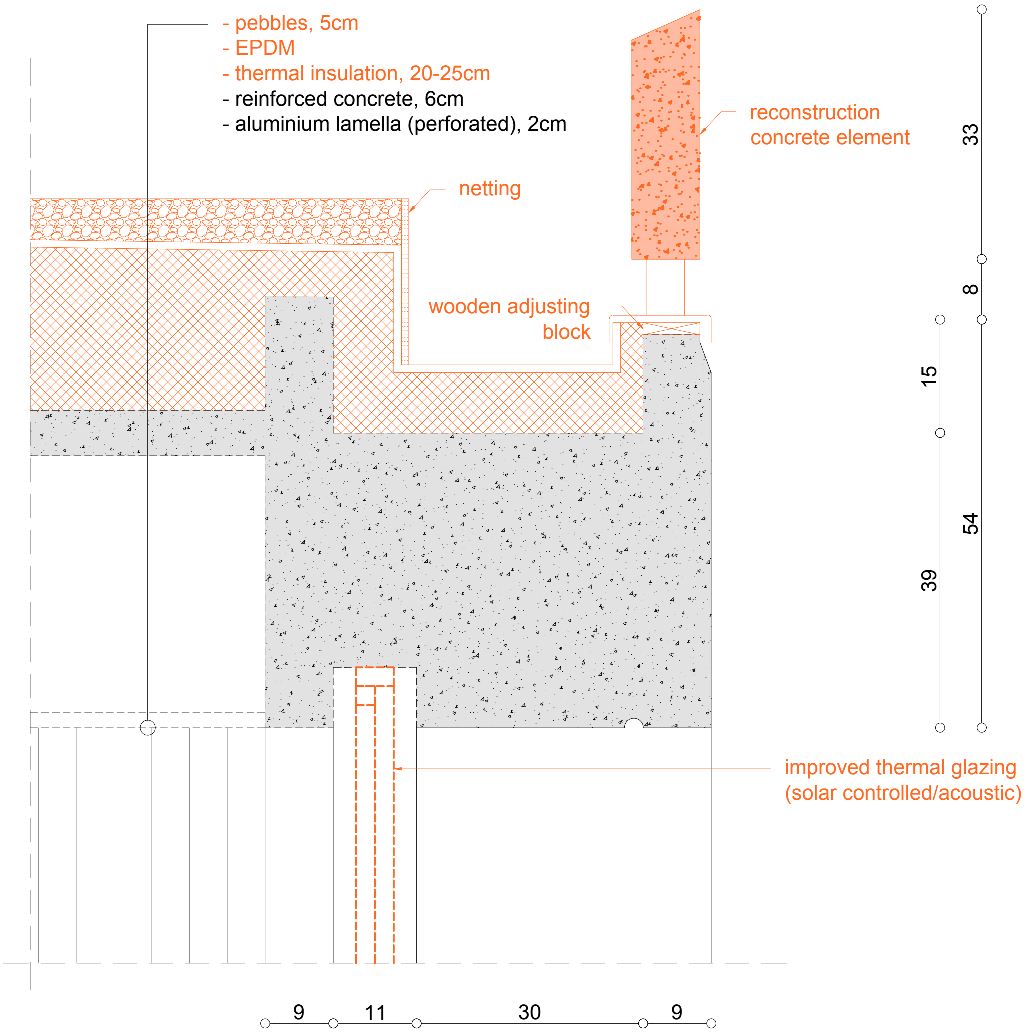
2.1. HVAC

A radiant ceiling heats the hallways. A pipe system is integrated in the lowered ceiling. This system is still in use today.
Convectors initially heated the classes. They were installed near the windows in a void in the floor structure. A metal grid was placed on top (floor classroom) and at the bottom side of the floor a metal hatch gave access to the convector. The incoming and outgoing technical pipes go by the vertical shafts attached to the

1 The current situation inside near the roof edges was not inspected during the survey because the lowered ceiling (aluminium lamella) covers the concrete roof surface.

2 Appendix C: HENS H., *International Kunstcentrum de Singel. Renovatie Daken: koudebrugwerking, oplossingen, specifieke geleidingsverliezen*, unpublished study KU Leuven, 2002.

DETAIL Eave (1-10): project



columns (cfr. Chapter II.1: Technical Analysis). Today radiators heat the classrooms. The pipe system follows the original course. The metal grids are covered with multiplex.
The conceived heating concept was totally integrated and the heating elements were not visible. The following proposals are options to restore this situation.

2.1.1. Radiant Ceiling
The existing radiant ceiling can be maintained and if necessary be optimised. The insulation on the roof will already improve the performance of the system.

2.1.2. Floor heating
The structural floor is covered with screed and finished with linoleum. If the thickness of the screed is minimum 7cm, it is possible to integrate a floor heating system. Linoleum is compatible with floor heating.[3] It is important that the linoleum is not too thick in order that the thermal insulation is less than 15 m² K/W.[4] The linoleum needs to be integrally glued to the floor. The insulation of the floor needs to be sufficient in order to have good performance of the heating system. If too many heat losses occur through the floor, too much produced heat gets lost in stead of warming the room. Furthermore is this system not compatible with an insulating screed. This system needs to be evaluated together with the thermal insulation of the floor (cfr. supra).

2.1.3. Convector
The void in the structural floors has according to the drawings a height of 35 cm. The dimensions of the hatch are 2 m x 1,1 m.
The voids can be reused to install a heating, ventilations and/or cooling system. The technical pipes follow the existing path and the hatch needs to be insulated at the inside. The installation has to be silent.
The basic requirement is that the room can be heated during winter. A heating convector can warm the rooms if floor heating is not possible (cfr. supra).
If floor heating is possible, the voids can entirely be used for ventilation and cooling (centralised or decentralised). Otherwise the possibility has to be investigated in combination with a heating convector.

2.2. Lightning
The ceiling is conceived as a continuous plane. The ceiling concerns a lowered aluminium lamella ceiling with integrated modular lights.
In some classes the light elements are covered with a multiplex plate and fluorescent tubes are installed on the plate.
To restore the continuity of the ceiling, the optimisation of the lighting should occur within the boundaries of the modular elements.
The integrated elements can be replaced by elements providing the necessary amount of lux. The finishing is a translucent covering. The original ones can be reused or replaced by similar ones.

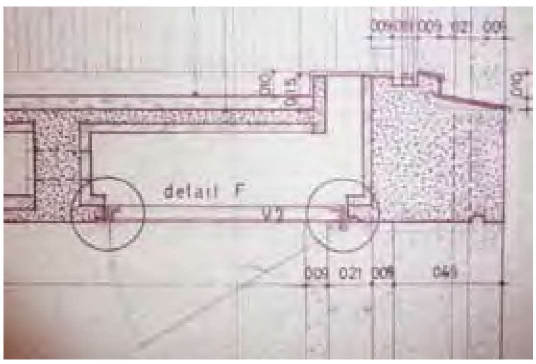


Figure III.2.3: Detail section BB (Antwerp: deSingel).

3 “Technische informatie. Marmoleum Next Generation”, in *Forbo*: http://www.forbo.com/flooring/nl-nl/downloads/linoleum/p4eanh (accessed 01/08/2015).
4 “Vloerverwarming onder linoleum: een goed idee?”, in *Tarkett:* http://www.tarkett-magazine.be/professionals/linoleum-vloeren/vloerverwarming-onder-linoleum-een-goed-idee/ (accessed 01/08/2015).

PART IV
CONCLUSION

From the beginning, already during the design process, the building has deviated from its original context. Léon Stynen, a moderating and convincing architect, was able to minimise the impact of these alteration, but could not prevent the start of an **irreversible evolution**.
Together with the context, the programme of the building became more extensive and more complex. A music conservatoire has transformed into an international arts campus.
The current state of the complex is the result of this vital development. The solitary building has evolved into a **micro urban landscape**. The original building is the historic centre of this city and its 'raison d'être'. The complex is appreciated and respected by its users and managed in a committed and professional way.

The building has served much more than its original purpose and can be destined as the instigator of this today blooming international arts centre. This vital function ensures the continued existence of the building. Its high-demanding programme however also puts the building under a **constant pressure** to evolve and comply with the current needs and regulations. Despite the commendable management and consequent extensions with a clear vision, the risk of not recognising the original building is emerging. Moreover, today the site is at its maximum and adaptations of the building will have to fulfil the upcoming needs. Unrestricted alterations, ad-hoc solutions with a permanent character, can result in a miscellany without structure and without a traceable origin.

At this stage, more then ever, a **protection of the building** might safeguard the original complex for further vanishing by systematic alterations. Moreover provides this protected state financial amends for the necessary works and maintenance of the historic building.
Even more important is the definition of a global integrated vision on the total complex. One must accept the building in its current situation. Returning to the original state, to its architectural heyday, is impossible and moreover irrelevant. The peace and order of the original complex is replaced by the vital chaos of an art city. A **masterplan of restoration** must define the **restrictions and the necessary liberties** to preserve the original building and its recognisability as a historic core of the complex: a white pearl, perfectly balanced, at the same time monumental and proportioned on a human scale. Only by revaluating the original building the true dialogue between the 'old' and the 'new' will commence.

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PART VI
ANNEX

ANNEX 1: Ten Huize van... Léon Stynen

(FLORQUIN Joos, *Ten huize van … 18*, Leuven: Davidsfonds, 1982, pp. 131-133)

Er is dan nog het Conservatorium waaraan u aan het bouwen bent.

De eerste fase is inderdaad af. Niemand heeft een idee hoeveel werk dat vraagt eer zo een project in kannen en kruiken is en wat een rompslomp daarbij komt kijken. Alleen voor dat eerste gedeelte werden meer dan 350 plannen gemaakt. Ge begrijpt dat ik dat niet alleen kan doen. Ik heb zeven architecten die me helpen, dan nog tekenaars, een secretariaat. Anders is het niet mogelijk.
Ik heb die opdracht gekregen toen Van Audenhove minister was, dat is nu 12 jaar geleden. Dat gebouw werd dus uitgevoerd met de gegevens van 1956, want eens dat het project aanvaard is, wordt daaraan niets meer veranderd. Maar de vooruitgang is zo snel in deze tijd dat ik duidelijk zie dat er zaken anders en beter zouden kunnen worden uitgevoerd.
Ook in de optiek van de sociale evolutie b.v.: men gaat meer naar een gemeenschap waar de studenten de buitenstaanders ontmoeten. Gelukkig had ik wel iets in die zin voorzien. Maar dan stoot ge vaak op dorre administratieve bepalingen. De administratie van de schoolbouw bepaalt dat een gang in een school 1,80 m moet zijn. Ik had mijn gangen 2,40 m gemaakt omdat die ruimte door de studenten kon worden gebruikt als praatkamer of wandelplaats, wat in een conservatorium belangrijk is: wanneer de prof met een student viool studeert, moeten de anderen buiten wachten. Die ontspanningsmogelijkheid is daar dus zeer belangrijk. Ik heb zwaar moeten vechten om dat erdoor te krijgen. De eerste fase, die klaar is, omvat alleen klaslokalen en administratie. In de

Figure VI.1.X: Ten Huize van Léon Stynen (www.cobra.be, 2015)

tweede fase komen concertzaal, toneelzaal en bibliotheek aan de beurt. Hier weer: de opdracht was een zaal te bouwen die kon dienen als concertzaal, als toneelzaal, als vergaderzaal, enz. Ik heb hard moeten vechten om duidelijk te maken dat een concertzaal heel andere eisen stelt dan een toneelzaal. Ik heb het pleit gewonnen maar het is niet makkelijk geweest. Er wordt gezegd dat ik een slecht karakter heb, maar dat is niet waar. Ik weet wat ik wil en ik hou vol tenzij ik zie dat ik mis ben. En dat gebeurt ook. De man die mij een opdracht geeft om te bouwen, is voor mij geen cliënt want dan wordt de relatie door geld bepaald. Hij is een man voor wie ik bouw en dus sta ik naast hem en niet tegenover hem: ik moet die man helpen. In die situatie durf ik hem ook zeggen wat ik op het hart heb. Een zieke is voor de dokter toch ook geen cliënt maar een patiënt: in die situatie kan ook de dokter hem de waarheid zeggen.

Hebt u het gebouw kunnen maken waarvan u altijd gedroomd hebt dat u het zou mogen maken?

Dat is nooit gebeurd en zal ook nooit gebeuren. Dat soort plannen maakt ge op school en die zijn niet te verwezenlijken, want al de imperatieven van het leven verhinderen dat. Tenzij ge natuurlijk de kans krijgt een stad te bouwen in de woestijn. Le Corbusier heeft dat grote geluk gehad.
Maar neem nu het voorbeeld van het Conservatorium. Ik heb geprobeerd dat in een eigen kader, een eigen milieu te plaatsen en er wordt plomp een zwembad naast neergezet dat, om het zacht uit te drukken, er minder bij past. Trouwens, dat Conservatorium is een hele lijdensweg geweest. Toen ik de opdracht kreeg, ben ik naar de beschikbare gronden gaan zien om de beste plaats te kiezen. Ik heb de Desguinlei gekozen omdat die plaats makkelijk te bereiken is, zowel voor hen die uit de stad

Figure VI.1.X: Ten Huize van Léon Stynen (www.cobra.be, 2015)

komen als voor hen die van de omliggende gemeenten komen. Daar was ook wat van te maken want op die plaats waren de oude vestingen, er was water en er was groen. Ik zou er inderdaad van mogen maken wat ik dacht.
We waren pas aan het bouwen en daar deelt Brussel me mee dat ze het tracé van de autoweg verlegd hebben: die zou nu vlak naast het Conservatorium komen en wij moesten er zelfs grond voor afstaan. Dat was een ramp, want niet alleen de isolatie kwam in het gedrang maar daarbij namen ze me het water af, wat een architectonisch element was. Na veel discussie hebben ze de weg 30 m. opgeschoven maar de verminking blijft.
Zes maanden later is Brussel er weer met een ander project: er moest een plaats gezocht worden om twee spoorbanen te laten lopen naast de E 3 en daarvoor moesten wij tien meter van onze gronden afstaan. Ik heb weer gevochten en zelfs lelijke woorden gebruikt, met het gevolg dat ze de spoorbaan een beetje zouden verschuiven. Stel u dat voor: de grond vernauwd, de heuvels weg, het water weg. Komt dan de stad Antwerpen nog dat log zwembad ernaast plaatsen, en verlangt dat de heuveltjes volledig zouden verdwijnen. Ik klaag dat ze heel mijn architectuur verknoeien en krijg als antwoord: kunt ge nu zoveel belang hechten aan een heuveltje? We zullen een stukje voor u ophopen. Ik heb toen aan Floris Jespers gedacht, die altijd zei: we leven in een apenland. Wanneer er in Zwitserland ergens een kleine heuvel is, moet hemel en aarde verzet worden eer daar aan geraakt mag worden, en dan nog. Heel het milieu waarin ik mijn gebouw had willen plaatsen, hebben ze kapot gemaakt. En dan zeggen ze: er zijn geen Belgische architecten, er bestaat geen Belgische architectuur, en als argument zullen ze dan nog de bouw van het Conservatorium aanhalen.

Figure VI.1.X: Ten Huize van Léon Stynen (www.cobra.be, 2015)

ANNEX 2: Interview with Minister Andries Kinsbergen, Minister of State and former Governor of the province of Antwerp, on Friday 12th of December 2014

In welke context zijn de programmatorische wijzigingen tussen de eerste en twee fase doorgevoerd?

Op dat moment was ik gouverneur van de provincie Antwerpen. Een gouverneur wordt aangesproken voor verschillende zaken, ook als er moeilijkheden zijn. Voor het conservatorium stelde zich het probleem dat er absoluut een nieuw gebouw moest komen, maar dat er geen geld was. Dus niets nieuws onder de zon. M'n vroeg dan aan mij of ik niets kon bemiddelen om toch tot de nodige gelden te komen. Nu was het toeval zo dat er op hetzelfde ogenblik voor radio Antwerpen een probleem was van huisvesting. Radio Antwerpen was gevestigd aan de Albertlei en zij moeten dringend een nieuw gebouw hebben. Het conservatorium was in een vreselijke staat, dat was toen op de Sint-Jacobsmarkt. Hiervoor moest ook een nieuw gebouw komen. Ik heb dan gezegd, vermits er geen geld is om dit afzonderlijk te doen, waarom zouden we niet alles bij elkaar leggen en eens kijken of we er geen complex van kunnen maken. En dat is een idee dat aanvaard is door de toenmalige directeur van de radio, mr. Maarten, en de directeur van het conservatorium, en zo is dat eigenlijk een joint venture geworden tussen het conservatorium enerzijds en Radio Antwerpen anderzijds en deSingel.

Is de beslissing om de Radio Antwerpen aan het programma van het conservatorium toe te voegen gemaakt na de realisatie van de eerste fase?

Ja en de grote moeilijkheid was dat praktisch alles reeds in kannen en kruiken was voor de tweede fase. En dan kwam het idee van de radio erbij.
De radio was nodig, ten eerste vond ik dit functioneel heel goed: het conservatorium, muziek, en een radio, dat kon een kruisbestuiving zijn. Ten tweede was dat nodig voor de financiën. Maar de plannen waren al gemaakt, m'n had al de idee om in een bepaalde richting te gaan en dan moest m'n dat wijzigen voor de integratie van het programma van de radio.
Een grotere moeilijkheid was dat dan de ringweg aangelegd werd. De autostrade die er nu is, die liep juist daar waar het conservatorium en de radio moesten komen. Dat gaf natuurlijk heel veel geluidshinder en moesten dus de plannen aangepast worden om ervoor te zorgen dat er een radiogebouw kon komen en deSingel met concertzalen. En u bent van het vak en u weet dat om dit allemaal te kunnen verwezenlijken zonder dat er lawaaihinder is nadien, was dat een hele opgave. Temeer omdat men dat niet van begin af aan heeft weten te concipiëren omdat de aanleg van de ringweg er in de loop der tijden is gekomen. Dat was dus een grote moeilijkheid, maar m'n heeft dat toch kunnen realiseren.

Kaderde deze beslissing ook in de visie om van het totale gebouw een cultureel centrum te maken, met publieke zalen i.p.v. zalen enkel gebruikt door het conservatorium?

Ja, een gelukkig dat dit allemaal zo is kunnen lopen. Dan heeft m'n geen afzonderlijke gebouwen moeten zetten, dan kon m'n dat allemaal integreren, die zalen, met de radio, met het conservatorium. En het resultaat is deSingel zoals die er nu staat, een totaalcomplex. En dat heeft dus als verre achtergrond de kwestie van de financiën.

PART VI - Annex

Moest deze beslissing toen niet genomen zijn, was het gebouw misschien nooit volledig gerealiseerd?

Neen, zeker nooit.

Hoe stond architect Léon Stynen tegenover deze beslissing?

Hij heeft me dikwijls gezegd dat het geen eenvoudige opdracht was om tijdens die werken en met het spoor en de ring die er net naast lopen, om daar ook nog een studio te maken. Maar hij zei, ik ga dat toch proberen te doen en hij is toch in die opdracht geslaagd.

Dus hij had geen bezwaren tegen de toevoeging van het programma? Dit betekende geen inbreuk op zijn gebouwconcept?

Neen, dat niet, maar dat hij wild enthousiast was, mag ik ook niet zeggen. Hij was zich goed bewust van het feit dat als die oplossing er niet zou komen, dat er niks zou komen of een halve oplossing.

Konden de mensen het gebouw appreciëren?

In het begin stond iedereen er nogal vreemd tegenover. Een conservatorium, concertzalen en een radio allemaal bijeen op die plaats bij de spoorweg. Gaat dit allemaal wel? Maar gaandeweg hebben de mensen zich gerealiseerd dat als we dit niet doen, gaat er niets zijn. Het is eigenlijk door faute de mieux dat men zich erbij neergelegd heeft.

En de modernistische verschijningsvorm?

Dat is natuurlijk een kwestie van smaak. De architect heeft een bepaalde opvatting en dat moet je aanvaarden of dat moet je niet aanvaarden.

Figure VI.2.X: Minister Renaat Van Elslande, Governor Andries Kinsbergen and Mayor Lode Craeybeckx visit director Flor Peeters (PERSOONS 1998, p. 15)

Annex 3

FACULTEIT TOEGEPASTE WETENSCHAPPEN
DEPARTEMENT BURGERLIJKE BOUWKUNDE
LABORATORIUM BOUWFYSICA
KASTEELPARK ARENBERG 51
B-3001 HEVERLEE

KATHOLIEKE
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LEUVEN

S. Beel, Architecten bvba

Internationaal Kunstcentrum de Singel
Renovatie Daken: koudebrugwerking, oplossingen, specifieke geleidingsverliezen

Rapport 2002/05(2)

FACULTEIT TOEGEPASTE WETENSCHAPPEN
DEPARTEMENT BURGERLIJKE BOUWKUNDE
LABORATORIUM BOUWFYSICA
KASTEELPARK ARENBERG, 51
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KATHOLIEKE
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LEUVEN

RAPPORT

S. Beel, Architecten BVBA

Kouter 1, bus 5

9000 GENT

Internationaal Kunstcentrum de Singel

Renovatie daken: koudebrugwerking, oplossingen, specifieke geleidingsverliezen

Rapport 2002/05 (2)

1. Inleiding

Dit rapport volgt op 2002/05 (1). Toen zijn de drie details, die het Architectenbureau Baro & Morel had uitgewerkt, geanalyseerd zoals ze waren voor de renovatie en zouden zijn erna. Ook de vloer boven het open gelijkvloers werd in de analyse betrokken.

Voorliggend rapport gaat kort in op de opmerkingen van de ontwerpers op rapport 2002/05 (1). Hun aangepaste voorstellen worden tegen het licht gehouden. Daarnaast bekijken we de betonnen raamstijlen en is een analyse gebeurd van de specifieke geleidingsverliezen op de doorsnede DD.

2. Rapport 2002/05 (1), discussie

- In hun nota geeft het architectenbureau de indruk dat wij vooral getracht zouden hebben de geleidingsverliezen te beperken. Dat is niet het geval. Bij de analyse werd vooral gekeken naar de temperatuurfactoren. Warmteverliezen werden voor de volledigheid vermeld, maar zijn niet gebruikt als zwaarwegend argument gezien het globaal gebrek aan isolatiekwaliteit. Het voorstel 'buitenisolatie' had als enige bedoeling te tonen hoeveel beter die keuze vanuit 'koudebrug'-oogpunt is;
- Bij detail 1 brengt wat betreft temperatuurfactoren de binnenisolatie soelaas, op voorwaarde dat de ribben worden meegeïsoleerd. Bij detail 2 is de binnenisolatie zowel uit het oogpunt temperatuurfactoren als beperking van warmteverliezen zonder nut. Of bij detail 3 de binnenisolatie veel nut heeft wordt in voorliggend rapport meer in detail nagegaan;
- Stralingspanelen: normaal worden die aan de bovenzijde afgedekt met warmte-isolatie. Gebeurt dat niet, dan zal de luchtlaag tussen vals plafond en dak wel degelijk worden

opgewarmd, wat uit hoofde temperatuurfactoren gunstiger is, uit hoofde geleidingsverliezen ongunstiger;

- Zonder luchtbevochtiging zijn 's winters de gemiddeld dampdrukken binnen vrij laag (waarschijnlijk 800 à 900 Pa). Om in zo'n geval bij een binnentemperatuur van 20°C schimmelontwikkeling te vermijden, volstaat een temperatuurfactor 0.35. Ten aanzien van oppervlaktecondensatie wordt dat 0.23. **Vandaar: waar de lucht niet wordt bevochtigd geldt f_{hi}=0.35 als prestatie-eis**;
- Voor het antwoord op hoe de samenhangende details 1 en 2 op te lossen verwijzen we naar de aanvullende berekeningen;
- Detail 2 ten gronde: zie aanvullende berekeningen;
- Detail 3 ten gronde: zie de aanvullende berekeningen;
- Vloer: zie aanvullende berekeningen;

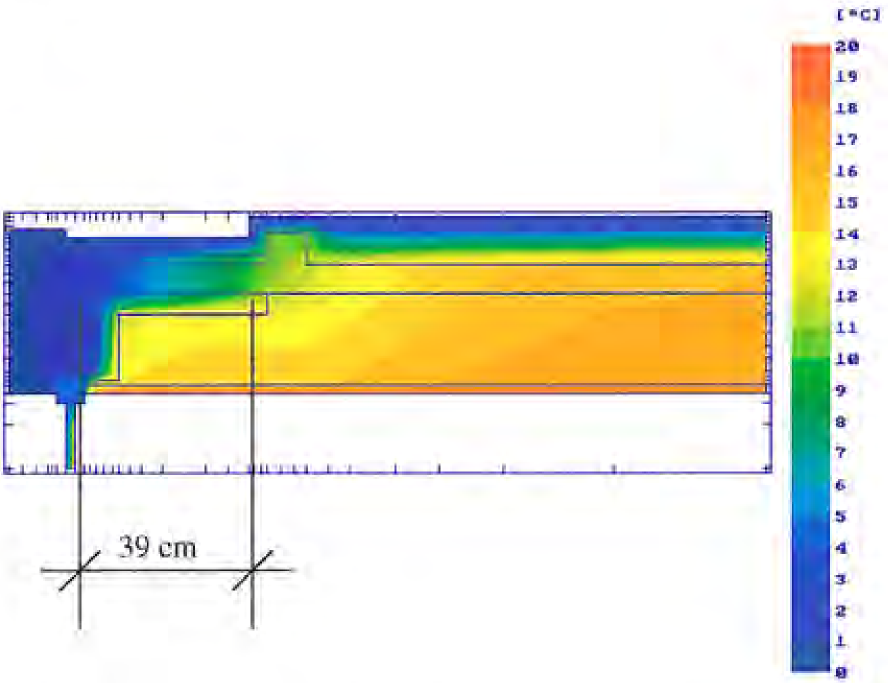
3. Aanvullende berekeningen

3.1 Detail 1

We bekijken het geval dat:

- Het plafond luchtdicht blijft;
- De binnenisolatie correct wordt geplaatst (d.w.z. alle ribben ingepakt);
- Op het dak 12 cm PUR komt, d.w.z. 8 cm als opvulling en 4 cm daar bovenop (geeft 4 cm ter plaatse van de gootbalk). In de goot ligt 3 cm;
- Geen buitenisolatie.

Isothermen



Afgezien van de zone direct tegen het stalen raam, voldoet de temperatuurfactor over de afgewikkelde lengte van de binnenisolatie aan de eis >0.6. Net tegen het raam hebben we

0.25, d.w.z. dat daar schimmelontwikkeling niet uit te sluiten is. Niet oplosbaar, tenzij goed isolerende houten ramen zouden worden geplaatst. Waar de binnenisolatie stopt, op 39 cm van de balk, hebben we op het beton een temperatuurfactor 0.55, d.w.z. iets kleiner dan 0.6. In de gangen volstaat die waarde. Wil men met alle middelen toch voorbij 0.6 komen, dan dient de binnenisolatie door te lopen tot 53 cm vanaf de balk. De impact op de warmteverliezen van de lengte waarover binnenisolatie wordt toegepast is compleet te verwaarlozen.

Lijnwarmtedoorgangscoëfficiënt (ψ)

Bij een temperatuurverschil van 20°C bedraagt de warmtestroom door het gerenoveerde detail 30.81 W/m, d.w.z. 1.54 W/(m.K), een afname met 38.7% ten opzichte van de huidige situatie. Eéndimensionale referentie:

Deel	**U-waarde W/(m².K)**	**L m**	**Verlies W/(m.K)**
Dak	0.21	1.73	0.363
Gevel (met vals plafond als binnen-isolatie)	0.54	0.435	0.235
Raamprofiel	5.83	0.02	0.117
Dubbel glas	3.12	0.15	0.468
			1.183

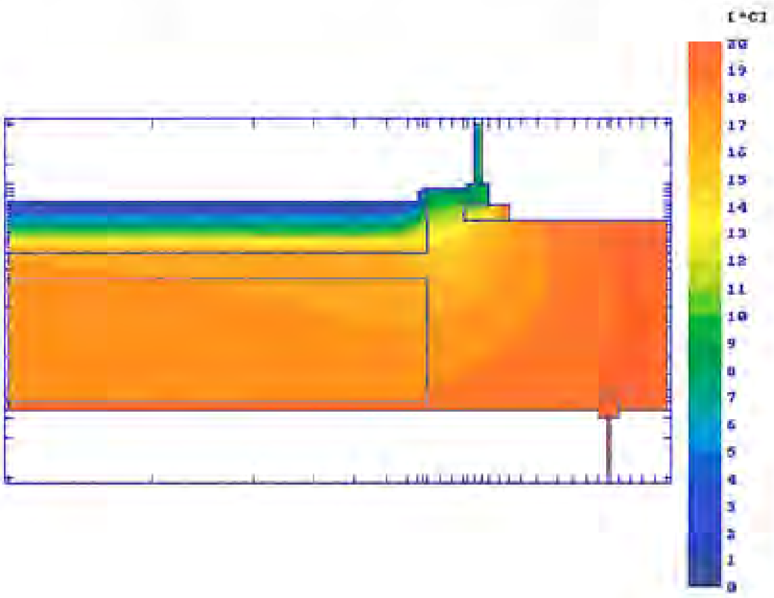
of, $\psi = 1.54 - 1.183 = 0.357 \text{ W}/(\text{m.K})$

3.2 Detail 2

We bekijken het geval dat:

- Het plafond luchtdicht blijft;
- De binnenisolatie weggelaten wordt;
- Op het dak 12 cm PUR komt, d.w.z. 8 cm als opvulling en 4 cm daar bovenop.

Isothermen



De figuur maakt duidelijk dat er wat betreft temperatuurfactoren absoluut geen problemen zijn. Nergens, tenzij tegen de stalen ramen zakt de temperatuurfactor onder 0.6. De binnenisolatie is bijgevolg totaal overbodig en de 12 cm PU op het dak doen het beter dan de vroegere oplossingen.

Onze voorkeur gaat trouwens hoe dan ook naar een droge renovatie met PUR of rotswol. Met een licht afschotbeton komt behoorlijk wat bouwvocht in de constructie terecht, ook als men het systeem met EPS-vulblokken toepast.

Lijnwarmtedoorgangscoëfficiënt (ψ)

Bij een temperatuurverschil van 20°C bedraagt de warmtestroom door het gerenoveerde detail 33.57 W/m, d.w.z. 1.68 W/(m.K), een afname met 30% ten opzichte van de huidige situatie. Eéndimensionale referentie:

Deel	U-waarde W/(m².K)	L m	Verlies W/(m.K)
Dak	0.21	1.03	0.363
Raamprofiel	5.83	0.02	0.117
Dubbel glas	3.12	0.15	0.468
			0.948

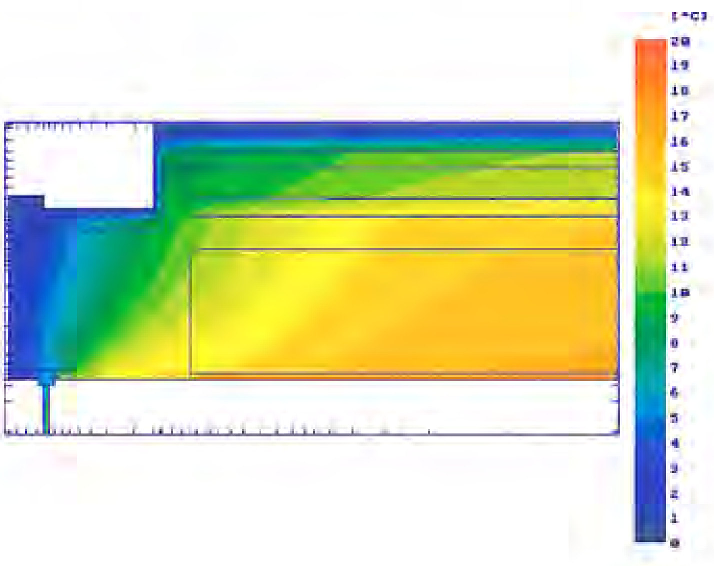
of, $\psi = 1.68 - 0.948 = 0.732$ W/(m.K)

3.3 Detail 3

We bekijken het geval dat:

- Het plafond luchtdicht blijft;
- De binnenisolatie weggelaten wordt;
- Op het dak de welfsels .bewaard blijven en daarop een nieuwe PU-dakisolatie, dikte 8 cm, komt.

Isothermen



Vergelijken we dit resultaat met de uitvoering waarbij binnenisolatie wordt toegepast, dan zijn de verschillen miniem. Temperatuurfactoren onder 0.6 vinden we onderaan de gevelbalk, over een afstand van 10 cm vanaf het raam. Boven het vals plafond hebben we wat betreft de gevelbalk temperatuurfactoren tussen 0.74 (onder) en 0.54 (hoek balk/ribbenvloer). Deze laatste waarde ligt iets te laag. Echt problematisch is dat echter niet. Vandaar dat ook hier de binnenisolatie mag worden weggelaten!

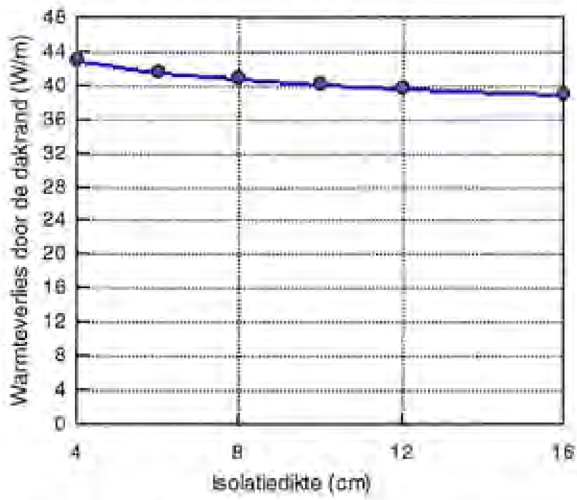
Lijnwarmtedoorgangscoëfficiënt (ψ)

Bij een temperatuurverschil van 20°C bedraagt de warmtestroom door het gerenoveerd detail 52.76 W/m, d.w.z. 2.64 W/(m.K), een afname met 19% ten opzichte van de huidige situatie. Eéndimensionale referentie:

Deel	**U-waarde W/(m².K)**	**L m**	**Verlies W/(m.K)**
Dak	0.235	1.965	0.462
Gevel (met vals plafond als binnen-isolatie	1.28	0.53	0.680
Raamprofiel	5.83	0.02	0.117
Dubbel glas	3.12	0.15	0.468
			1.726

of, $\psi = 2.64 - 1.726 = 0.938\ \text{W/(m.K)}$. Met binnenisolatie waren de resultaten: Φ_{2D}=50.39 W/m, ψ=1.09 W/(m.K), of, veel maakt het niet uit. Weglaten bijgevolg. Bespaart heel wat werkuren en zorgt voor een goedkopere renovatie.

Effect van een dikkere warmte-isolatie op het platte dak



Figuur 1 Effect van een dikkere dakisolatie op het warmteverlies door het detail (ramen en glasstrook van 15 cm niet beschouwd)

Bijgevoegde figuur 1 toont dat, net zoals bij binnenisolatie, het effect van extra dikte aan warmte-isolatie op het platte dak bedroevend klein is. De reden is voor de hand liggend. De dakrand is een alles overheersende koudebrug!

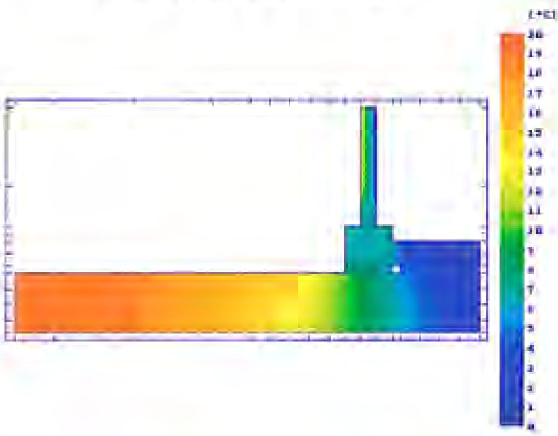
3.4 Horizontale tussenregels in gewapend beton

Aan de zonzijde zitten de ramen dieper en aan de schaduwzijde minder diep in het gevelvlak. Dit heeft een behoorlijke invloed op de temperaturen in de horizontale en verticale betonnen regels tussen de ramen.

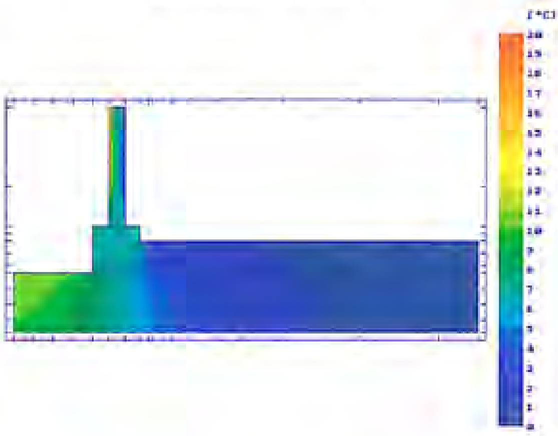
Het werkelijk detail is vervangen door een eenvoudiger dummy: een betonnen regel van 15 cm hoog en 60 cm diep, waarbij het raam zich op 10, respectievelijk 40 cm van het gevelvlak bevindt.

<u>Isothermen</u>

Raam tegen het gevelvlak



Raam naar binnen



De figuren tonen dat, in de mate de ramen meer naar binnen zitten, de betonregel kouder wordt.

<u>Warmteverlies per °C temperatuurverschil binnen/buiten</u>

Bij een temperatuurverschil van 1°C bedraagt de warmtestroom door de regel 1.65 W/(m.K) in geval het raam op 10 cm van de buitenkant staat en 1.48 W/(m.K) in geval het raam op 10 cm van de binnenkant zit. Eéndimensionaal is de warmtestroom 0.56 W/(m.K). Of, temperatuurfactoren en warmteverliezen veranderen in tegengestelde richting als het raam van buiten naar binnen schuift. De ene worden groter, de andere kleiner.

3.5 Meest rendabele warmte-isolatie bij de vloer boven het open gelijkvloers

We definiëren als meest rendabele warmte-isolatie deze, waarbij de verhouding tussen de totale geactualiseerde kosten en de opbrengst door energiebesparing, een beter comfort, enz, minimaal is.

De geactualiseerde kosten worden gegeven door:

$$K_{act} = K_o + \sum \frac{K_{oj}}{(1+a)^q} + \sum_{n=1}^{m} \frac{K_M (1+r_M)^n}{(1+a)^n} + \sum_{n=1}^{m} \frac{K_E (1+r_E)^n}{(1+a)^n}$$

met K_o de begininvestering, bij isolatiematerialen evenredig met de dikte ($K_o = a_{is} + b_{is} R_{is}$), K_{oj} de toekomstige vervanginvesteringen, bij vloerisolatie in principe nul, K_M de jaarlijkse onderhoudskosten, hier nul, K_E de jaarlijkse energiekosten en m de actualisatieperiode, 30 jaar. Is de actualisatiegraad a constant en mogen we de jaarlijkse stijging van de energieprijzen bovenop de inflatie als gemiddeld constant beschouwen, dan vereenvoudigen zich deze vergelijking tot: $K_{act} = \underbrace{a_{is} + b_{is} R_{is}}_{\text{Investering}} + \underbrace{\frac{C_{act} B_E}{R_o + R_{is}}}_{\text{Jaarlijkse energiekost}}$, met B_E de verbruikskosten per jaar bij een warmteweerstand $R_o + R_{is} = 1$. De energiebesparing per m² kunnen we schrijven als (bij verwaarlozing van de ingebouwde energie):

$$K_E = B_E \left(\frac{1}{R_o} - \frac{1}{R_o + R_{is}} \right)$$

waaruit:

$$\text{rend} = \frac{a_{is} + b_{is} R_{is} + \dfrac{C_{act} B_E}{R_o + R_{is}}}{B_E \left(\dfrac{1}{R_o} - \dfrac{1}{R_o + R_{is}} \right)}$$

De afgeleide naar R_{is} van de rend-functie nul geeft de meest rendabele warmteweerstand en daarmee de meest rendabele isolatiedikte: $R_{is,rend} = \sqrt{\frac{a_{is} R_o + C_{act} B_E}{b_{is}}}$. $R_{is,rend}$ kunnen we bijgevolg berekenen als we R_o, C_{act}, B_E, a_{is}, b_{is} en m kennen. Daarenboven dienen we over de equivalente warmtegeleidingscoëfficiënt λ_{eq} van het isolatiemateriaal te beschikken, willen we uit $R_{is,rend}$ de dikte bepalen. In λ_{eq} zitten alle meerdimensionale effecten verrekend. In voorliggend geval:

$R_o = 1.07$ m².K/W, $\lambda_{eq} = 0.0384$ W/(m.K)

C_{act} (m=30 jaar)

a	r_E	C_{act}	**$d_{is,rend}$ (EPS) cm**
0	0	30	**14**
0	0.02	38.8	**15**
0.02	0	22.3	**12**
0.02	0.02	30	**14**
0.05	0	15.9	**11**
0.05	0.02	19.9	**12**

B_E: kan begroot op 2.5 €/jaar.

Voor a_{is} en b_{is} dienen we prijsgegevens te gebruiken. Bij een houtwolcement/EPS composiet kunnen we a_{is}=€ 11.4, b_{is}=€ 6.7 (inclusief 6% BTW) stellen.

Invullen van deze waarden in de $\sqrt{\ }$ vergelijking, geeft de isolatiedikten van kolom 4 in bovenstaande tabel. Gezien bij dikten onder het optimum de rendabiliteit vlug daalt en bij dikten erboven ze extreem traag daalt, wordt best de grootste dikte uit de kolom gekozen, in casu 15 cm. Of zo'n dikte kan, laat staan bestaat, is een andere zaak
Vandaar een praktisch antwoord op de vraag 'Wat is de rendabele isolatiedikte?': gebruik van de houtwolcement/EPS composiet de grootst mogelijke dikte die op de markt te vinden is en bouwkundig kan worden toegepast.

4. Energieverbruik

Een grondige studie van het energieverbruik van het Singel complex valt buiten het bestek van de opdracht. Wel gingen we voor doorsnede DD na hoe de renovatie en isolatiebeslissingen de specifieke geleidingsverliezen besturen.

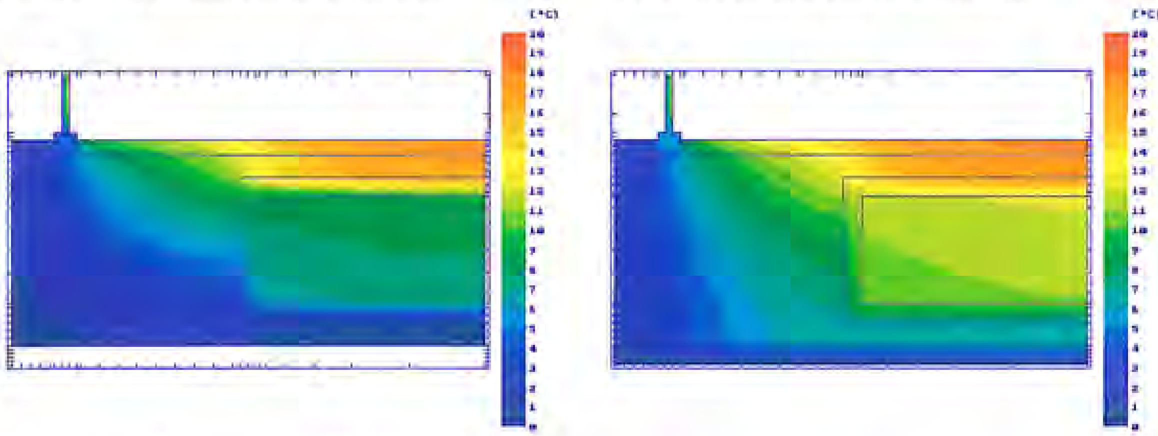
4.1 Koudebruggen

In de snede komen twee lijnkoudebruggen voor die nog niet werden geanalyseerd: de gevelbalk en de centrale balk.

Gevelbalk

Isothermen

Zonder vloerisolatie aan de onderzijde | Vloer met isolatie aan de onderzijde



Lijnwarmtedoorgangscoëfficiënt (ψ)

Geen isolatie aan de onderzijde — Het warmteverlies door het detail bedraagt 2.49 W/(m.K). Eéndimensionale referentie:

Deel	U-waarde W/(m².K)	L m	Verlies W/(m.K)
Vloer	0.58	1.245	0.72
Gevel (balk)	2.26	0.54	1.22
Raamprofiel	5.83	0.02	0.117
Dubbel glas	3.12	0.15	0.468
			2.525

of, ψ kan geschat op -0.037 W/(m.K). Waarom negatief? Gewoon omdat de referentie de buitenafmetingen neemt en daardoor de balk als geveloppervlakte inrekent.

Met isolatie aan de onderzijde

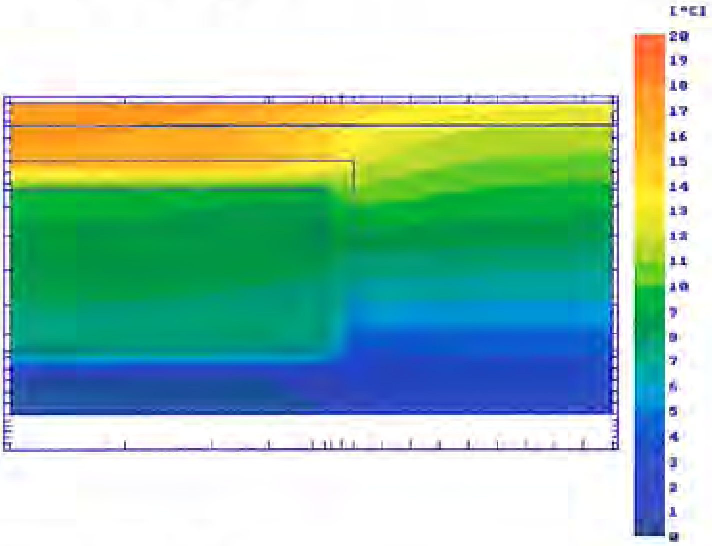
In functie van de dikte aan EPS in het composiet houtwolcement/EPS wordt de lijnwarmtedoorgangscoëfficiënt:

dikte EPS cm	U-waarde $W/(m^2.K)$	1D-verlies W/(m.K)	2D-verlies W/(m.K)	ψ W/(m.K)
3	0.36	2.255	2.213	-0.042
5	0.31	2.189	2.176	-0.013
7	0.27	2.136	2.152	0.016
9	0.23	2.097	2.136	0.039

Centrale balk

Isothermen

Zonder vloerisolatie aan de onderzijde



Lijnwarmtedoorgangscoëfficiënt (ψ)

Geen isolatie aan de onderzijde

Het warmteverlies door het detail, als berekend, bedraagt 2.73 W/(m.K). Eéndimensionale referentie:

Deel	U-waarde $W/(m^2.K)$	L m	Verlies W/(m.K)
Vloer	0.58	2.04	1.18
			1.18

of, ψ kan geschat op 1.55 W/(m.K).

Met isolatie aan de onderzijde

In functie van de dikte aan EPS in het composiet HWC/EPS wordt de lijnwarmtedoorgangscoëfficiënt:

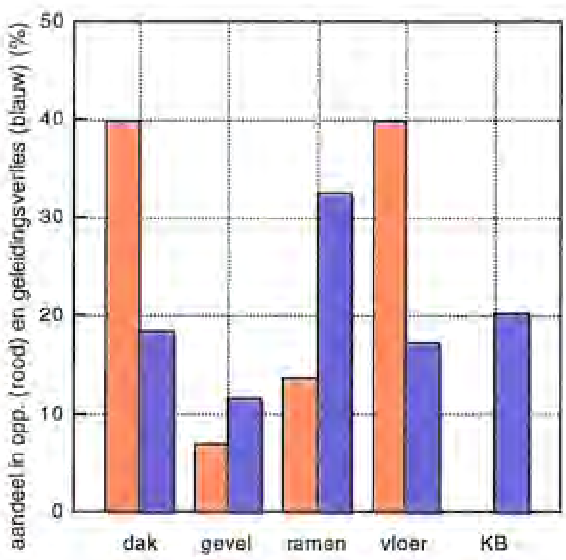
dikte EPS cm	U-waarde W/(m².K)	1D-verlies W/(m.K)	2D-verlies W/(m.K)	ψ W/(m.K)
3	0.36	0.734	1.106	0.37
5	0.31	0.632	0.872	0.24
7	0.27	0.551	0.720	0.17
9	0.23	0.469	0.614	0.15

4.2 Specifieke geleidingsverliezen

Huidige toestand

Bouwdeel	**Opp. m²/m**	**U-waarde W/(m².K)**	**Verlies W/(m.K)**
Dak	14.8	0.62	9.18
Gevel	2.59	2.26	5.85
Ramen	5.11	3.17	16.21
Vloer	14.8	0.58	8.58
Lijnkoudebruggen	**Lengte m/m**	**ψ-waarde W/(m.K)**	**Verlies W/(m.K)**
Dakrand	1	-0.164	-0.164
Betonnen stijlen, raam op 10 cm van buitenvlak (1)	1.43	1.09	1.56
Betonnen stijlen, raam op 10 cm van binnenvlak (2)	1.43	0.92	1.31
Vloerbalk (gevel)	1	-0.037	-0.037
Vloerbalk, centraal	1	1.55	1.55
Vloerribben	27.7	0.212	5.87
		Totaal	**49.9 W/(m.K)**

Figuur 1 geeft de verdeling over de verschillende scheidingsconstructies. Het glas zorgt voor het grootste verlies, gevolgd door koudebrugwerking.



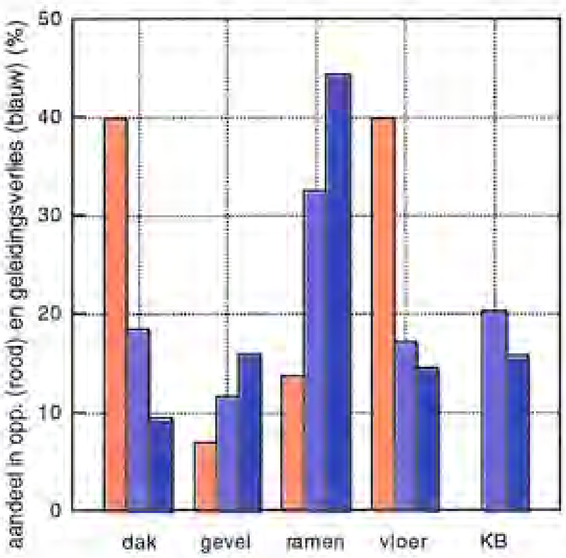
Figuur 1 Oppervlakte en verliesaandeel ve schillende scheidingsconstructies

Na renovatie

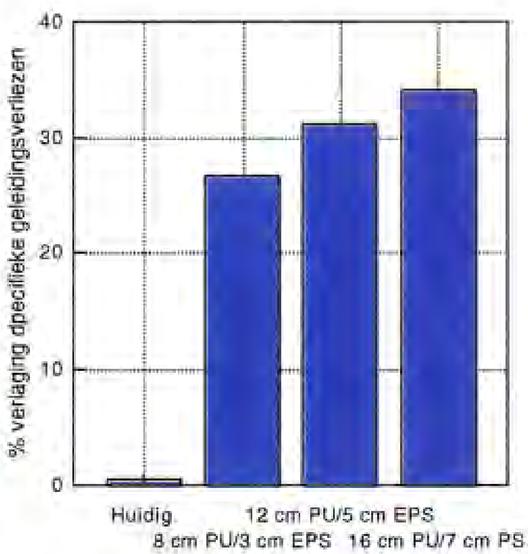
- Dak en vloer worden geïsoleerd, het dak met 8 cm PUR bovenop de welfsels en de vloer met een composiet HWC/EPS met 3 cm EPS in.

Bouwdeel	Opp. m^2/m	U-waarde $W/(m^2.K)$	Verlies W/(m.K)
Dak	14.8	0.235	3.48
Gevel	2.59	2.26	5.85
Ramen	5.11	3.17	16.21
Vloer	14.8	0.36	5.32
Lijnkoudebruggen	**Lengte m/m**	**ψ-waarde W/(m.K)**	**Verlies W/(m.K)**
Dakrand	1	0.395	0.395
Betonnen stijlen (1)	1.43	1.09	1.56
Betonnen stijlen (2)	1.43	0.92	1.31
Vloerbalk (gevel)	1	-0.042	-0.042
Vloerbalk, centraal	1	0.37	0.37
Vloerribben	27.7	0.078	2.16
		Totaal	**36.6 W/(m.K)**

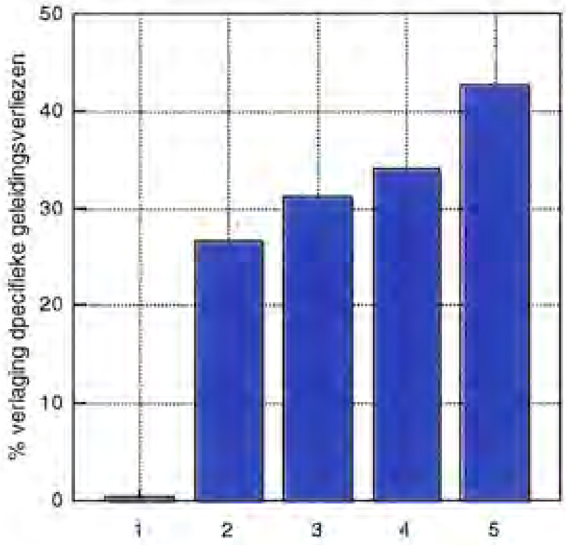
Vergelijken we de nieuwe verdeling over de verschillende scheidingsconstructies met deze voor renovatie, dan valt op dat door de dak- en vloerisolatie de ramen nog meer als de grote verliesvlakken fungeren. Figuur 3 toont daarenboven dat door nog meer dak- en vloerisolatie te voorzien, de extra afname beperkt blijft. Daarentegen zorgt vervanging van de dubbele beglazing door lage e, argon gevuld dubbel glas voor een afname, die we nooit met bouwkundig uitvoerbare dikten aan dak- en vloerisolatie zouden kunnen halen, zie figuur 4. Alleen, met beter glas neemt de ernst van de condensvorming tegen de metalen raamprofielen zonder meer toe met ergere vervuiling dan nu het geval is en een snellere corrosie als gevolg.



Figuur 2 Oppervlakte en verliesaandeel verschillende scheidingsconstructies



Figuur 3 Procentuele daling specifieke geleidingsverliezen



Figuur 4 Procentuele daling specifieke schillende geleidingsverliezen
1=huidige toestand (daling nul)
2=8 cm PU op het dak, 3 cm EPS in composiet EPS/HWC tegen vloer
3=12 cm PU op het dak, 5 cm EPS in composiet EPS/HWC tegen vloer
4=16 cm PU op het dak, 7 cm EPS in composiet EPS/HWC tegen vloer
5=8 cm PU op het dak, 3 cm EPS in composiet EPS/HWC tegen vloer, lage e, argongevulde beglazing

Leuven, 15 mei 2002

H. Hens
Gewoon Hoogleraar