

Graduation Report

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Faculty of architecture and the built environment
TU Delft
P2

Content

A. Graduation plan

B1. Design manifesto

B2. Theory research

C. Design brief

D1. Research book

D2. Design journal

E. Schematic design

F. Parameters to construct

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation plan



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Daphne Vlak
Student number	4673832

Studio		
Name / Theme	AR3AP100 Public Building Graduation Studio	
Main mentor	Henk Bultstra	Project design
Second mentor	Florian Eckardt	Building technology
Third mentor	Nicola Marzot	Theory research
Argumentation of choice of the studio	The choice fell on this studio, because public buildings was a theme I had not come across in my bachelor or first year of the master, so this felt like a last chance to go all out on a new typology before leaving university.	

Graduation project	
Title of the graduation project	A Hybrid Binckhorst
Goal	
Location:	Binckhorst, Den Haag, Netherlands
The posed problem,	The ambition is to transform Binckhorst into an densified area for living, working and leisure, while maintaining space, character and creating a healthier environment. The problem is the exact opposite. At the moment the area is not suitable for living, is unhealthy, noisy and not integrated with the rest of the city. The challenge is to reflect on and respond to this vision for Binckhorst and how my music marvel can help with the transition.
research questions and	How can the music marvel of the future serve the contemporary architecture, characterized by its hybrid character, that is coming to Binckhorst? What does it mean for the urban character to be of a hybrid form? How does this translate to the scale of a building plan and into user experience? How will the music marvel, in this context, differentiate itself from other mix-use areas?

design assignment in which these result.	The design assignment resulting from this question should give an answer to the municipality's masterplan for the chosen location in Binckhorst and create a detailed design. It should give answer to the proposed question of a hybrid character and what that means for a music venue, reflecting the zeitgeist of the 21 st century. The design should be a multiplicity of building elements, making it less singular in function, productive, transformative and resilient. The design has to be future proof and able to grow with the Binckhorst at it is growing.
Process	
Method description	
<p>Case study To look into this idea of hybrid architecture, two possible methods can be used consecutively; the first being a case study analysis. Here it is possible to use the music venues, already analysed by fellow students, presented at the P1 presentations from the public building studio, as well as looking into new venues and/or other typologies.</p> <p>Hypothetical research After this, the results of the analysis can be used in hypothetical research, meaning there is a set hypothesis and generating a possible result to find out whether the hypothesis proves the statement or not. In the case of a design this would translate into the hypothesis that 'a hybrid design is the optimal typology for this area' with the outcome being a building already set.</p>	

Literature and general practical preference

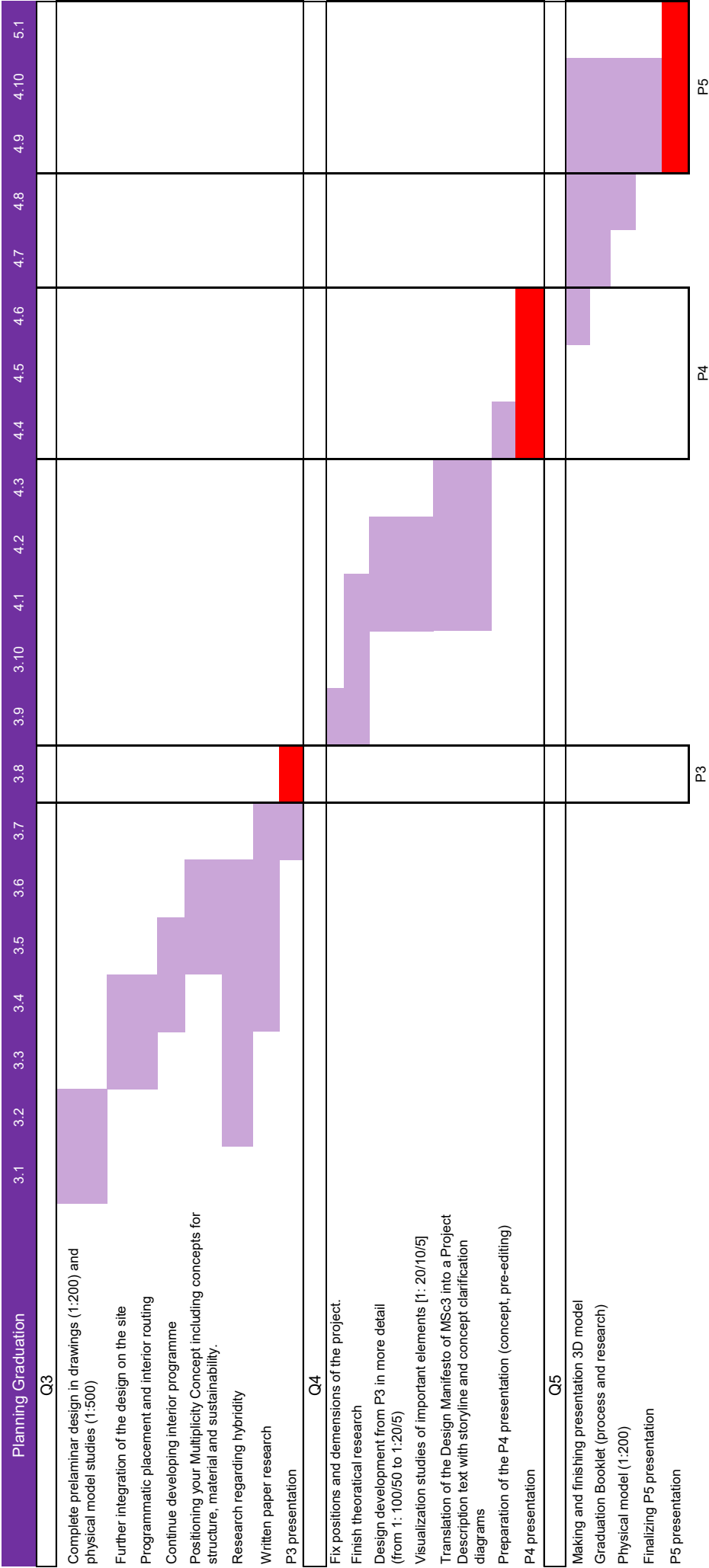
1. *Hybrid Urbanism / Hybrid Space Lab*. (z.d.). Hybridspacelab. Geraadpleegd op 17 november 2021, van <https://hybridspacelab.net/project/hybrid-urbanism/>
2. Howells, J. Openshaw, G. Why mixing residential and light industrial is good for our cities <https://aeom.com/without-limits/article/why-mixing-residential-and-light-industrial-is-good-for-our-cities/>
3. Krasilnikova, E. E., & Klimov, D. V. (2016). The Main Design Principles of Hybrid Spaces in Terms of the Urban Planning Regeneration. *RUDN Journal of Agronomy and Animal Industries*, 4, 63–74. <https://doi.org/10.22363/2312-797x-2016-4-63-74>
4. Madanipour, A., Knierbein, S., & Degros, A. (2013). *Public Space and the Challenges of Urban Transformation in Europe*. Taylor & Francis.
5. Marling, G., Jensen, O. B., & Kiib, H. (2009). The Experience City: Planning of Hybrid Cultural Projects. *European Planning Studies*, 17(6), 863–885. <https://doi.org/10.1080/09654310902794018>
6. Nissen, S. (2008). Urban Transformation: From Public and Private Space to Spaces of Hybrid Character. *Czech Sociological Review*, 44(6), 1129–1150. <https://doi.org/10.13060/00380288.2008.44.6.04>
7. Per, A. F., Mozas, J., Arpa, J., & a+t architecture publishers. (2011). *This is Hybrid*. a + t ediciones.

Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?
In the master track of Architecture you are always encouraged to explore personal interests and think further than what is already there and challenge these ideas. The idea of the hybrid building is a manifestation, a cosmopolitan building, shaped in a way that does not directly correspond with the contents. So it is not directly the topic that related to the master track, but more the way of thinking about architecture.
The link between my graduation topic and the studio topic is also not direct, other than I want to research an idea that can also be implemented on public buildings. The hybrid building can take on multiple representations, even contradicting representations. It can be an urban landmark, sculpture, landscape or an anonymous building, meaning it can thus also be a music venue
2. What is the relevance of your graduation work in the larger social, professional and scientific framework.
In the academic field, the aim is always to explore interests and learn more, so we can share a better understanding of the world we live in. The contribution to society of this specific research will be that the study can point out the advantages of hybrid architecture as well as the challenges, so that future designers can learn from past designs, as is ever the case with architectural design. It is a way of capturing the built environment at this moment in time and being a reason for certain actions regarding the final design for the music venue. It is very likely that in the future, with a growing population and densification of cities, that buildings are no longer built for single purposes, but as a combination

of them. Even in smaller cities it is a concept often thought about and used, because of the awareness of land use and the impact it has on the environment. Most citizens care for their local nature and do not wish to see it all become urbanized, but rather see underused land being reused and buildings being repurposed if that is an available option. It is also a way of thinking about changing lifestyles, which have especially been stirred up since the beginning of the pandemic. People live less in a black and white situation of living and working like they did fifty years ago and grow to a more flexible schedule, something where a hybrid building will come of use and what my music marvel will aim to be.

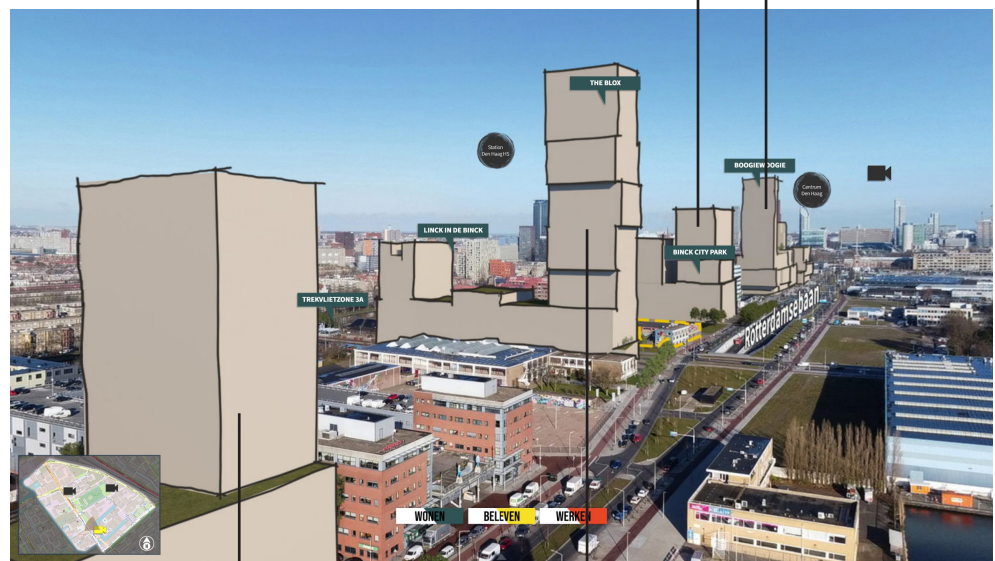
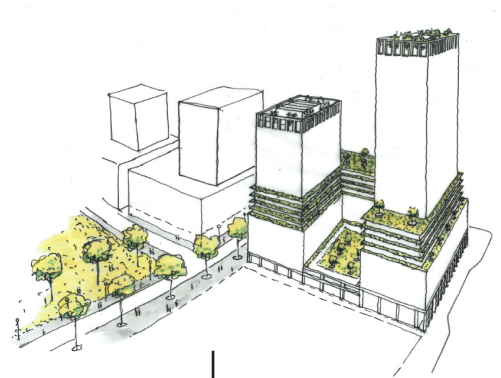
Planning



Process behind manifesto

B1

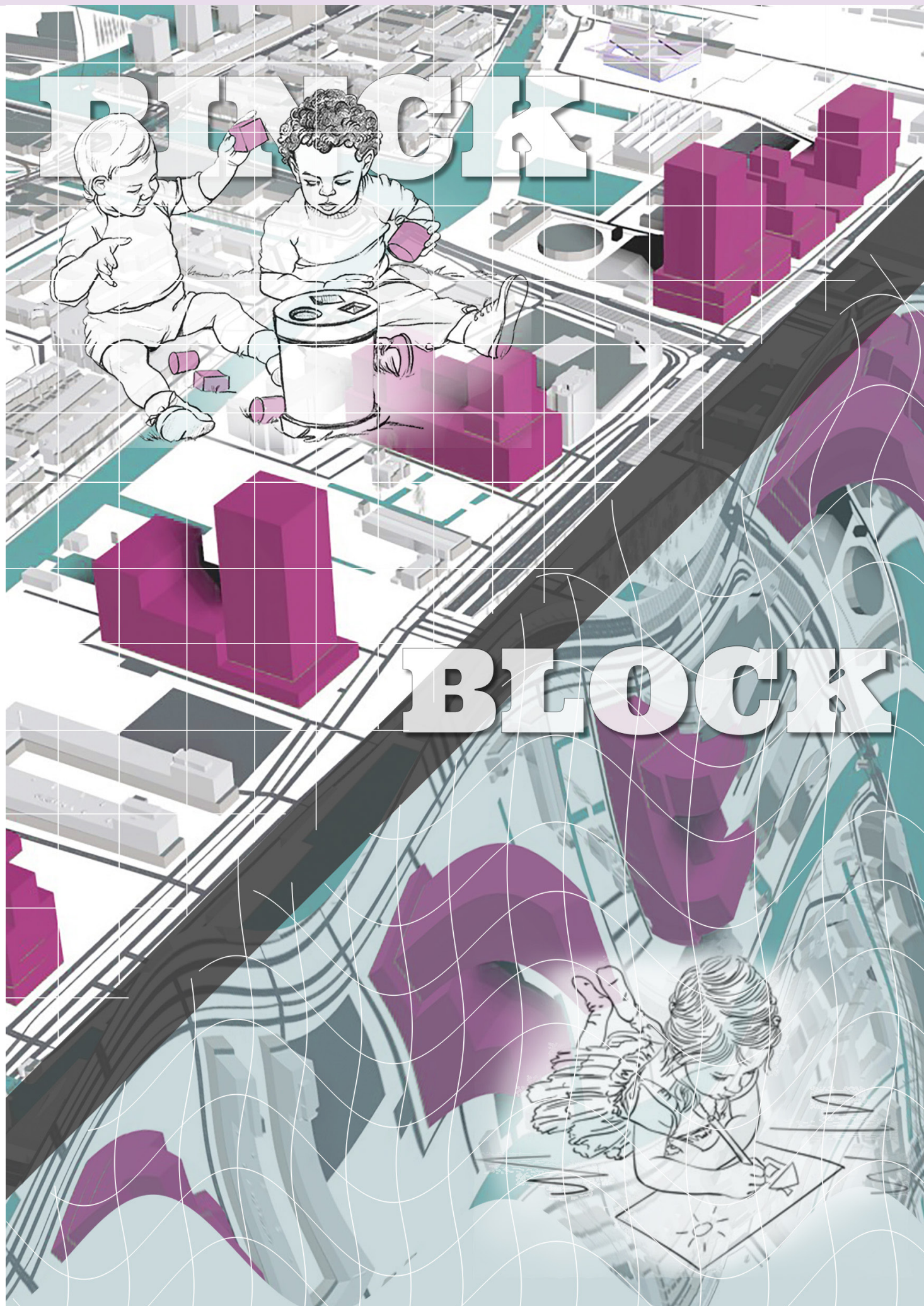
Manifesto



Plans for Binckhorst, source: <https://binckhorst-den Haag.com/kaart/>



The municipality's plans for Binckhorst are a combination of maps with rough areas for specified programs and project developers wanting to produce their ideas on those spots. The four projects shown above are from different developers, but the things they have in common are: 1. the municipality has to approve their plans and 2. they all share the same modern block type of architecture. There are many more examples of these types of blocks being developed in the area. This is neither a good or bad thing, but rather a remarkable one. It was the seed that planted itself for my design to react to the matter and create something that is a reaction to the landscape and an expressive and unique shape.



Abstract

B2

Theory research

The neighbourhood of Binckhorst is located close to the centre of The Hague and has a history as an industrial and business location. With the Hague continuing to grow in size the Binckhorst is enclosed by the city, and due to the strategic location of the area opportunities arise that can be utilized if the city wants to continue on growing. The vision is to transform and densify this area to include more housing and make it a healthier place overall, while maintaining some of the historical functions. The result will be a multiplicity of contrasting functions working together, a hybrid. The question arises: How can the music marvel of the future serve the contemporary architecture, characterized by its hybrid character, that is coming to Binckhorst? The personality of the hybrid is a celebration of complexity, diversity and variety of programmes. It is the crucible for a mixture of different interdependent activities. The ideal hybrid feeds on the meeting of the private and public spheres. The permeability of the hybrid makes it accessible from the city and the private use of its services extends its timetable to 24 hours a day. It differentiates itself from the mixed-use building and the social condenser. The aim is thus to conduct a research about the pros and cons of hybrid architecture and how they can be implemented in the Binckhorst area. To look into this idea of hybrid architecture, two possible methods can be used consecutively; a case study analysis and hypothetical research.

Binckhorst site sampling

FEEL

SENSATIONS

-Heat radiating from the stones, it was a warm and sunny day during the visit
 -Breeze of the wind, low speed, perfect to cool of a bit
 -Tall grass running across ankles
 -Heat coming from an AC unit, that very dense air without any oxygen in it.
 -Blowing air from fan.
 -Water flowing through hands
 -Leaves running across hands
 -Sand blowing on skin, blown into the air from the street by vehicles. Closing the eyes to not get it in my contact lenses.
 -Feeling relax walking around, taking pictures here and there, being around other students in the first week of uni and not knowing the stress of the assignments to come.

TEXTURES

-Baked bricks relief
 -Gaps between bricks
 -Hard wooden surface
 -Relief in wooden panels
 -Smooth metal
 -Pavement tiles underneath feet
 -Rough concrete
 -Smooth concrete
 -Bumpy soil and grass
 -Porous Rubber
 -Hard rubber
 -Weathered steel
 -Dock wood
 -Hard plastic
 -Smooth glass

THINK

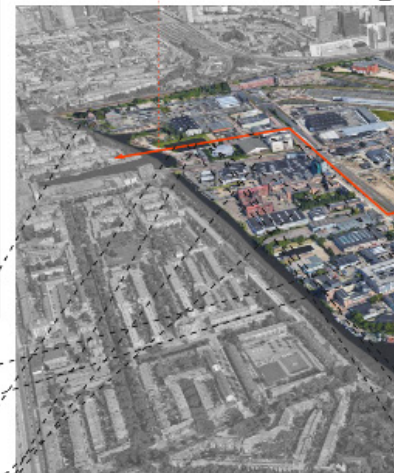
THOUGHTS THAT CROSS OUR MIND

-Everywhere I look there is only industry. Not a bad thing, but placing a concert hall here feels weird now.
 -This area could use more trees, there is hardly any shade or well kept grass to use.
 -Some of this heritage has value because otherwise they wouldn't have transformed the cabalero factory into something else.
 -There's a big contrast between the new and the old
 -It takes effort to cross the area, there are no bike paths, no crossings for people walking and the vehicles drive very fast here.
 -There is a lot of rubble here
 -Many areas are inaccessible, I wish I could go there
 -This area looks grim, lots of buildings are in a bad state or closed of and look like they are ready to be demolished. There are also not a lot of people there, which doesn't help with the feeling of safety.

Bridging the gap between

-What do **you** feel

-Can you feel



DO

SUBTITLE

Cycle	Wonder	Enter
Walk	Enjoy	Leave
Listen	Cross	Focus
Stop	Evade	Ignore
Stand	Use	Sketch
Take photos	Experiment	Party
Talk	Ask	Wait
Drink	Grab	Pour
Ride	Touch	

Cycle movement



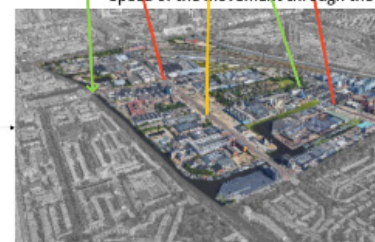
Joy movement



Listen movement



Speed of the movement through the



● Fast movement - Flowing traffic
 ● Slow movement - Exploring the area
 ● Slow/stop movement - Taking photo's or sitting on

between experiencing and thinking
 when hearing these sounds?
 the sounds in front of you?

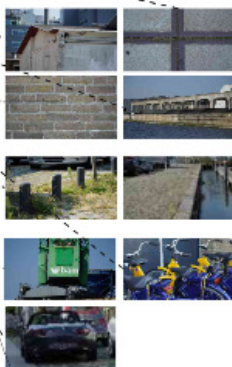
INCKHORST



SEE (image)

IMPRESSION, COLOR, LIGHT

- Shades of grey and brown
- Sunlight everywhere
- Matte materials
- pieces of green between materials
- Bright and shiny use-objects contrasting with grey and matte surroundings
- Shades of green and yellow
- Blue and grey
- Water reflections



HEAR (sound)

OBJECTS, AMBIENCE, SPEECH

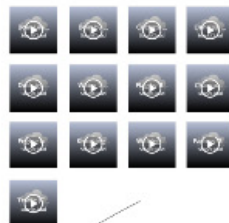
- Trucks
- Construction sounds
- Voices
- Car noise
- Vehicle sounds on the bg
- Species diving into the water
- Rusty metals (flag mast)
- Chirping birds
- Crickets
- Clamouring
- Wind running through the trees
- Boats going past
- Reverberation
- Echo

SMELL

SUBTITLE

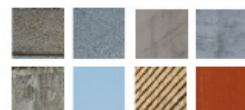
- Freshly mown grass
- Exhaust gasses
- Garbage
- Petrol
- Food
- Flowers and plants
- Burnt rubber
- Motor Oil
- Iron

Sound Palette

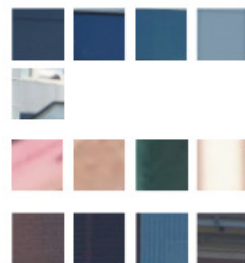


Color Palette

INDUSTRIAL



CORPORATE



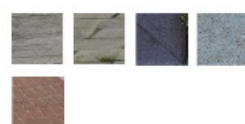
WATER



NATURE



PAVING



INDOOR



ovement

Stop

site

on benches

Dividing 'SEE' & 'HEAR' in Natural world & Valorized world?

Natural world



Valorised world



Amount of (human) activity - hotspots

- High activity
- Medium activity
- Low activity/abandoned

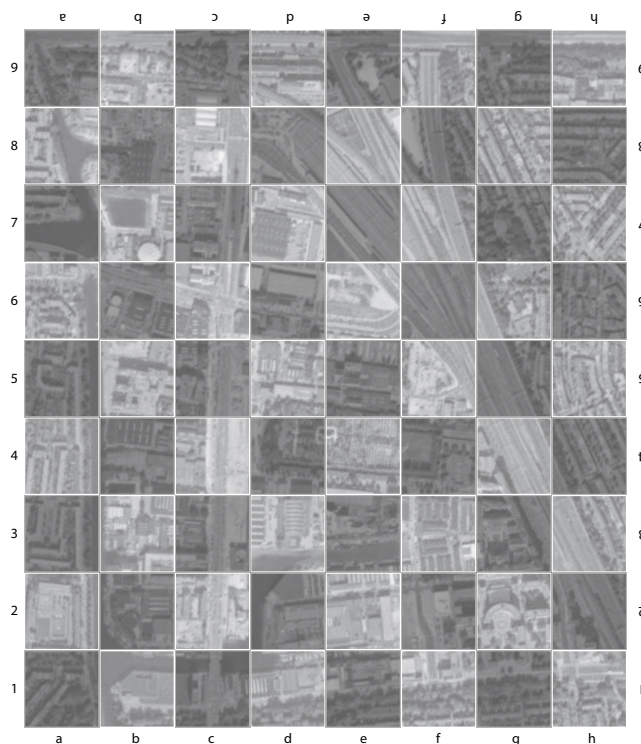


Binckhorst chess - notational system

A chessboard in itself is already somewhat of a notational system. The board is made up of 8x8 squares. Every square represents a position that a piece can be in. The icons of the chess pieces themselves. Behind the board and pieces is a carefully thought out rule system. Every piece of every colour has only a certain way it can move. There can only be one piece on the same square at a time. So when pieces cross each other on the same square there are rules for this as well. Depending on the board conditions, one piece defeats the other, always in the same manner set by the rules. Therefore it can be said that all the pieces, moves and squares, within the conditions of the current game board, only have a single meaning. This is one of Goodman's (1976) conditions for a notational system.

In a still chessboard, the only factor that to an extent is missing is time. The positions of the pieces however tell you what can and can't happen in the future. Therefore the still board itself is an indicator of the ever widening directions the game can go in.

When a complementary system documenting all the moves is introduced, the factor of time is added, and the system becomes a fully notational system. When every move in the game is documented, the state of the game can be recovered for every moment. This is what Goodman (1976) calls the recovery of a score. The identity of work and of score is retained in the steps of the game.



As a group we created the game of binckhorst chess, playing with the significant characters from the area as indicated below. After a certain amount of moves the game would lead to a playfield with character remaining and removed, a design for Binckhorst as a whole.

Option 1: scoresheet

PLAYERS

Whites		Blacks	
King	Residential towers	King	Current monuments
Queen	Concert hall	Queen	Industry
Rooks	Small housing blocks	Rooks	Corporate offices
Bishop	Public buildings and services	Bishop	Utility
Knight	Culture	Knight	reparation and service businesses
Pawn	Greenery	Pawn	Cars

SCORING

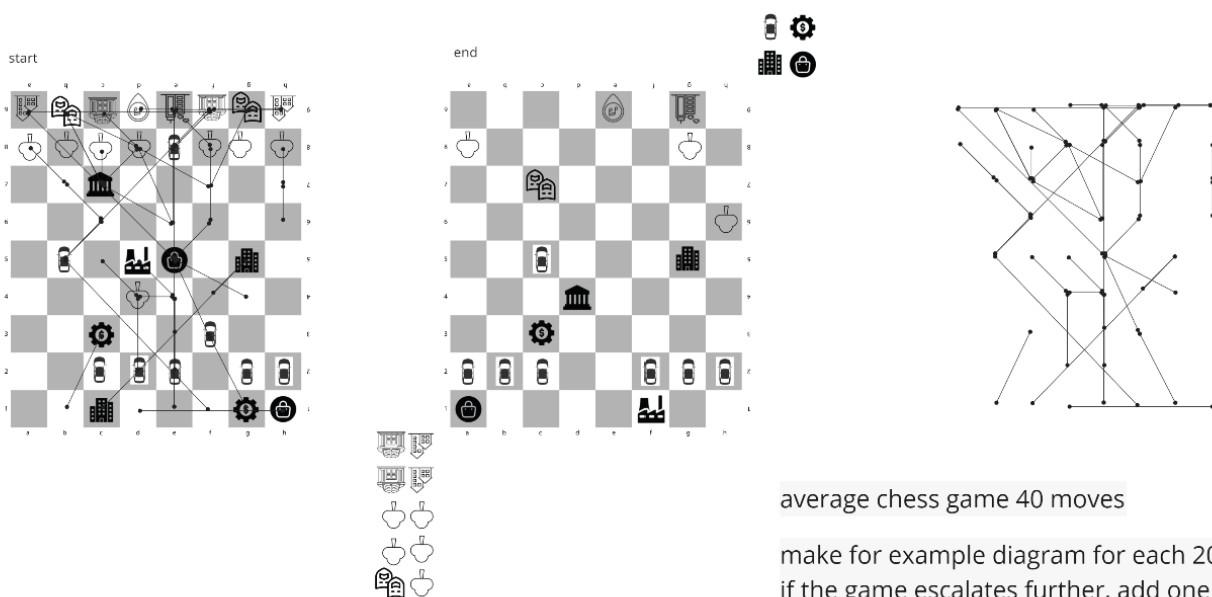
PLAYERS defeated>	KING	QUEEN	ROOK	BISHOP	KNIGHT	PAWN
KING	10	9	8	7	6	5
QUEEN	10	9	8	7	6	5
ROOK	10	8	7	6	5	4
BISHOP	10	7	6	5	4	3
KNIGHT	10	6	5	4	3	2
PAWN	10	5	4	3	2	1

Option 1 - example

moves white		moves black		Etc..... until the game is played out
W rook - B pawn	4	B queen - W bishop	7	
W pawn - B pawn	1	B pawn - W knight	2	
W knight - B rook	5	B rook - W rook	7	
W knight - B queen	6	B pawn - W pawn	1	
TOTAL	16	TOTAL	17	

Notating the results in a numerical way seemed too simple and was missing the graphical element. We decided to add colours and lines to indicate the moves and the strikes of the pieces, which eventually forms a map.

Option 2: graphical



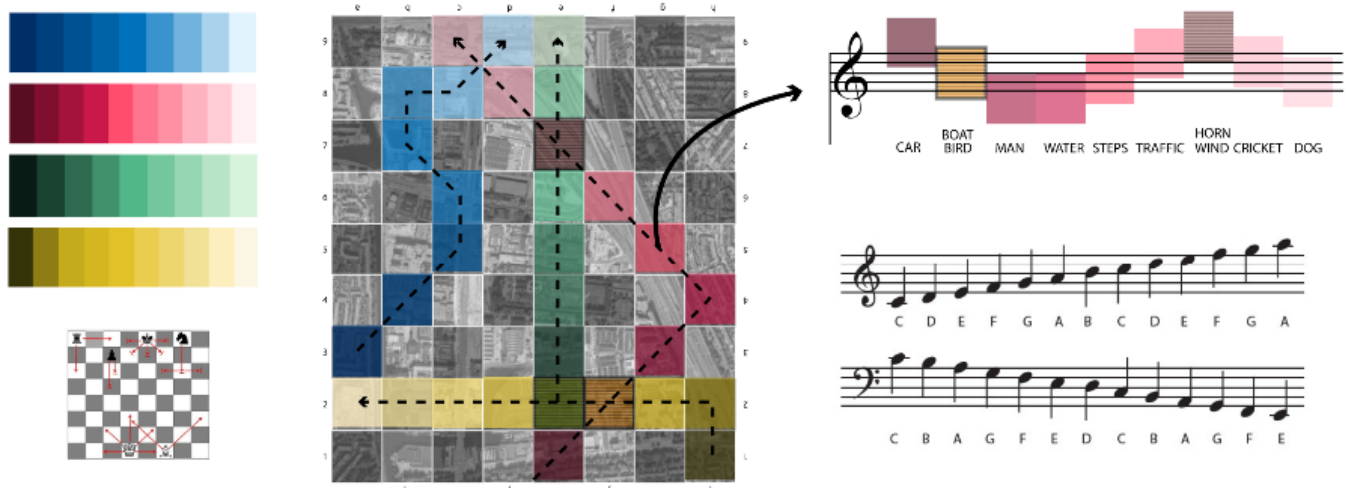
average chess game 40 moves

make for example diagram for each 20 moves, if the game escalates further, add one to the right. etc...

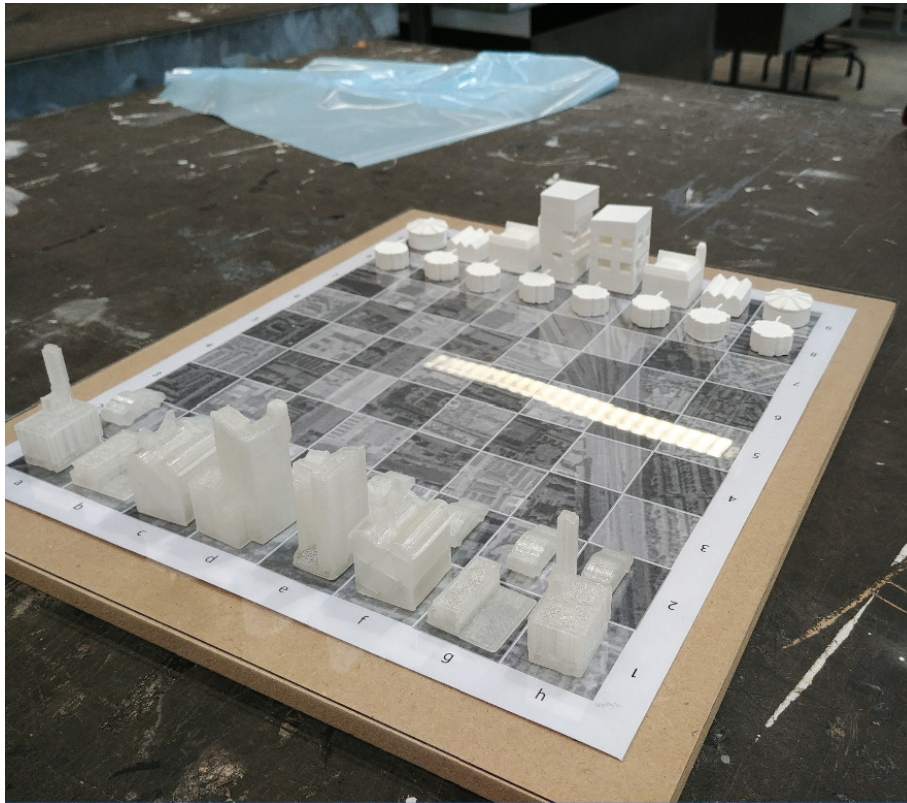
Add icons for pieces hitting other pieces, etc

Color opacity or color transition for moment in the game in which the move was made

Option 2: example



The result



References

Rotterdam Chess, Cube Dwellings



Democratic chess, Florian Hauswirth



Negative space chess, Stefan Gougherty



Urban planning



Design brief

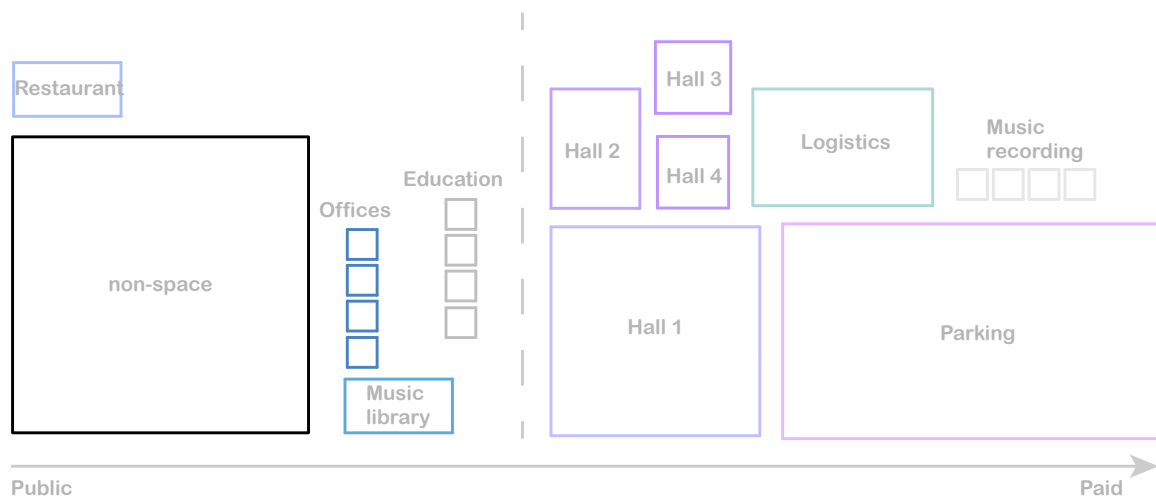
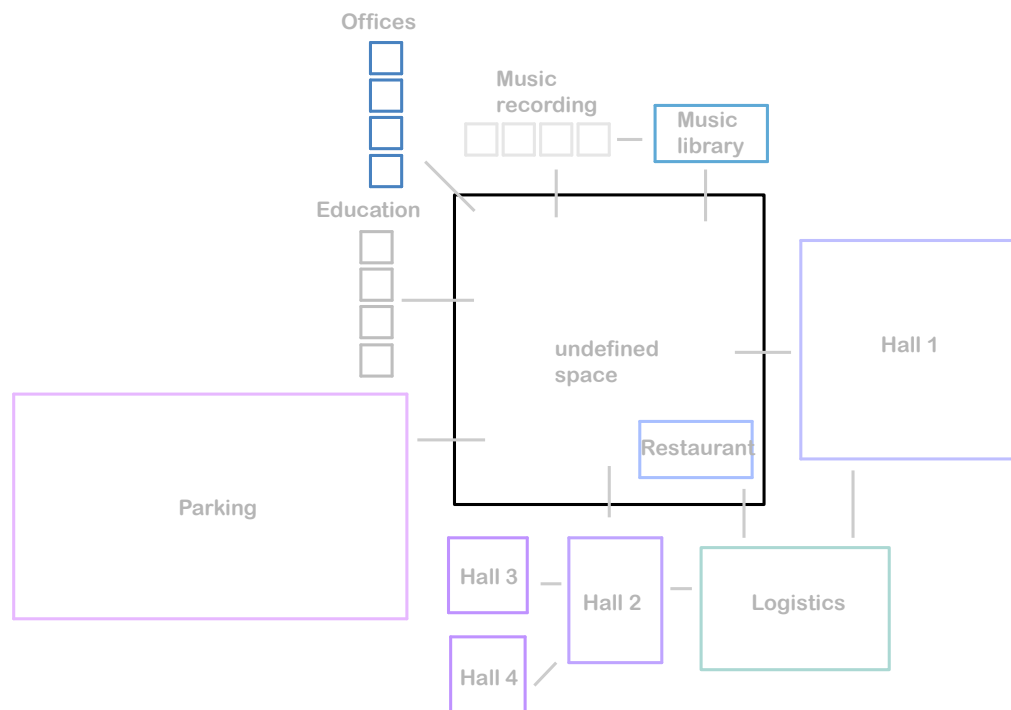


Design brief

PROGRAMME:

- Medium venue (GFA 4000-5000 m2)
- 4 music halls
 - o Hall 1: 720 – 1200 m2 / 9m high / 110 m2 stage
 - o Hall 2: 240 – 400 m2
 - o Hall 3: 120 - 200 m2
 - o Hall 4: 120 – 200 m2
- Restaurant and bar
- Accessable rooftop / rooftop terrace
- Study places
- Music library
- Office space
 - o ~200 m2
- Parking for cars & bikes
 - o Places for ~500 cars
 - o Places for ~800 bikes
 - o Encourage easy access for people coming by public transport
- Music recording spaces for public use
 - o ~50 m2
- Educational spaces (music/theatre/dance)
 - o ~200 m2

Design brief in visuals



City

D1

Research book

The city of The Hague is a collection of many different neighbourhoods, architectural styles, people and intentions. It is the most diverse city in the Netherlands when it comes to people and it is the political capital of the country. It has grown a lot over the last 50 years, just like many other cities in the Netherlands.

The area of Binckhorst, highlighted in the image, lays on the south-eastern side of the municipal border of The Hague. On the Northern side it is closed in by the important highway A12 as well as the train tracks leading to The Hague central station and on the south-eastern side it has a border with the town of Voorburg and the border formed by another big highway, the A4.

Binckhorst has a rich industrial history and over time, the neighbourhoods have grown around it. From the second half of the 20th century, the area has functioned mainly as terrain for industry and companies. The most prominent in the area are the concrete factory and the gas factory terrain. From the 90's onwards more and more companies have settled their offices here.

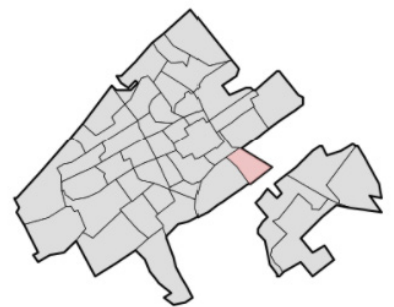
From 2009 the municipality has been planning to convert a part of this area into a neighbourhood for living. Many companies will be moved to be able to place housing for thousands of people. The most recent numbers from 2020 have a total population count of 2750 people. They intend to multiply this number by 4.5, giving the area a density of 87.3 in the future. As a reference, the city centre has a density of 140.

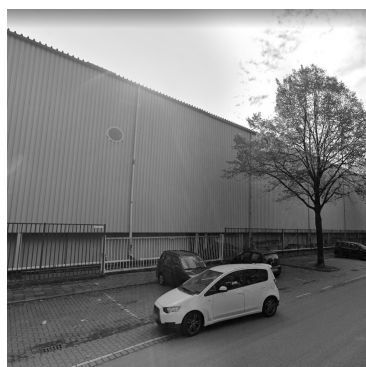
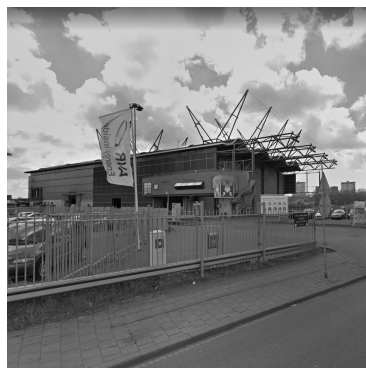
Before any plan can be realized, it is necessary to look at the current situation. The next page shows snapshots from the Binckhorst, where it is clear that the area now mainly contains roads, factories (old and new) and large open spaces. There is a lack of public transport bike paths and variation. There is also hardly any greenery in the area, except for the graveyard.

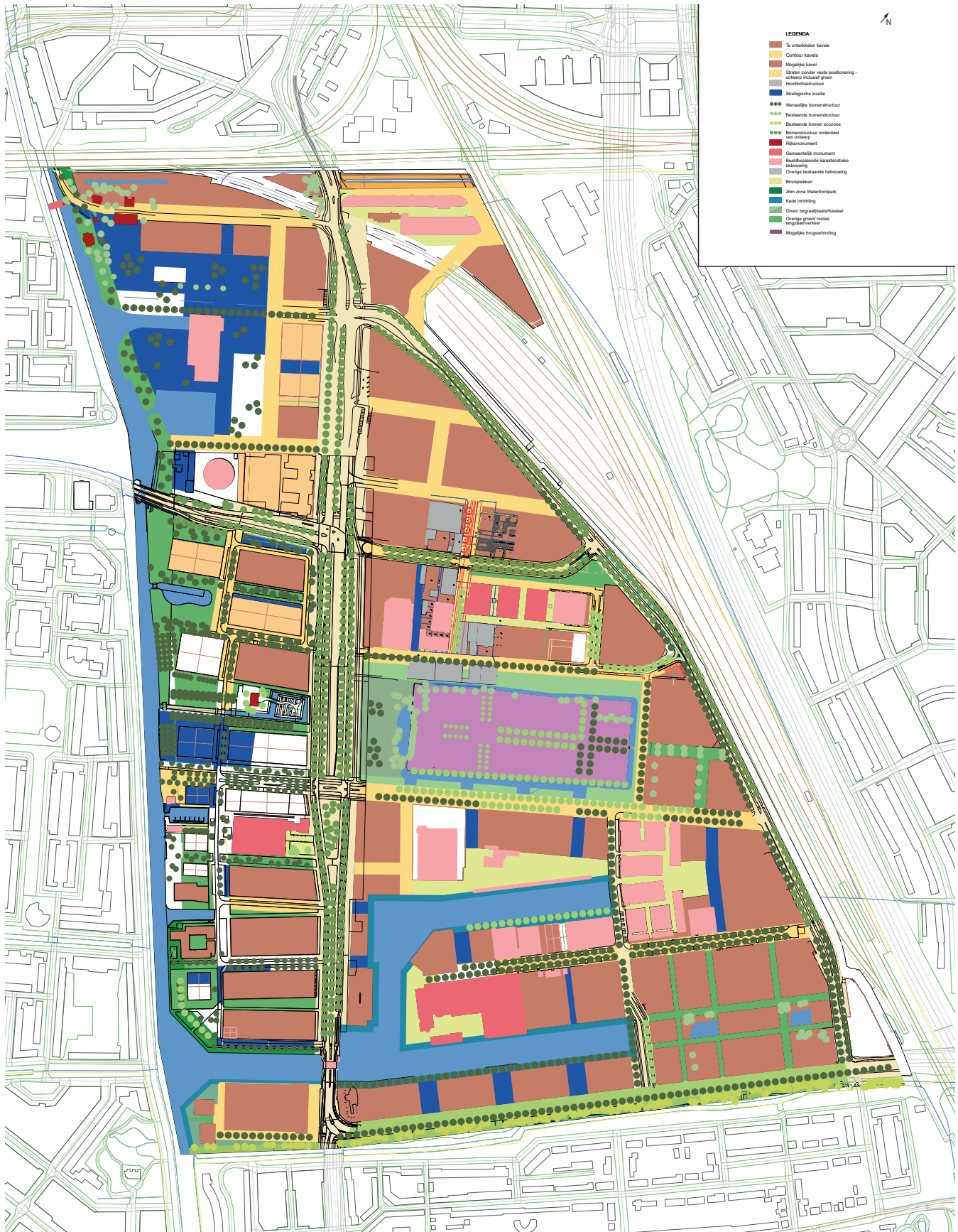
The Hague



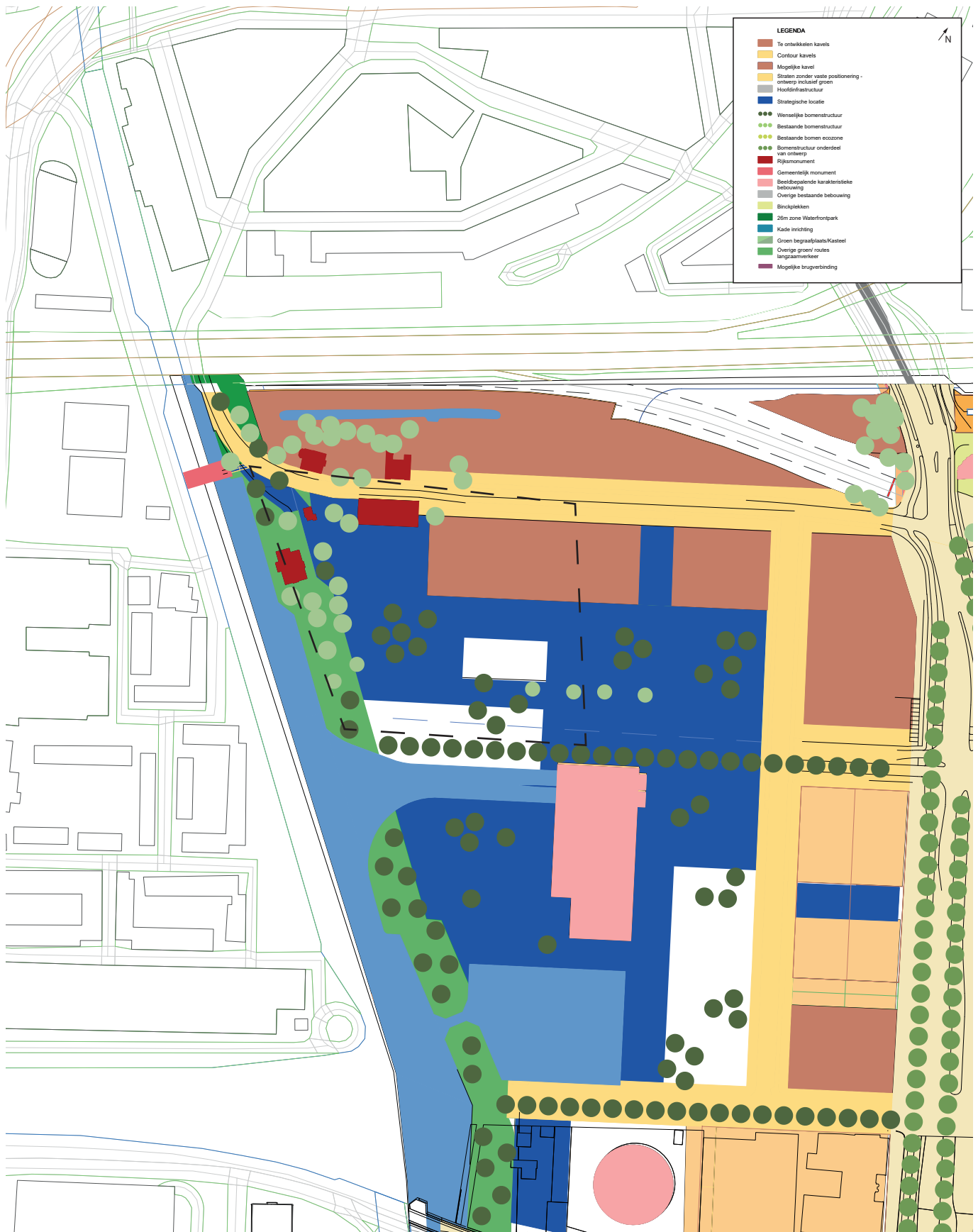
Binckhorst







This is the map 'bestemmingsplan' from the municipality of The Hague and it shows areas where they would favour a particular programme. It has been made clear that this plan is not a master plan and the borders are not set in stone, but they are rather an invitation to developers to discuss possible projects in the area. The brown areas clearly show how much denser they intend on building. Another big transformation is the design of the Binckhorstlaan, an important vein through the area that connects it. It is supposed to be much greener in the future.



Here the map is zoomed into the site where my building will be placed, as indicated by the dotted line. One argument for this site are the intentions from the municipality to create a long stretching boulevard in the area and to create to atmosphere of 'a park with buildings in it'. It is the start of my thought process about creating a site for the music marvel where on the one hand there are people just walking on the boulevard, slowing the place down and on the other side this green landscape from which the building can arise and interact with.

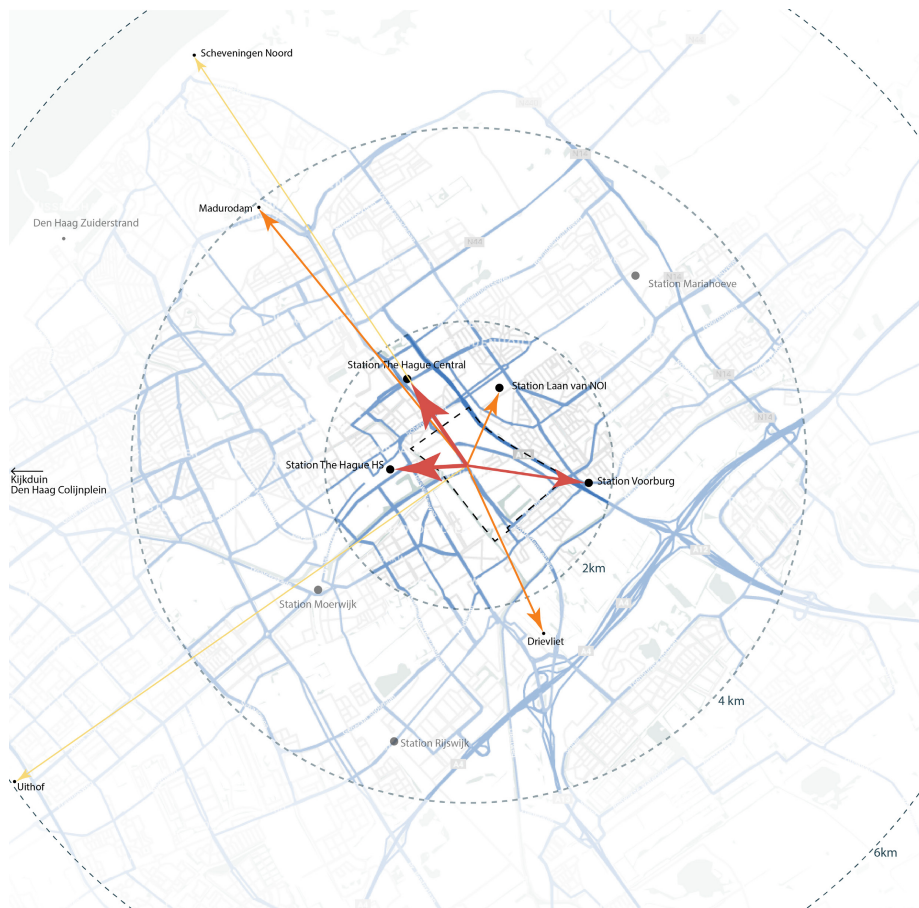
Connection

It can be concluded that the city of The Hague is a well connected city. Because of its important position in the country this is only a logical consequence. Both by car and by public transport it is possible to quickly reach other major cities in the Netherlands. It is only in terms of water and air connections that it is lacking compared to other big cities such as Rotterdam or Amsterdam.

The connectivity of the train vs the car is heavily determined by the area of The Hague where one has to go. Major hotspots such as the centre, amusement parks, sports halls or the beach are more interesting and faster to reach than by car. This is most applicable during the work week, when there are often many traffic jams coming in and going out of the city. When it comes to reaching the neighbourhoods it is easier to take the car, but here finding a spot to park can be the challenge. There aren't many places left where one can park the car for free.

The most important highways are the A12 and the A4 that lead into the city from Amsterdam, Rotterdam and Utrecht. For the train there is central station, but there are many other connections such as Hollands spoor, Laan van NOI, Mariahoeve and Voorburg, that bring people closer to their destination. Binckhorst, especially the northern part, is close to several train stations and has a direct access to the highway. It is only the transport within the neighbourhood that is lacking. There is a bus travelling the Binckhorstlaan, but for the rest it is easier to take the bike or the car.

In terms of people and living it is not that well connected. Because of the function of the area and the border from the water, the train tracks and the highways, it is almost like an island. People travel here during the day for work and leave the area empty during the night. This is a focus point for the future to improve upon and really include Binckhorst as an extension of the city centre, because even though it is so close to it, they have no current relation.

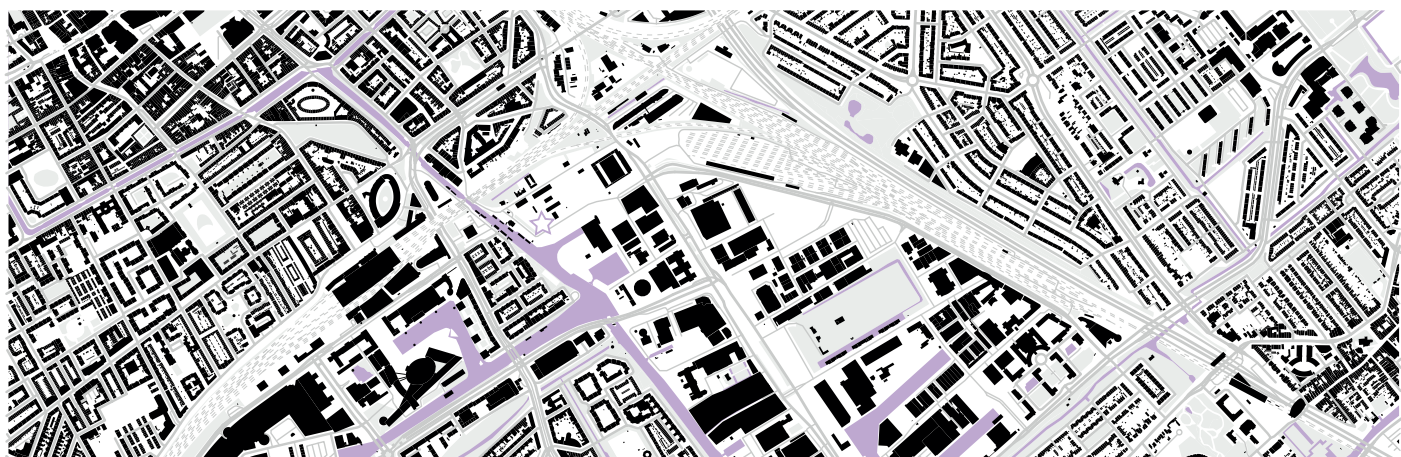




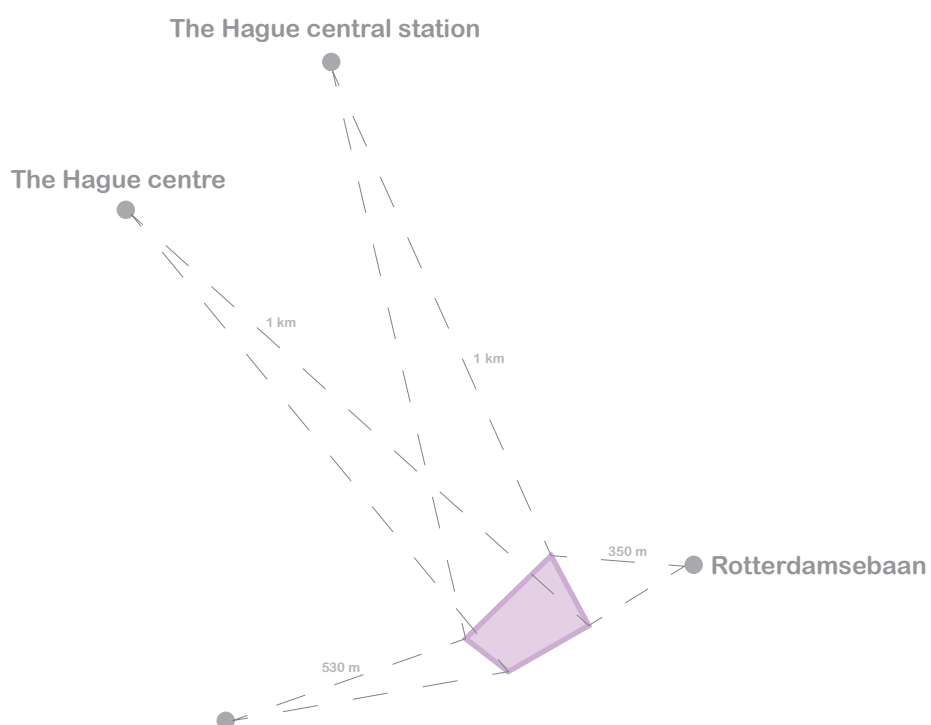
Barriers



Connections



Water



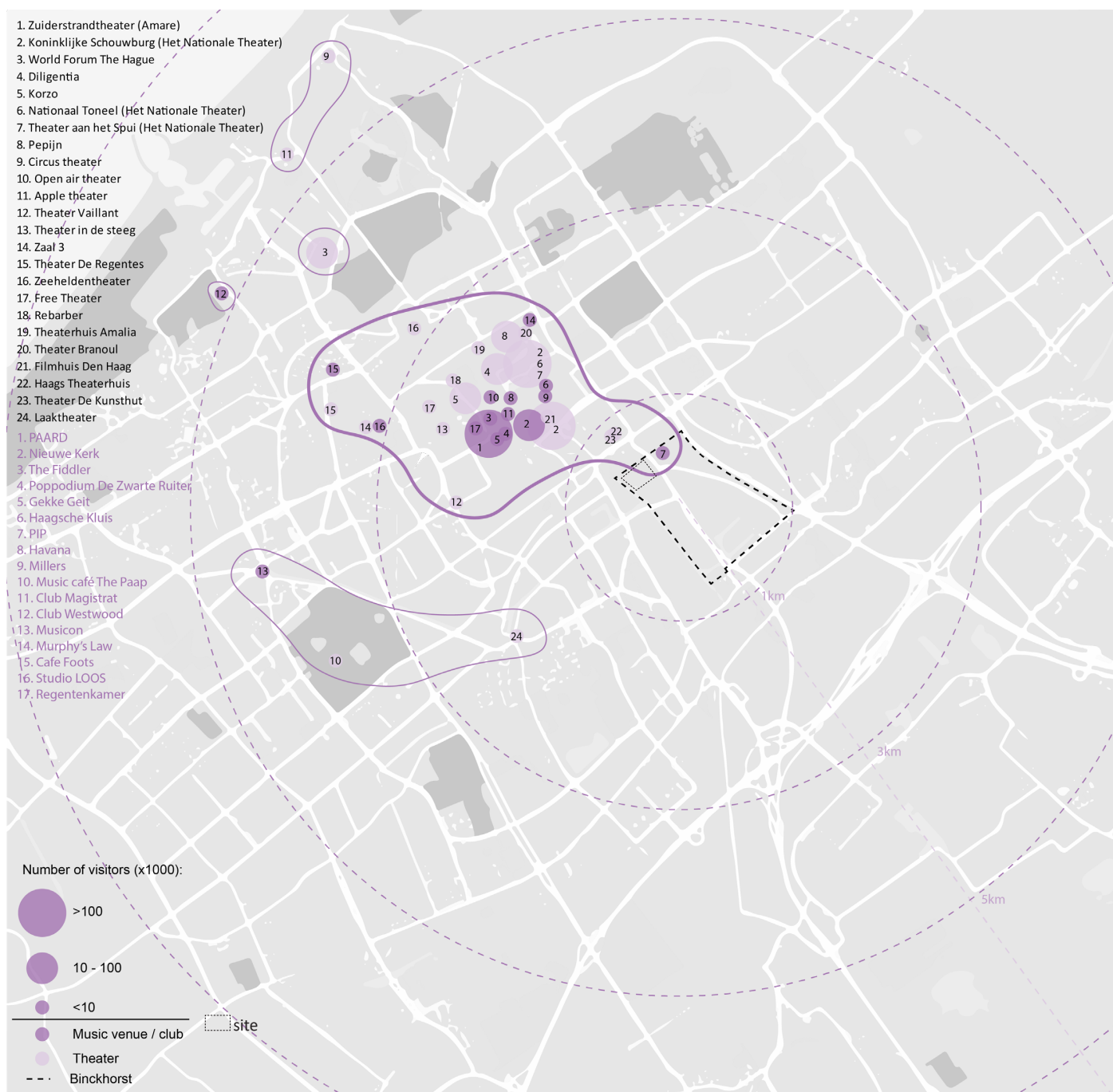
Culture

In the city there is an abundance of places for people to enjoy music in many different genres. It has 17 music venues as well as 26 theatres. The question arises how my new music marvel would fit into that crowd. Or even better, how would my music marvel stand out above the crowd.

When speaking of music, a distinction has to be made between the venues and the types of music. A club is not the same as a classical music venue and the crowd most certainly isn't either. The music venue PIP in Binckhorst is an underground venue, or at least that is how they describe themselves. Located in an old fire station they have an industrial and historical feel. The best way to describe it is as a nightclub.

The newest addition to the bunch, located in the city centre is Amare, a location for classical music and theatre. It is the most formal way of enjoying music, seated in a large audience. My music marvel is a response to both these locations and will not be a competitor.

Most of the music venues are located in the city centre. It is striking how close they are together, with some venues being completely on the other side of the city. Binckhorst is really lacking in this area if it wants to attract more inhabitants. My music venue is also located on the north-western edge of the neighbourhood. Even though this is because of transport and design reasons, this location could be an invitation for other venues to move further away from the centre and into Binckhorst.



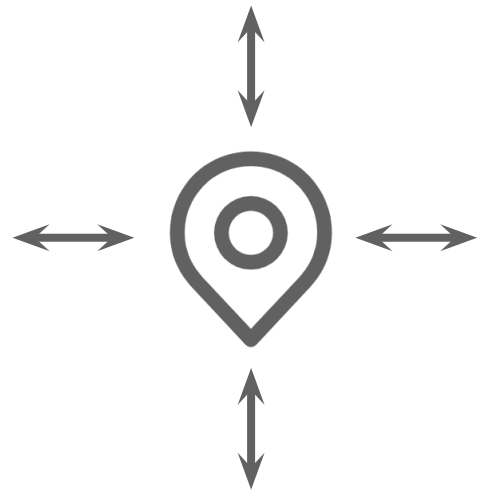
Conclusion from ccc

Binckhorst has a potential that still has to be unlocked. The plans for the future are just a promise, but could make the area an inviting place to be, with my music marvel acting as a catalyst for the border area. It could both be an invitation to people as well as more music and theatre to come to the neighbourhood, they could use some of both.

If the transport inside the Binckhorst area is extended it is a very easily reachable place, a real strong suit. The public transport and slow transport modes will have to play a major role if the municipality wants to keep this area car mellow, so the exact opposite of what it is now. The area has a great position in relation to the roads and trains.



Place for diverse music



Good reachable location



Music marvel as catalyst

A hybrid building

How can the music marvel of the future serve the contemporary architecture, characterized by its hybrid character, that is coming to Binckhorst?

1. What does it mean for architecture to be of a hybrid form?
2. How does this translate to the scale of a building plan and into user experience?
3. How will the music marvel, in this context, take a position towards the hybrid typology?

“Biologically, hybrids are formed by altering or hybridizing the DNA sequence of two organisms which leads to genetic variation. It is possible to apply this process in architecture and experiment if the architectural species will survive or not.” We can look at the built environment in the natural sense, it is something that is living and breathing, moving and growing or dying. A true hybrid is when the qualities of that offspring surpass the qualities of either parents. This process is called heterosis.

It is possible to create a hybrid building organism with multiple uses intersected, a retrofitting system that can support weaker activities. So when pondering on new creations in this sense, we also ask ourselves what it means for a building to be a hybrid from an architectural outlook and what makes it a success.

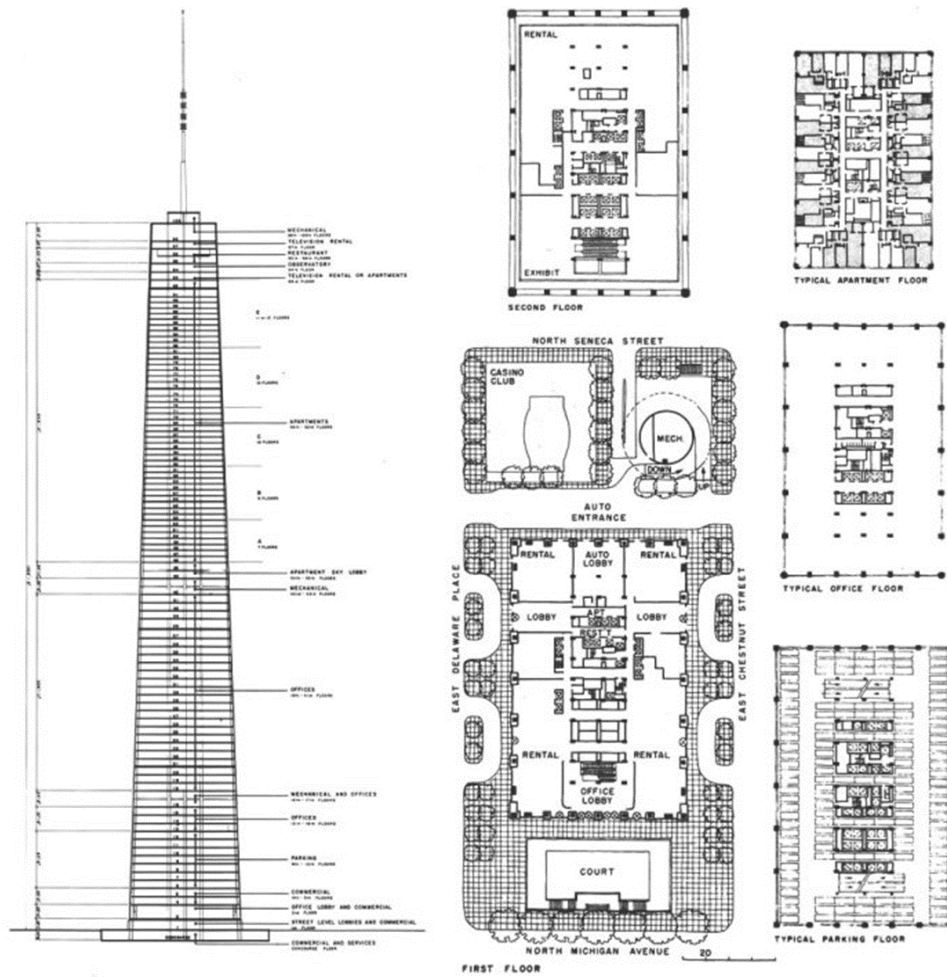
The personality of the hybrid is a celebration of complexity, diversity and variety of programmes.

It is the crucible for a mixture of different interdependent activities. The ideal hybrid feeds on the meeting of the private and public spheres. The permeability of the hybrid makes it accessible from the city and the private use of its services extends its timetable to 24 hours a day. This means that activity is constant and is not controlled by private or public rhythms.

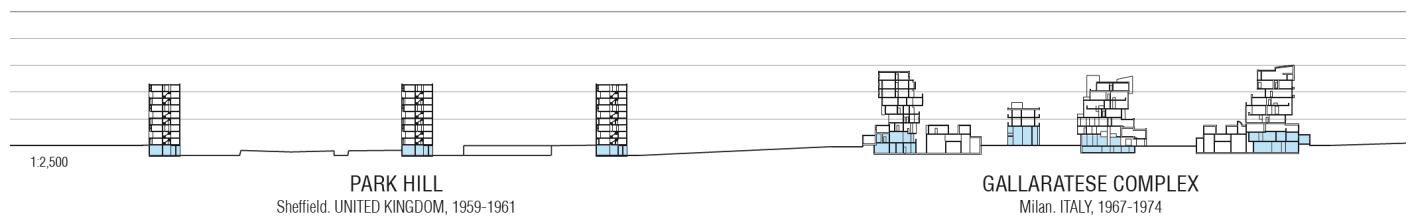
Hybrid vs mixed-use vs social condenser

In the book *This is Hybrid* there are three typologies laid out to help gain a better understanding of the idea of a hybrid, the first of course being of a hybrid, second a mix-use building and the third a social condenser.

When researching this terminology, one can quickly conclude that there is no clear definition of the terms and is often substituted for the term ‘mixed-use’. However, these two terms differ in their meaning. A mix-use building and a hybrid are the two ends of the same scale. Mixed-use means that the building contains several functions under the same roof, but they are not mixed. Their spaces are simply back to back. Generally, the functions placed in the building have nothing in common with each other. On the contrary, hybrid buildings contain functions and spaces that are integrated with each other and interact. These functions may not always be complementary, but they might share the same target group. The sum of the parts of a hybrid building is always greater than the parts separated. This does not go for mixed-use buildings. The hybrid building will always fight against those segregationist morphologies that allow the escape from some use and looks to unite, inside their area of influence, all of the activities that can provide life to it. The top figure on the next page shows an example of a hybrid building: John Hancock centre. The bottom figure on the next page shows an example of a mixed-use building: De Rotterdam.

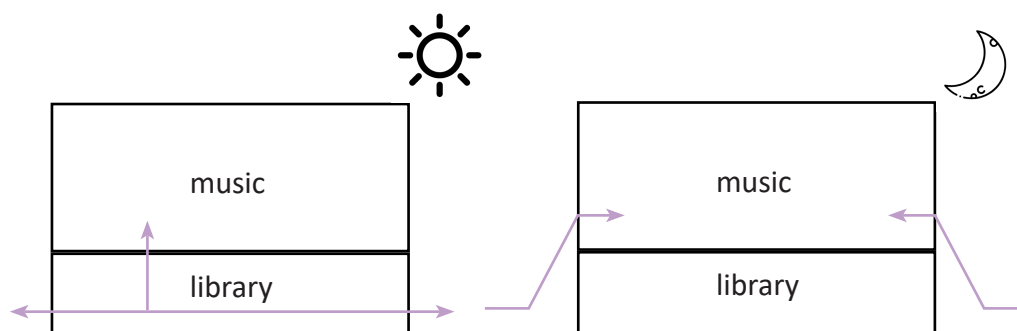


The third type mentioned is the social condenser. The social condenser stems from a soviet constructivist theory during the late 1920's that architecture has the ability to influence social behaviour. The intention of this idea was to influence the design of public spaces by breaking down social hierarchies and create socially equitable spaces. The alienation and privation of bourgeois or peasant life would be overcome and communities of equality and empathy would arise. The built form of this idea would lead to public plinths and mixed circulation to encourage encounters. This typology can be viewed as the basis for the hybrid building. The main difference is that there is still a clear division between the public and the private, whereas with the hybrid this border is dissolved. The figure below shows two examples of social condensers. Public space is marked in blue.



Interesting case studies

'Glass mountain' muziekgebouw Eindhoven

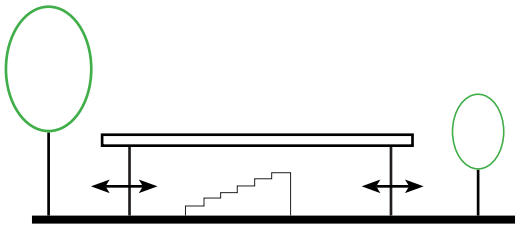


The glass mountain is a music venue built on top of an existing library. It is part of a bigger plan to upgrade the city centre of Eindhoven. The strong feature of this design is that the combination of these functions result in a long use of the building throughout the day and night.

House of Hungarian music, Budapest



This venue for classical and hungarian music is located in a green area outside of budepest. The interaction with the surroundings are very important for this project. They embraced this in the design by having a glass facade in the music hall, resulting in having nature as a backdrop and letting in a lot of natural light.

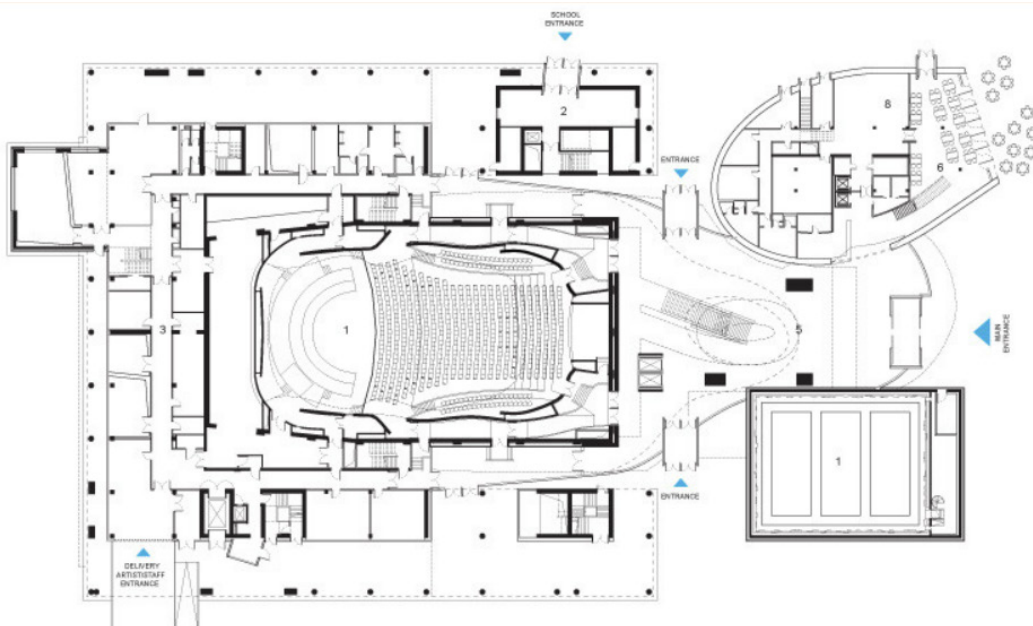
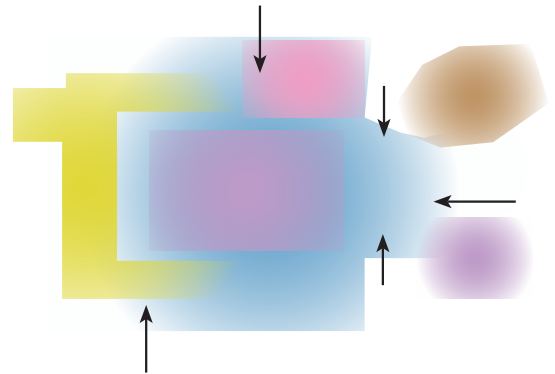


House of music, Aalborg



The architects describe this building as a shared hybrid space that becomes a center of inspiration. *"both of the shared-synergetic behavior and of the form and expression of the architecture.."* The building has cultural and educational functions that are connected via a shared public and performance spaces.

The functions in the building are both together and apart based on the needs. Everything has its own entry, but once inside spaces blend.

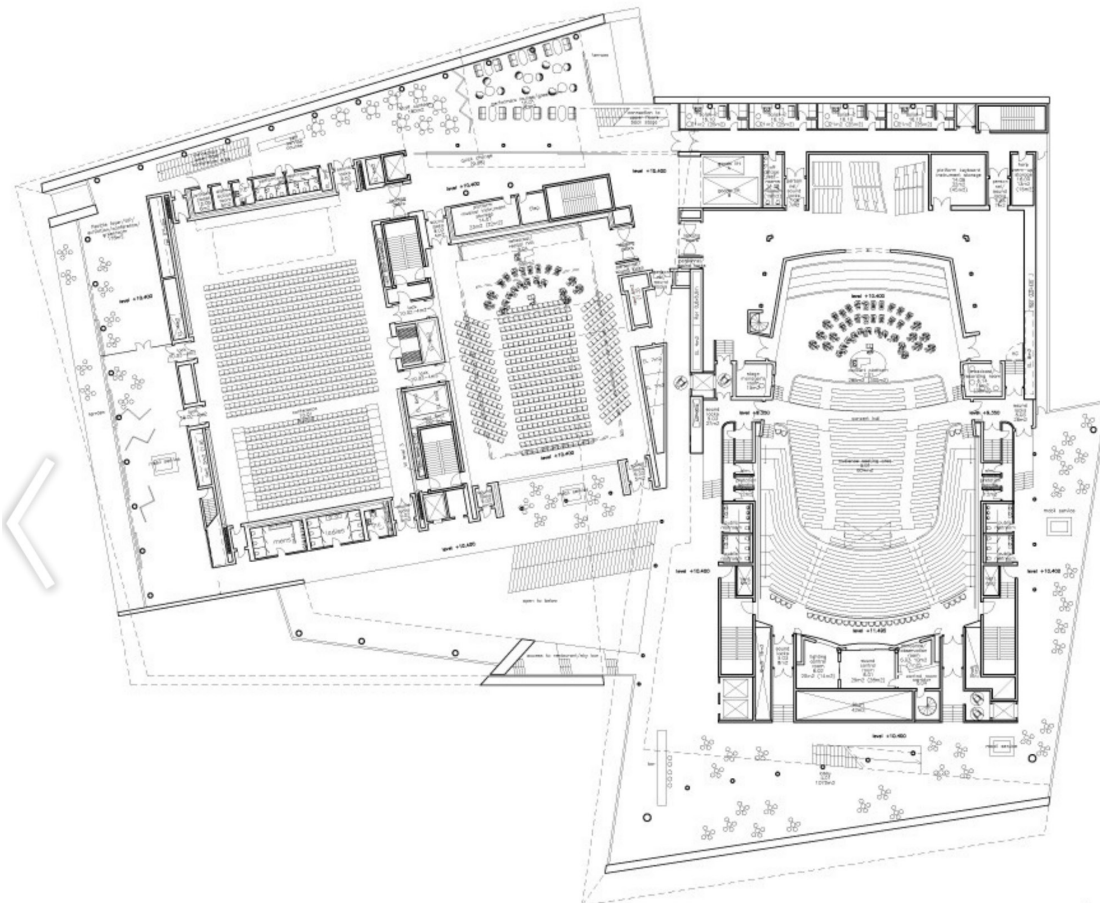


- | | |
|----------------------|---------------------|
| 1 PERFORMANCE SPACES | 7 BAR |
| 2 MUSIC EDUCATION | 8 KITCHEN |
| 3 BACK STAGE | 9 LIBRARY |
| 4 ADMINISTRATION | 10 TECHNICAL SPACES |
| 5 FOYER | 11 STORAGE |
| 6 RESTAURANT | 12 PARKING |



0 5 10 15 20 25m
LEVEL +/- 0.00 | 1:500

Harpa concert hall and conference centre, Reykjavik



East Harbour Project – Reykjavik CCC
Conceptual Design

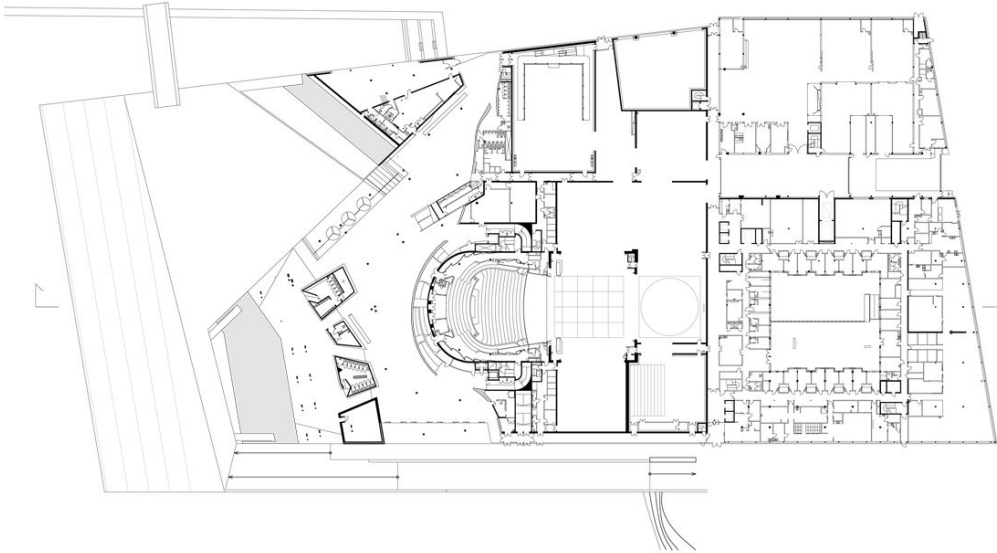
Level 2
Scale: 1:400
Date: 27.01.2006

Rev: 31.03.2006

F

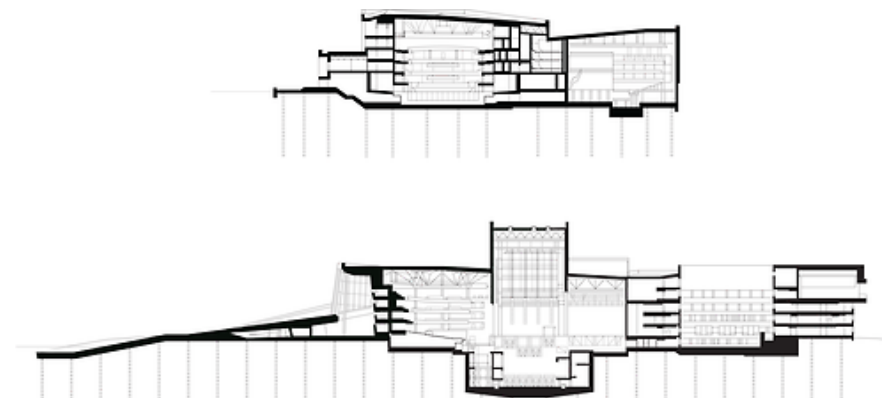
With this reference project the thing that stands out the most are the facade and the lines through the building. The different angles facades, both vertically and horizontally, make for a very interesting floor plan. It shows how such spaces can be used. The face has an interesting pattern and uses a combination of normal and coloured glass. These two together create patterns inside the building as well when the light hits.

Oslo opera house

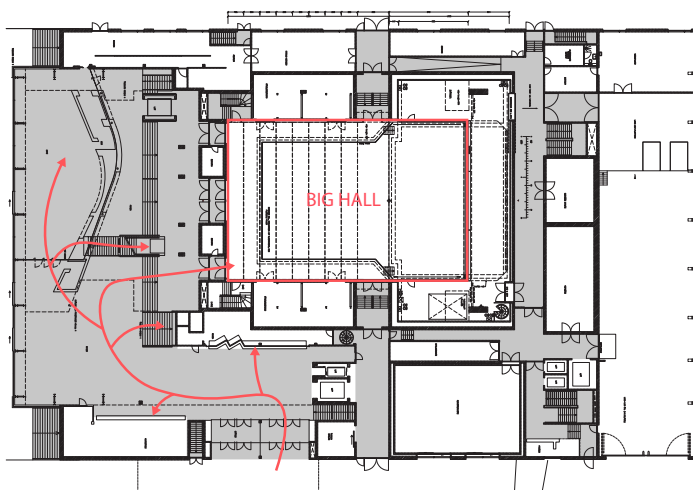


In terms of design, this project is what would come the closest to my design principles. It is a combination of closeness to the water and integrating the roof as a part of the landscape. The effectiveness of the design is illustrated well in the second photograph, where it is clear that people can enter the rooftop from different points and enjoy the sunlight.

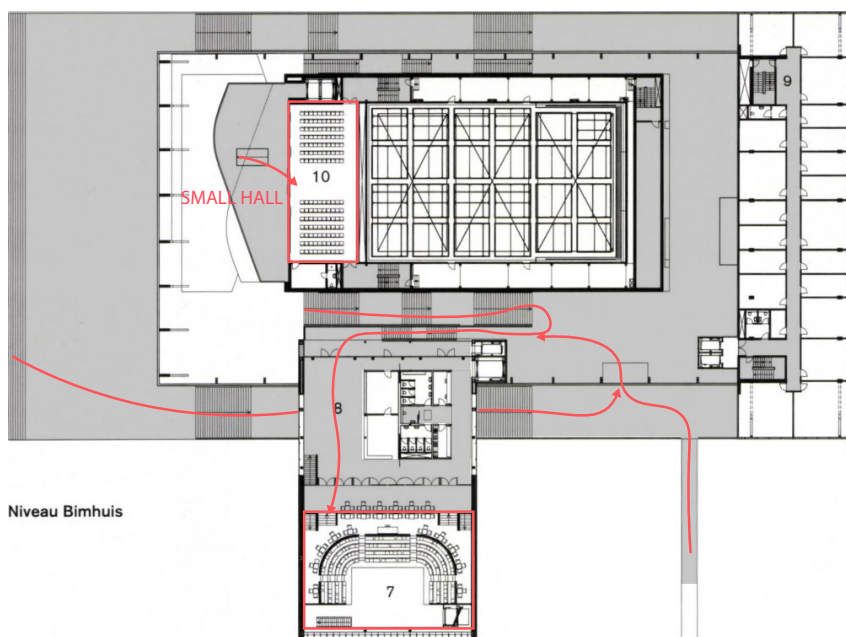
Also noticeable is the transition from the angled walls sloping up the building on the left of the floor plan to the more orthogonal side on the right side.



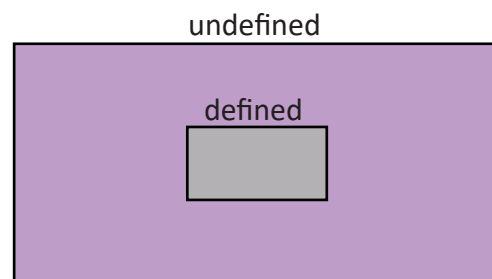
Muziekgebouw aan 't IJ



What is executed well in this design is the undefined space around the defined space. The circulation space is indicated in gray, but many times it is more than circulation space, it is also event space. This is an important factor that I thought was really charming to integrate into the music marvel for Binckhorst.



Niveau Bimhuis



Findings from the case studies

Use day and night

By combining seemingly contrasting functions in one building you can create a space that is used throughout the day.

Relation to the landscape

When reacting and interacting with the landscape it can become an integrated part of the building and be a backdrop to the programme.

Blending spaces

Even when some spaces are not usually mixed, blending the borders can lead to an interesting combination that asks for interaction of the user.

Possibilities for combining angled with orthogonal spaces

When played right the combination of these spaces can lead to unique, but still usefull shapes

Roof entries

One can use the roof as a part of the building, to invite the user up higher and in that way enjoy both the building and the landscape.

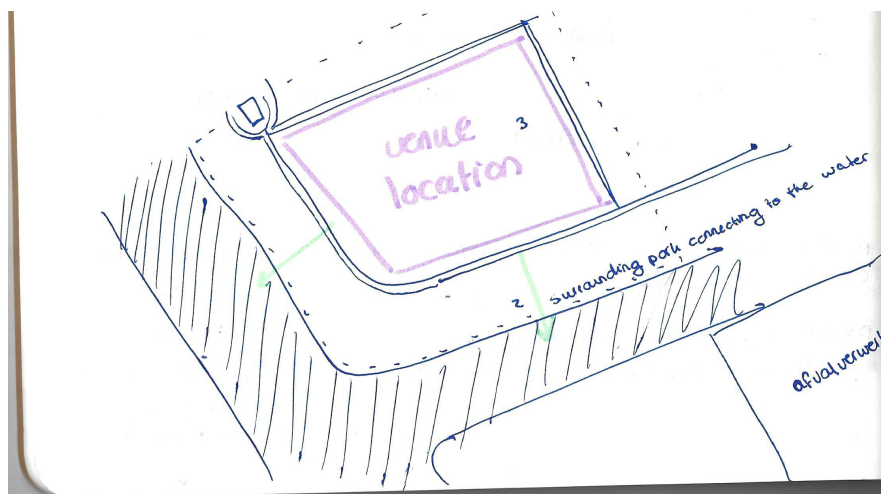
Creating undefined spaces

By purposely designing undefined spaces it leaves room for temporary programmes that make the building more than just the programme.

Design journal

D2

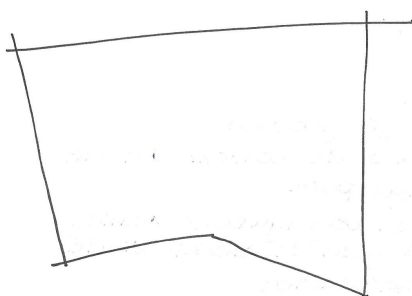
Design journal



1: volume : 93 800 m^3
area : 7000 m^2

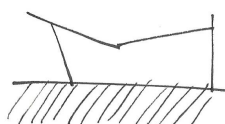
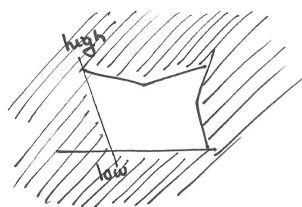
2 volume : 37 189 m^3
area : ~~88~~ 1425 m^2

3 volume : 26 000 m^3
area : 628 m^2



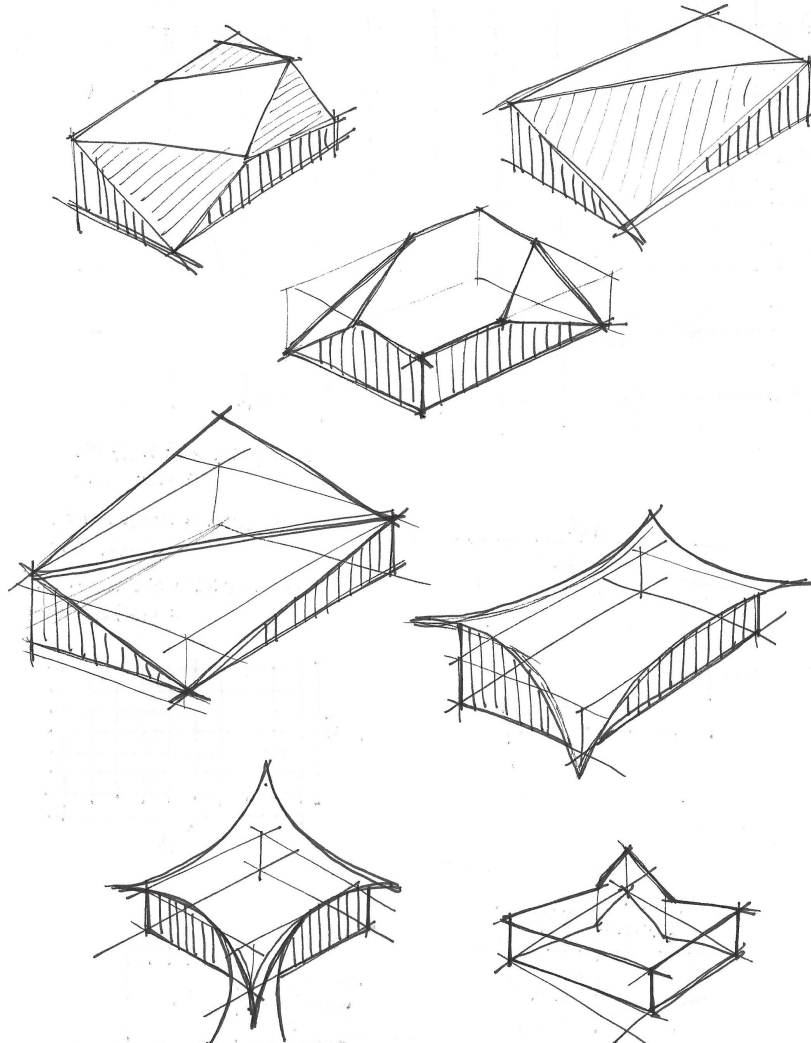
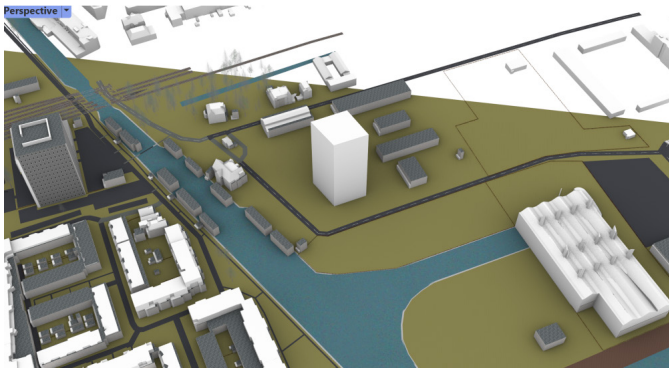
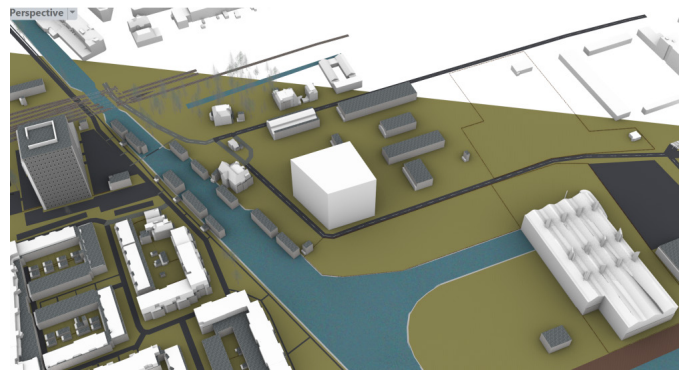
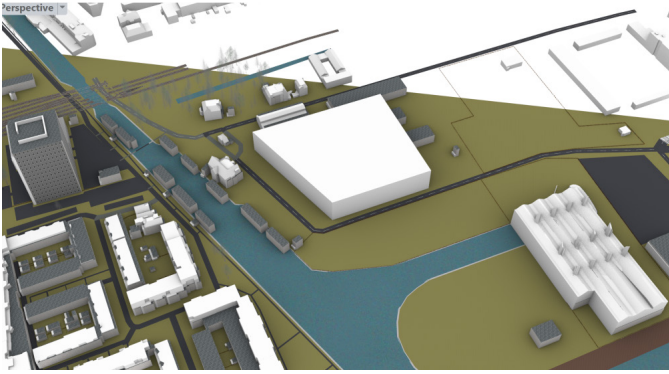
large venue = 1500 - 5000
visitors

stage (main) = 250 - 500
 m^2 $h = \sim 11 \text{ m}$



hybrid front to back. More open towards waterside.
Closer and logistics at the back. Logistics inside
building.

Mass study

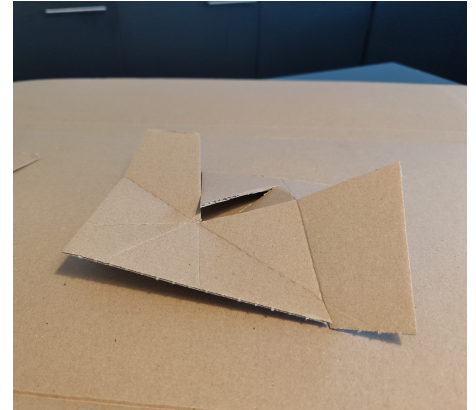
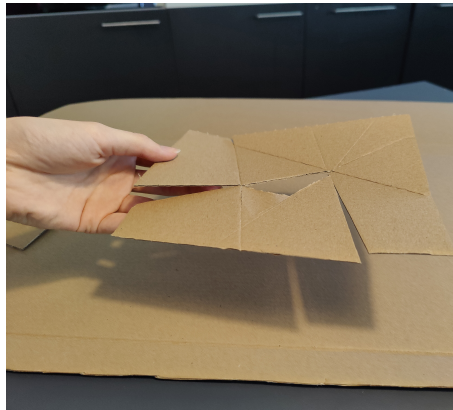


Model making

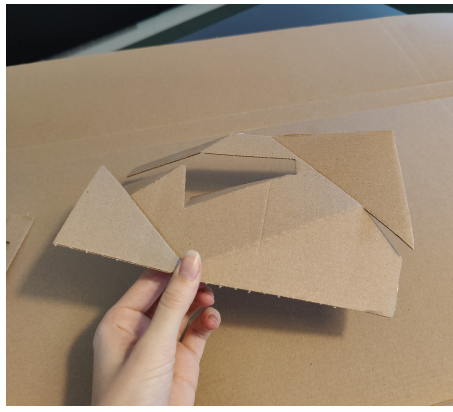
Making masses



Roof option 1



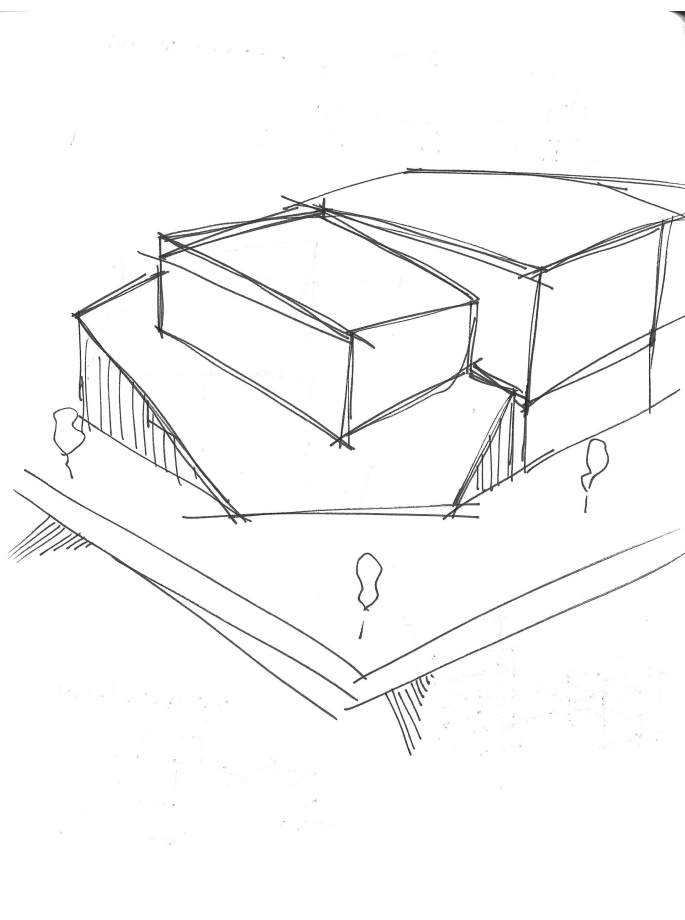
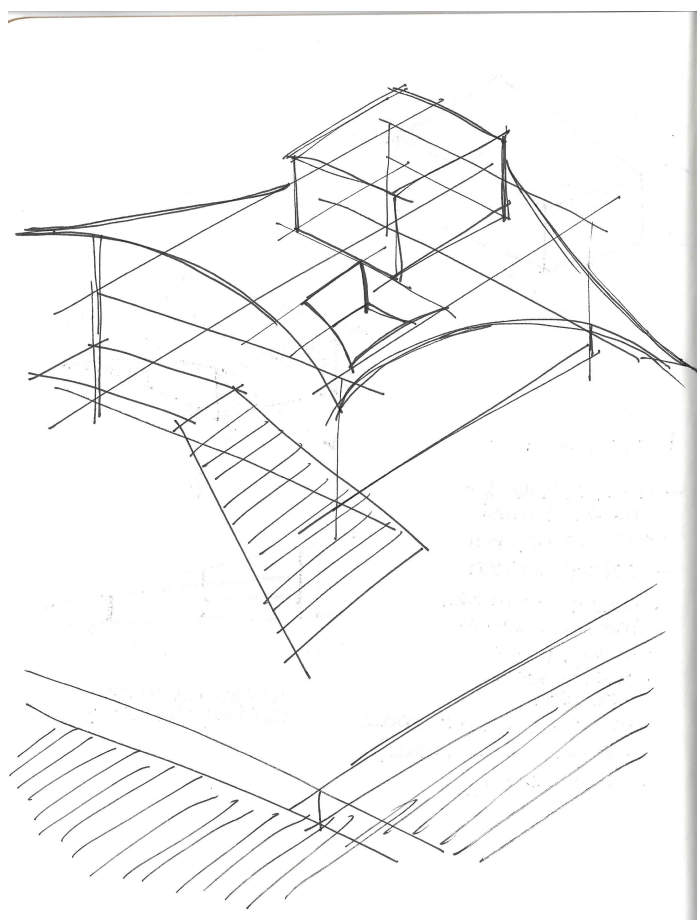
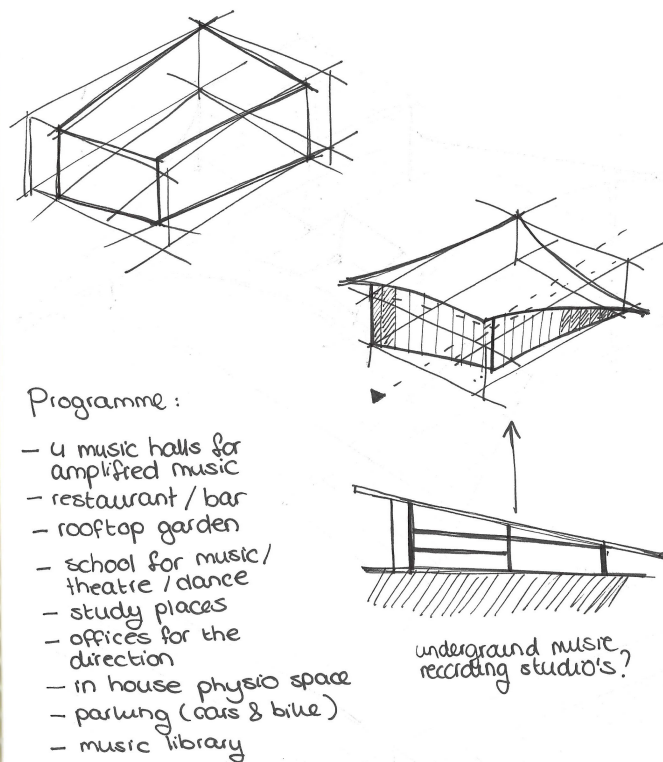
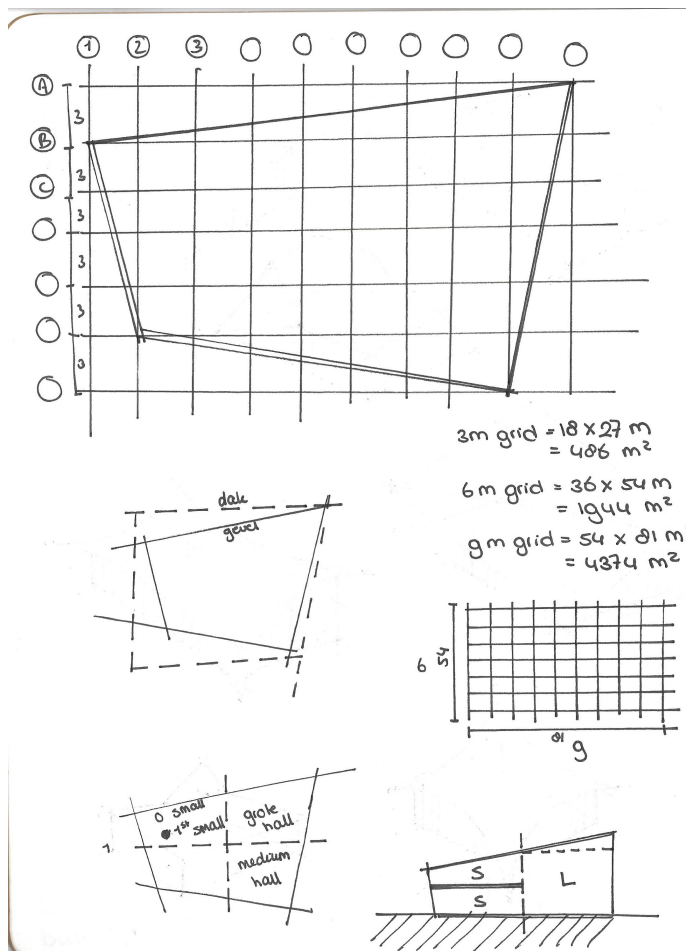
Option 2

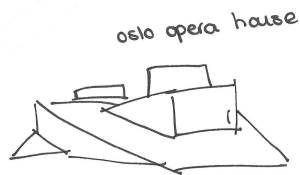
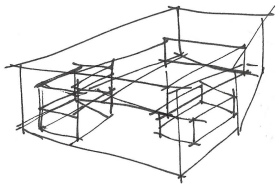
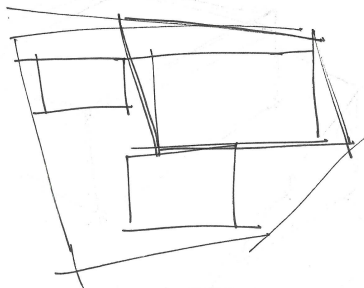
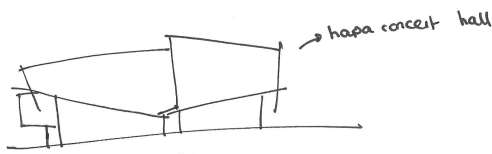


Option 3



First sketches





top view



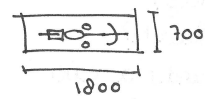
To do in Rhino:

- 1) model 2 versions of the 'base' of the building.
(Use separate layers)
- 2) Model 2-3 versions of the roof

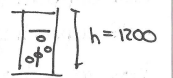
I like:

- The slanted paths that go up on the side of a building (and sometimes also be a roof)
- Making the roof have incapings so that it looks like stairs and people can sit on it.
- The greenery of the park going slightly up the roof

bike parking space



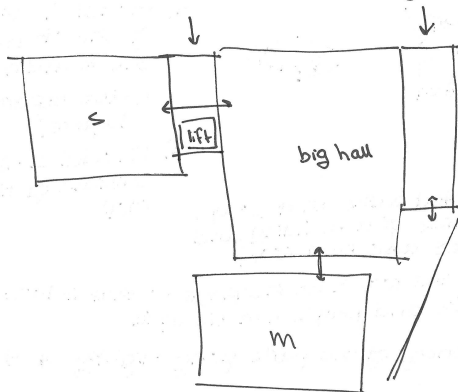
1.26 m² / 2 bikes



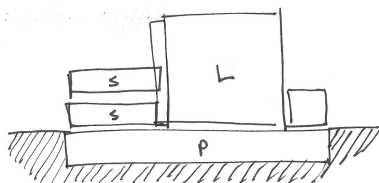
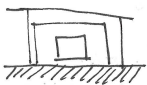
h=1200

parking spaces → paradiso: none
muzielgebouw: sdo
ziggo dome: shared with AFAS and arena
P1-P5

logistics



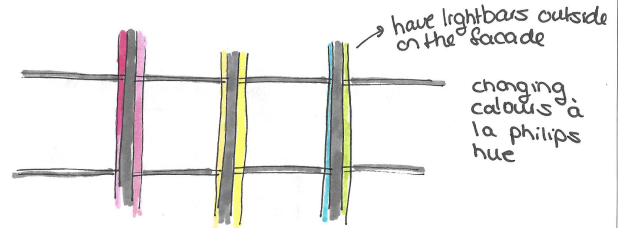
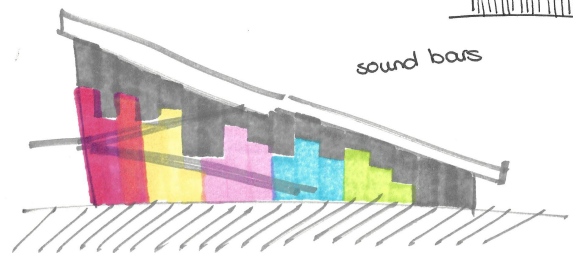
self supporting roof?
self supporting facade?
box in a box under a cover



sound wave



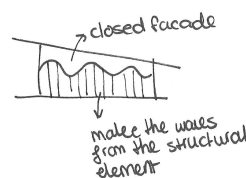
sound bars



have lightbars outside on the facade

changing colours a la philips hue

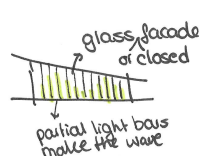
1



closed facade

make the waves from the structural element

2



glass facade or closed

partial light bars make the wave

3



closed

coloured glass (solar panels)

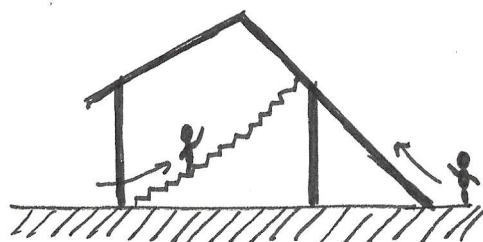
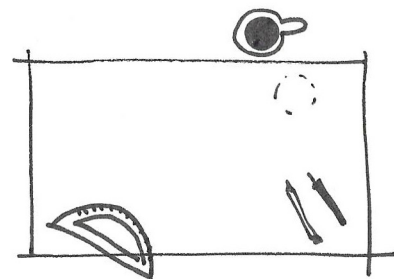
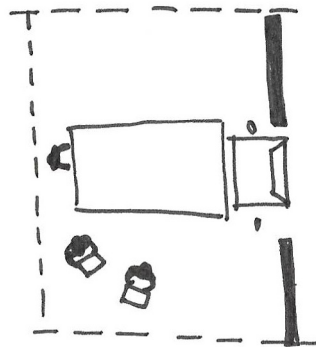
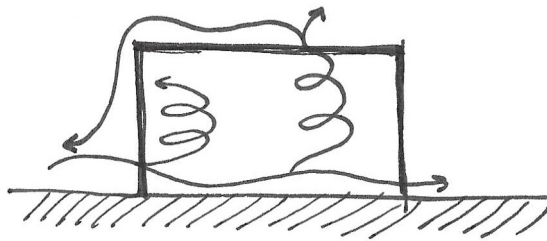
Design principles

ARCHITECTURE/DESIGN:

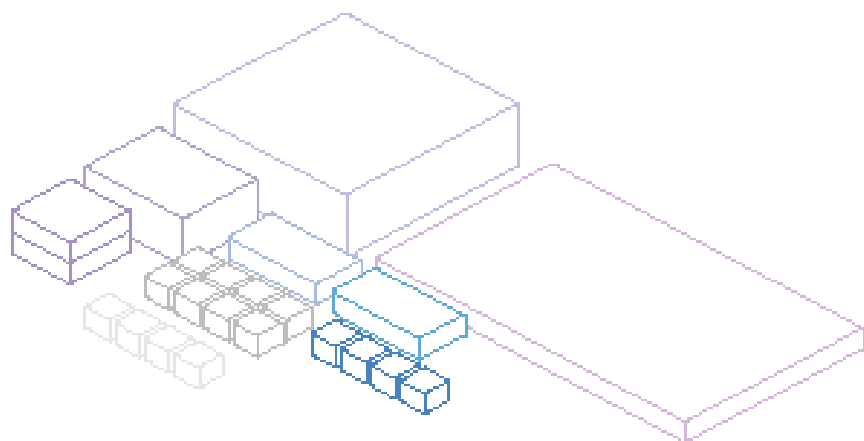
- 1 Hybrid design
 - o Building should be open and accessible, programme should lift each other up
- 2 Orient the spaces around the halls towards the park/boulevard area
- 3 Logistics inside the building
- 4 Design the undefined space for potential use as well
- 5 Accessible roof

E

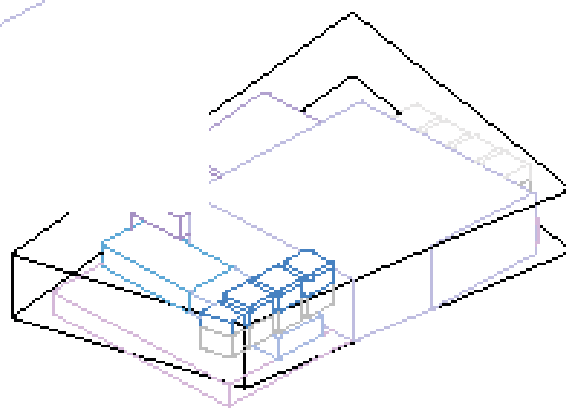
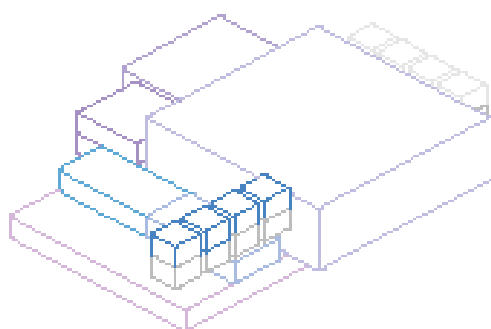
Schematic design



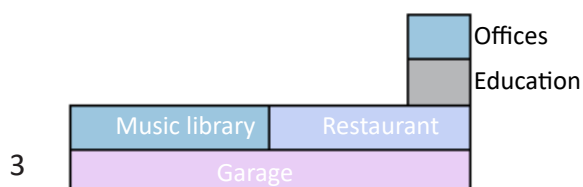
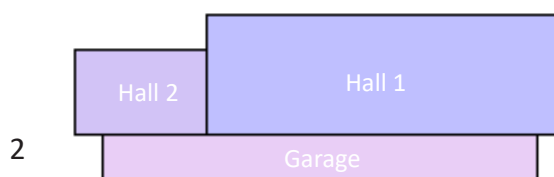
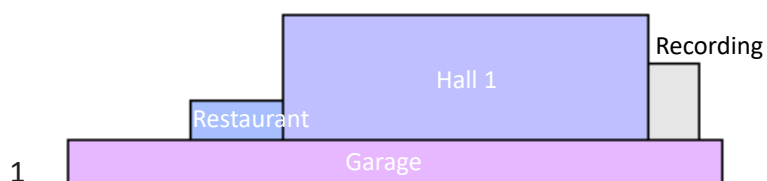
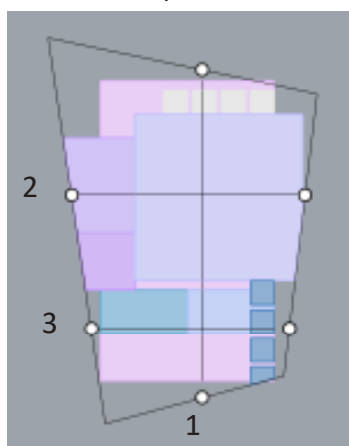
Programme



Big hall
 Medium hall
 Small hall
 Garage parking
 Restaurant
 Music library
 Education space
 Music recording
 Office



Top view

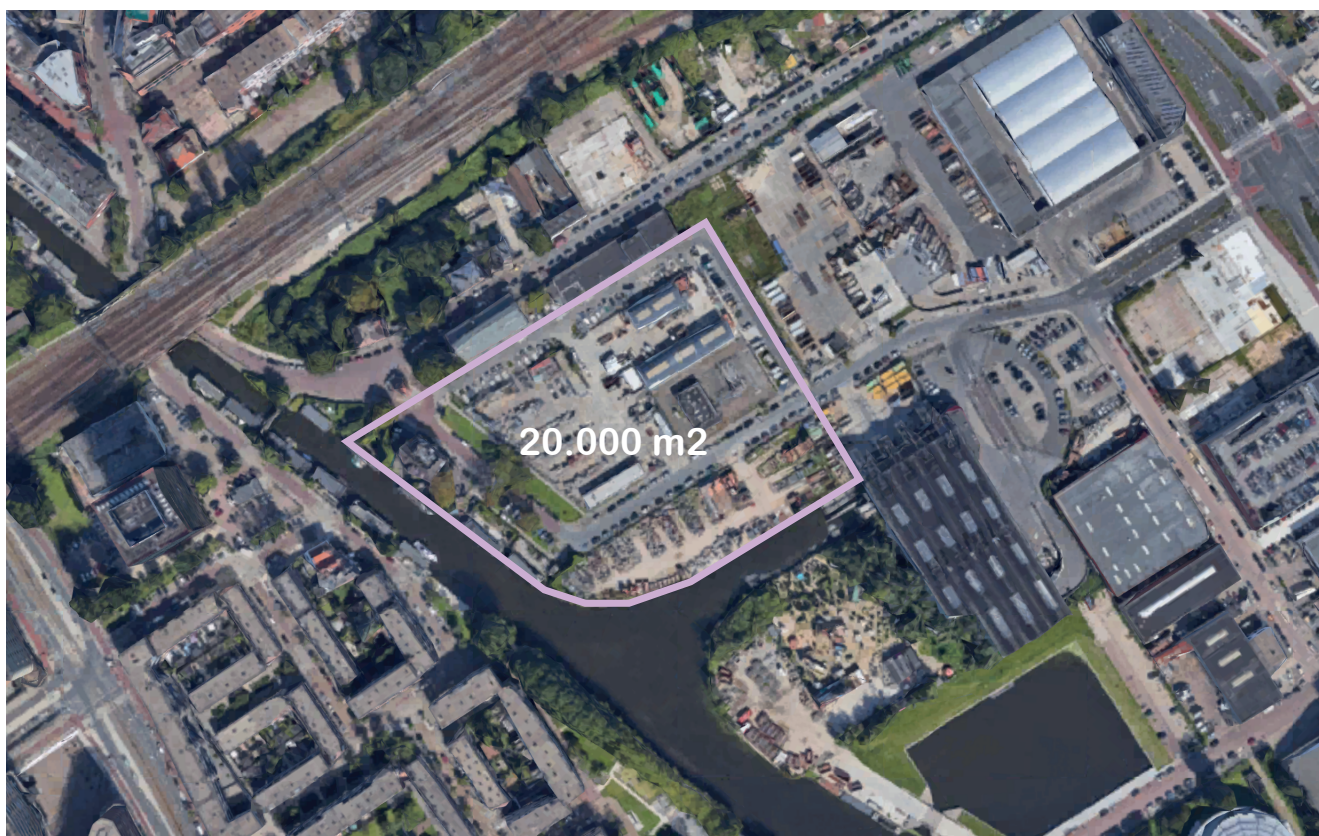


Site

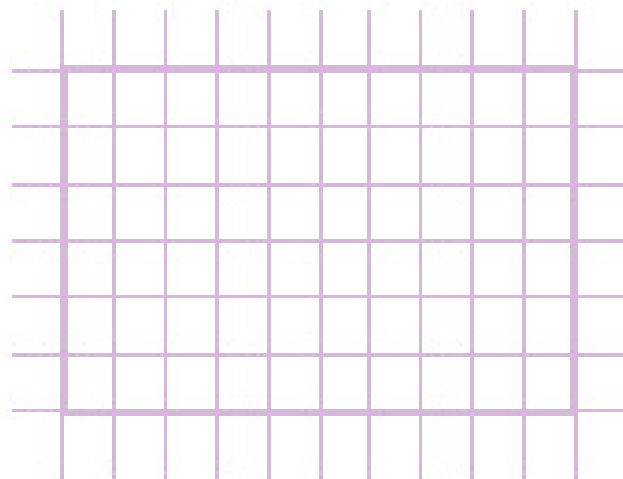
Binckhorst, The Hague, Netherlands



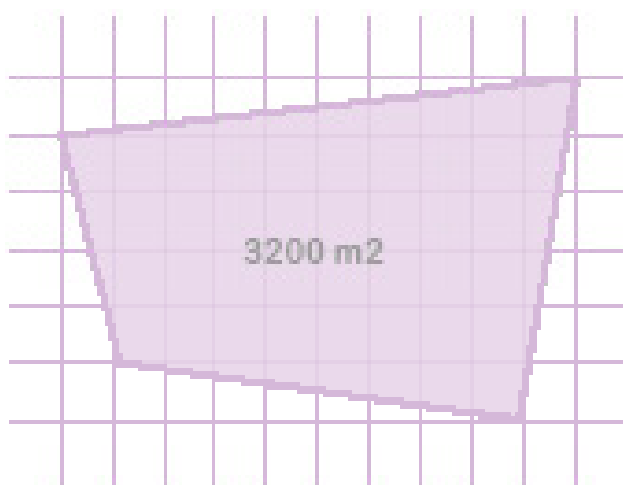
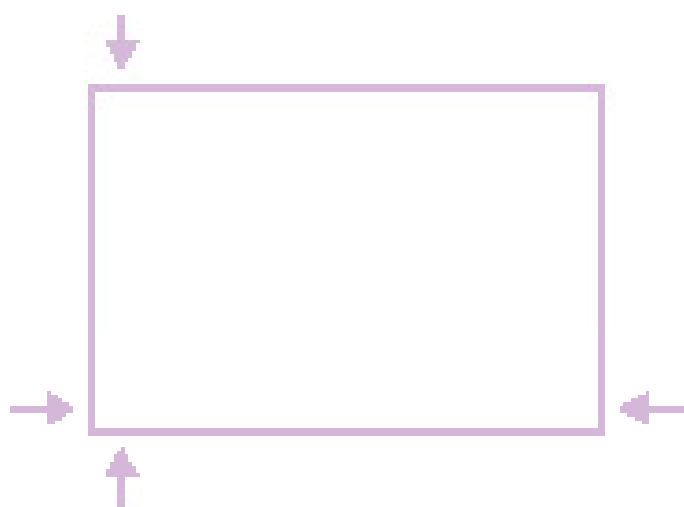
Site location



3000 - 4000 m²
building ground



Grid 9 x 9 m



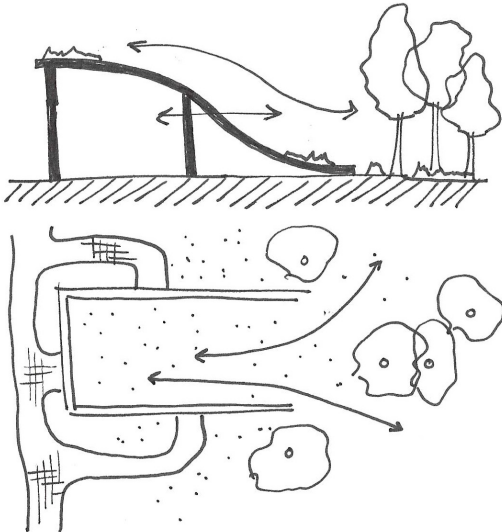
3200 m²



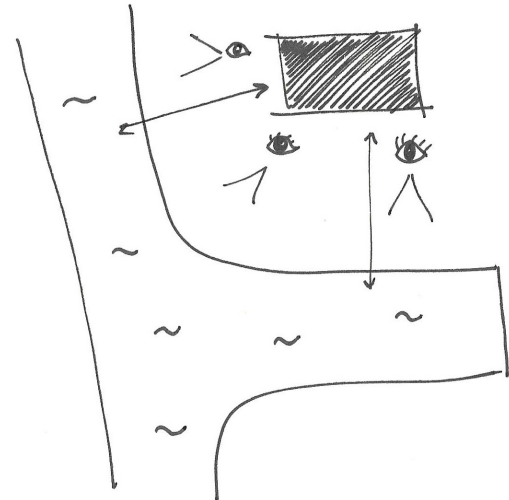
Principles of the site

1. interacts with the park surroundings
2. makes a connection with the views to the water and the boulevard
3. accessible from all around, not one clear main entry, but several entries for its several purposes.
4. eyecatcher for the area
5. encouragement of slow movement through the site

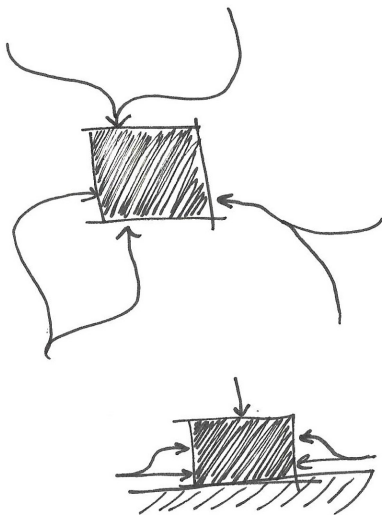
1



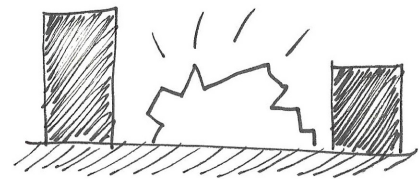
2



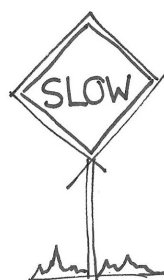
3



4

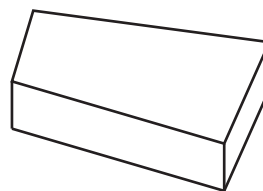
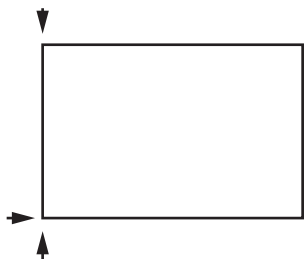


5

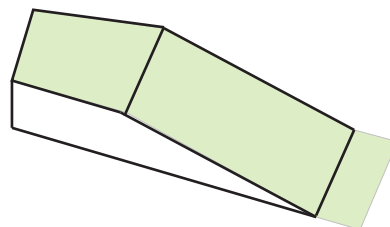
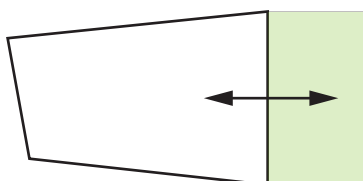


Design concept

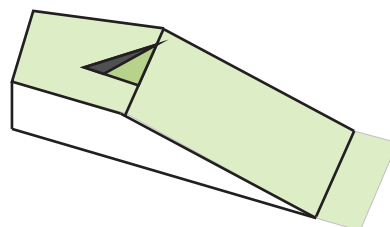
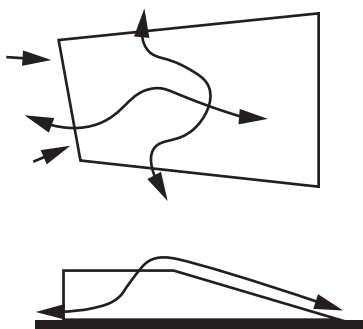
Fitting the programme



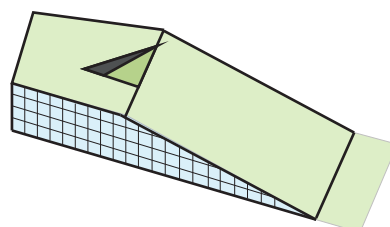
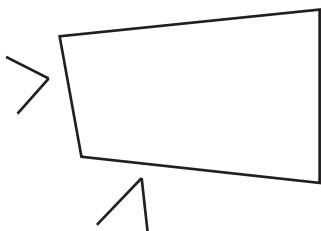
Connection with the landscape



Accessibility



Views to the water



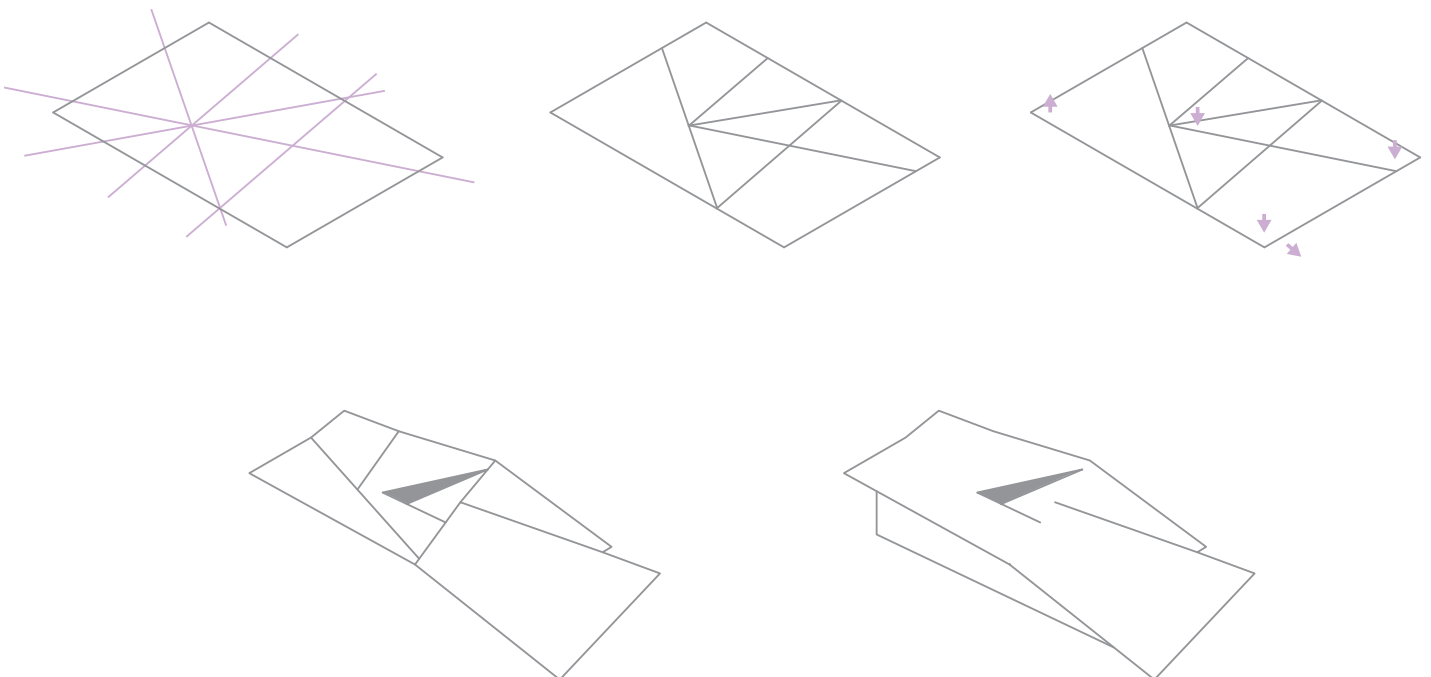
A concert hall that integrates more than just music, forming a hybrid design for the area. It includes the surroundings into the design and stands out from the building blocks of the city. Being built in the future parks surroundings it cannot interfere with this atmosphere, but work with it. For this reason the roof becomes an extension of the park, emerging again at the waterfront to embrace to view.

It must be integrated and yet accessible. A visitor should be able to come to the building for both the whole experience or a targeted visit. Spaces therefor have their own entryways and none of them are the 'main entry' of the building. This way the separate elements of the programme can continue to act without the support from the others when needed, really embodying the idea of the hybrid building.

Visitors can walk up onto the building and either enjoy the view, the sun or the seating or go on into the building and visit the programme inside. This way it should attract visitors who don't need to be at this occasion for the building per se, but just enjoy the surroundings and the landscape.

Once inside, the programme invites different groups of people to interact, because of the undefined space between the zones of the building. Music lovers can interact with restaurant visitor, who in turn can interact with students sitting down to do some studying, all while able to enjoy the large glass facade, pointed towards the waterfront of Binckhorst.

Roof concept

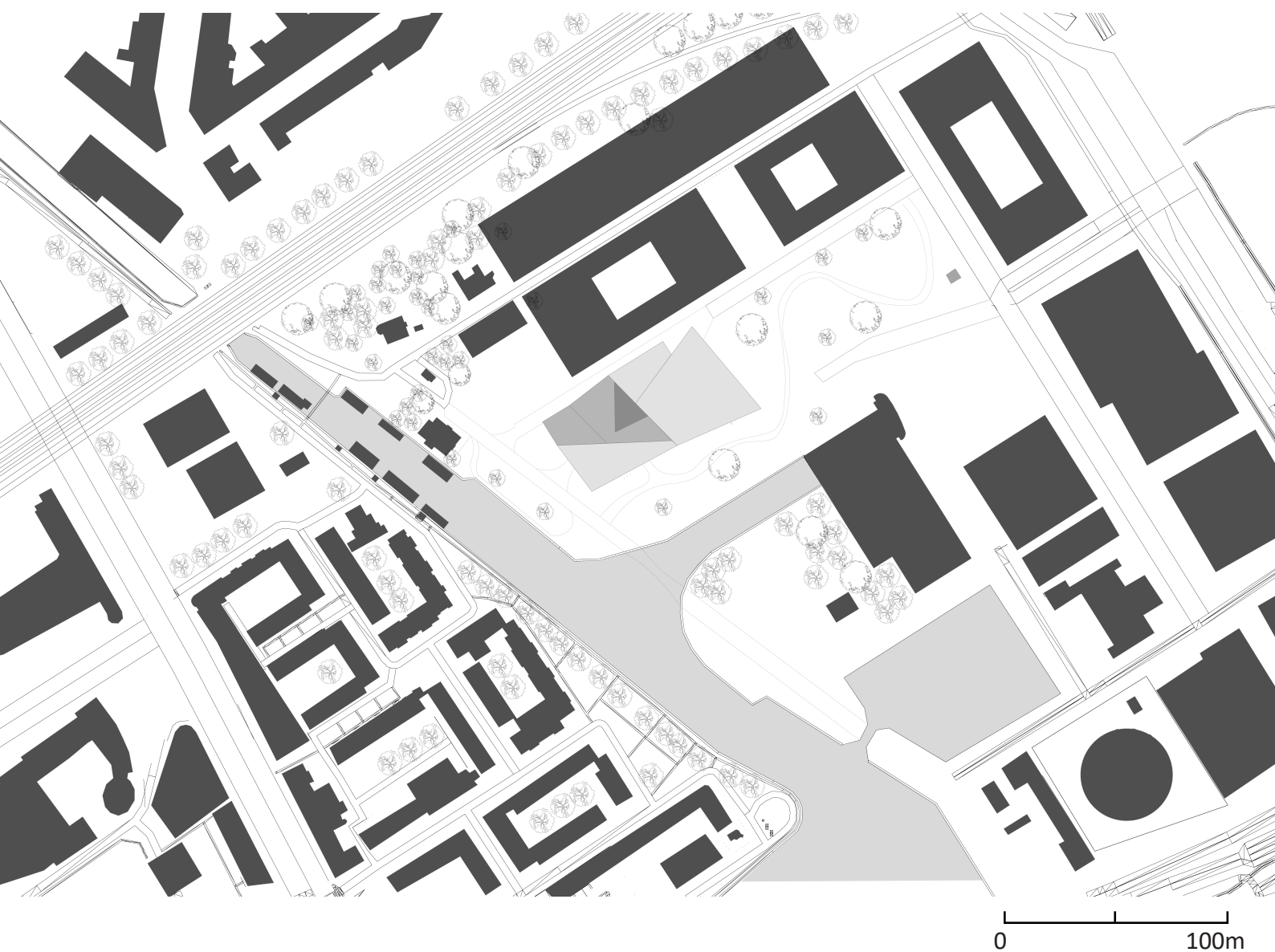


Current site

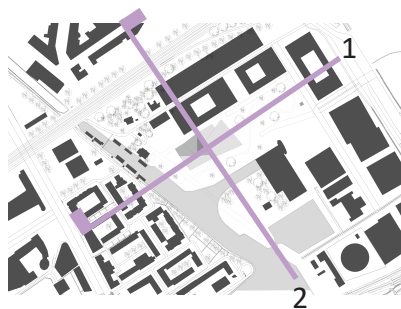
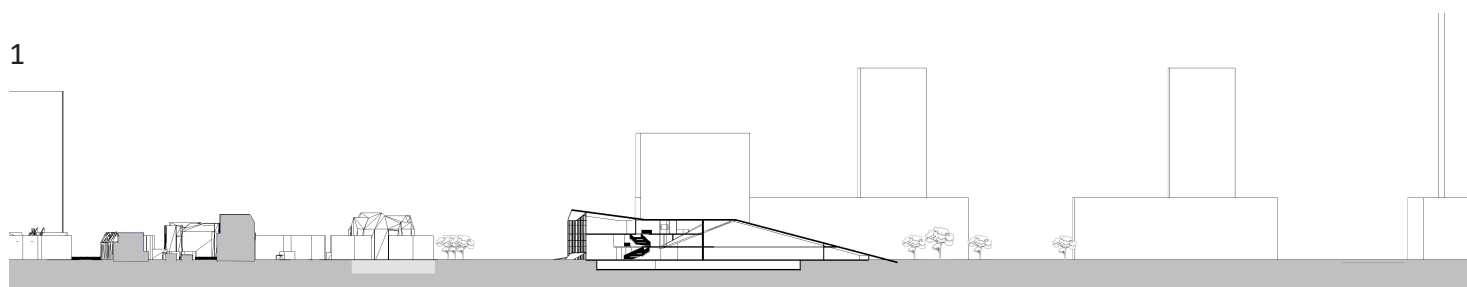


0 100m

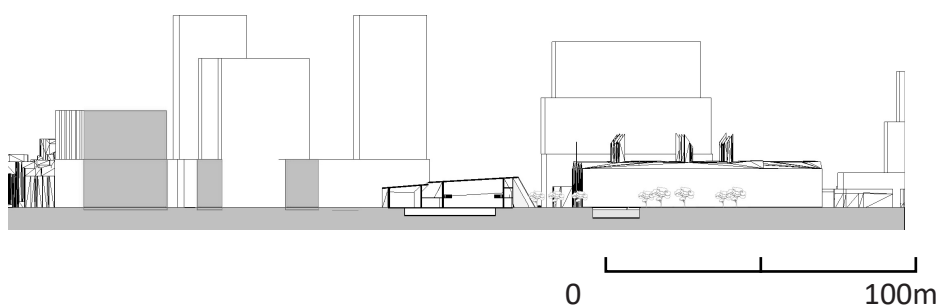
Site drawing and section



1

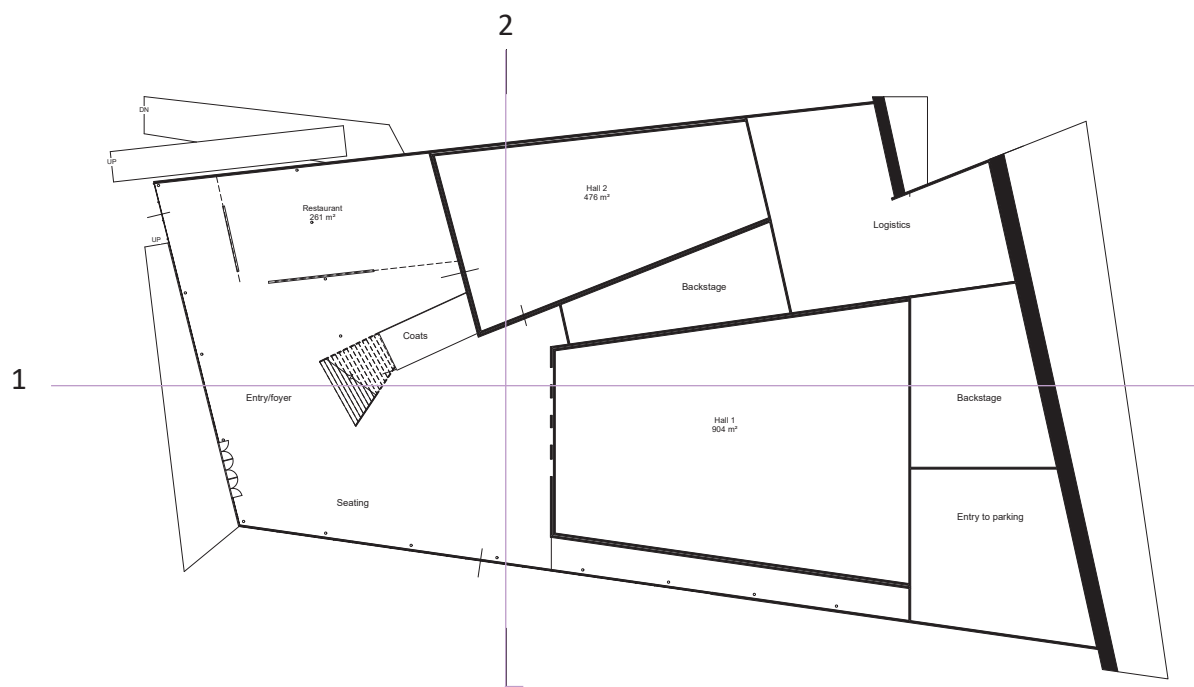


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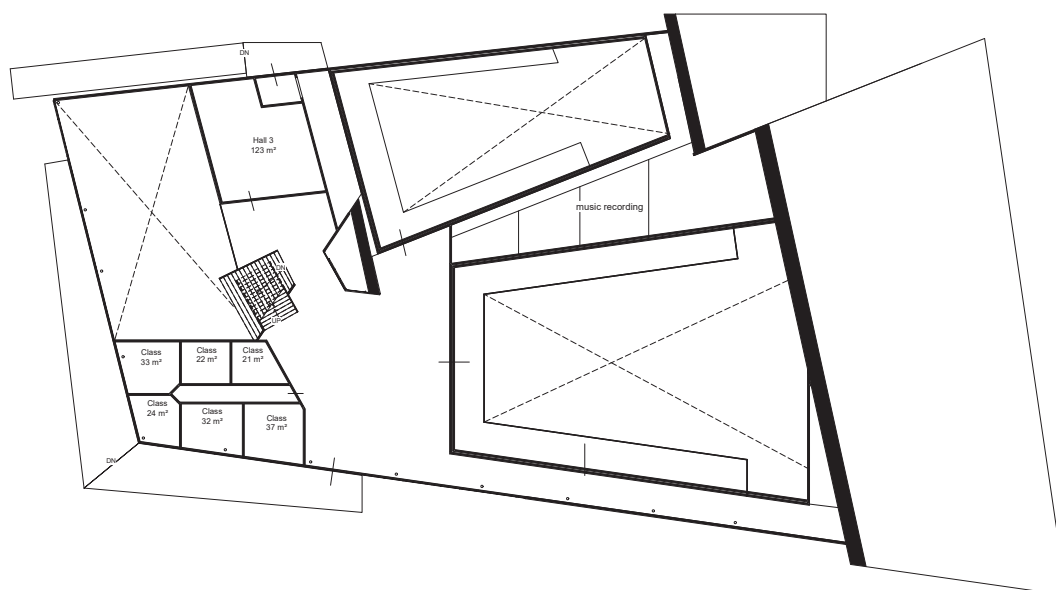


Floor plans

Ground floor

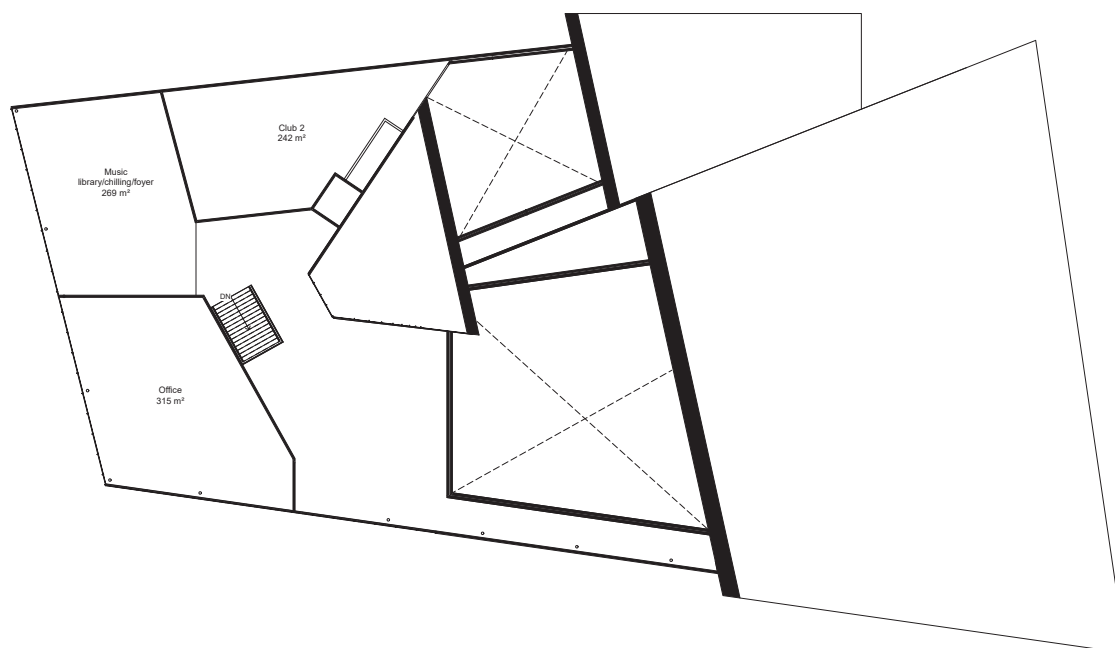


First floor

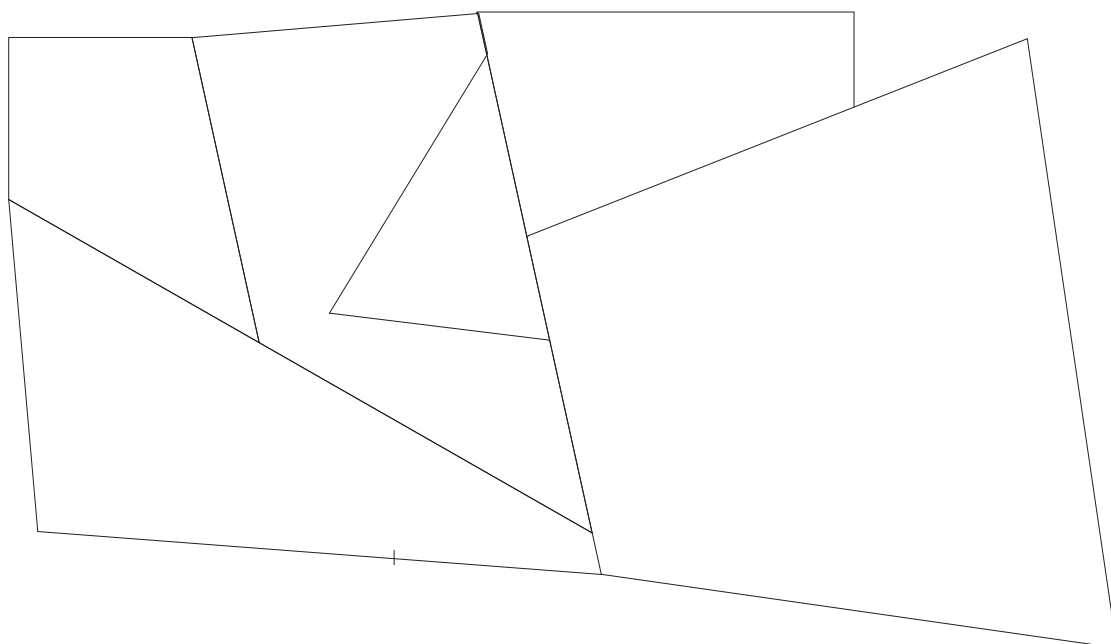


0 20m

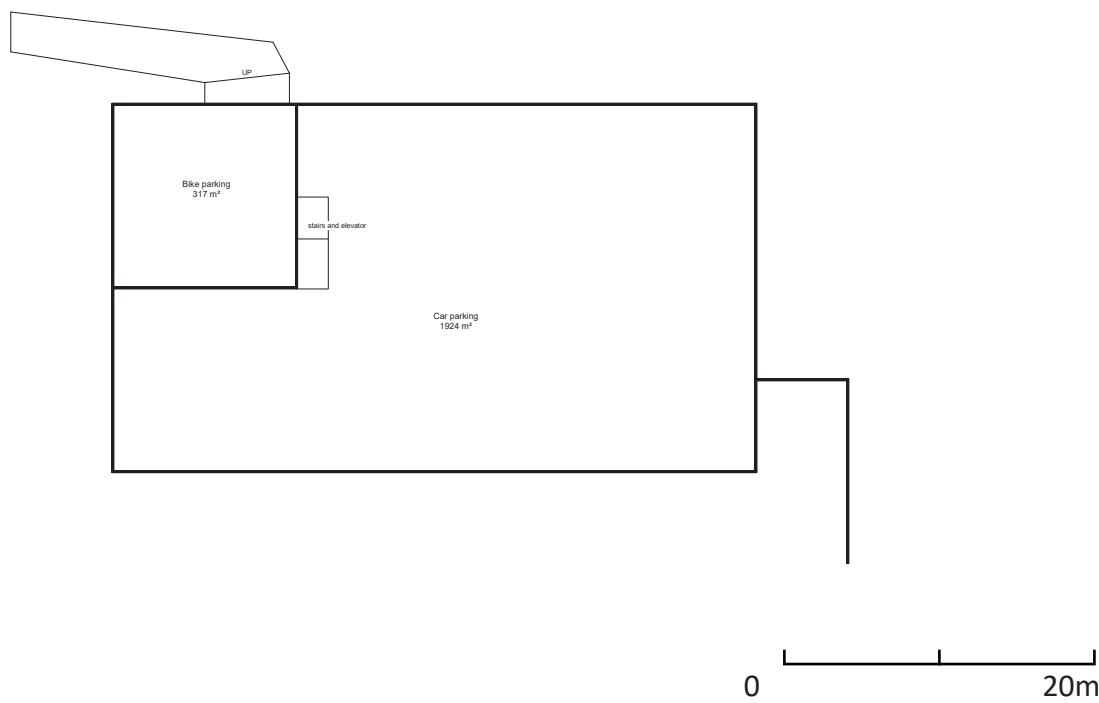
Second floor



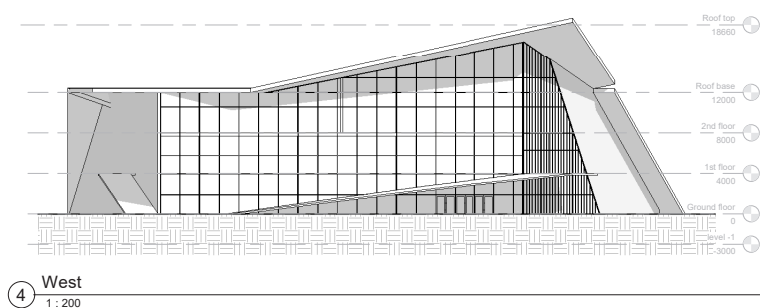
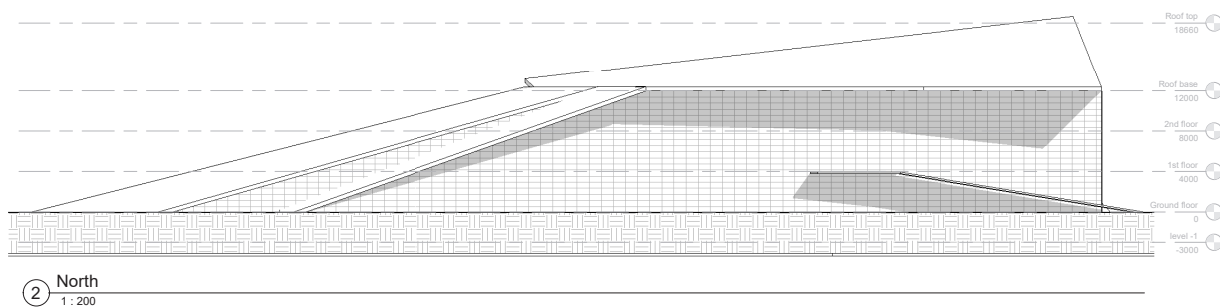
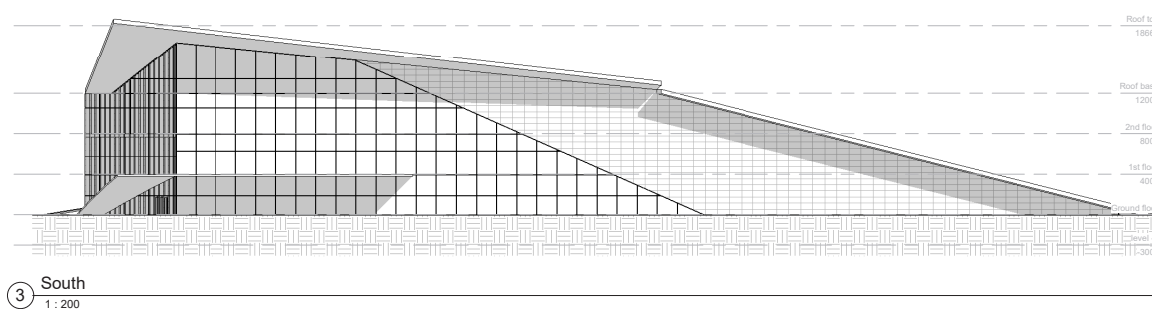
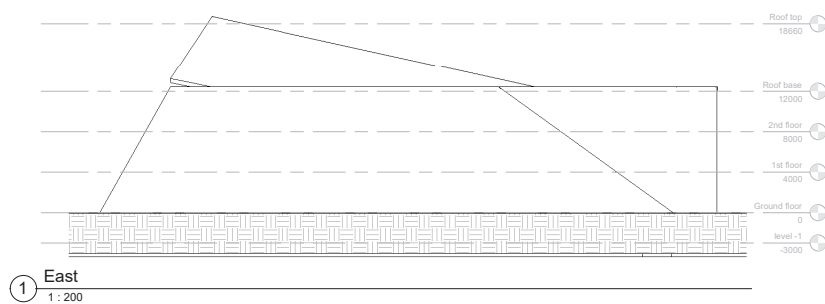
Roof



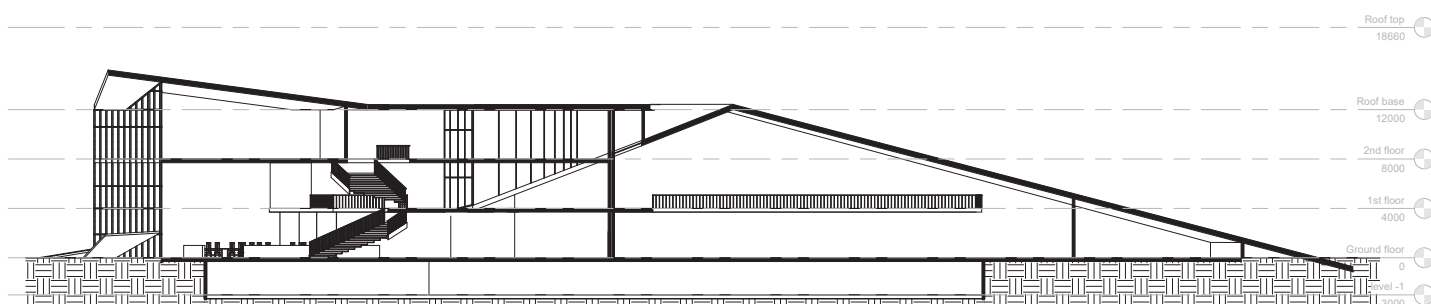
-1: garage



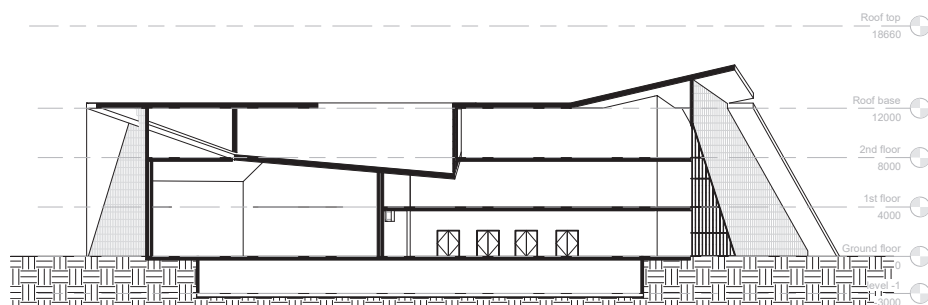
Facades



Sections

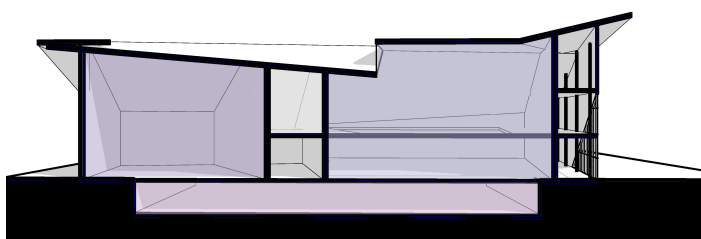


① Section 1
1 : 200



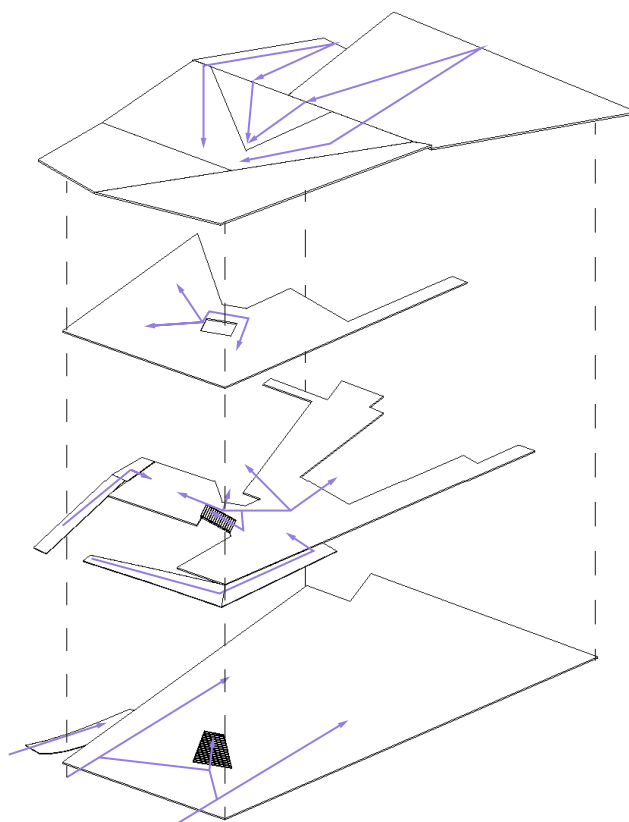
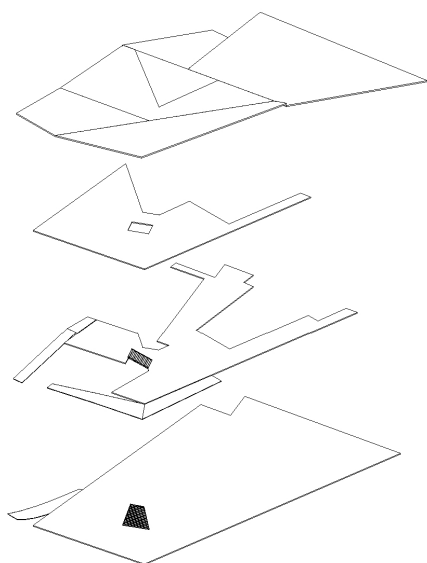
② Section 2
1 : 200

0 20m

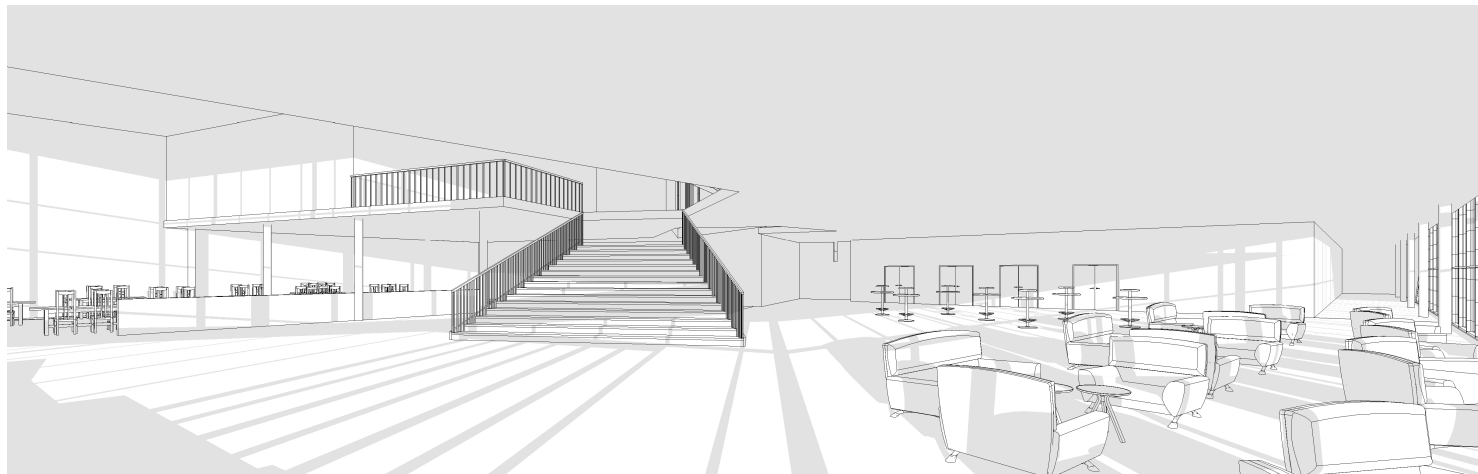


- Big hall
- Medium hall
- Small halls
- Gardens parking
- Restaurant
- Music library
- Education space
- Music recording
- Office

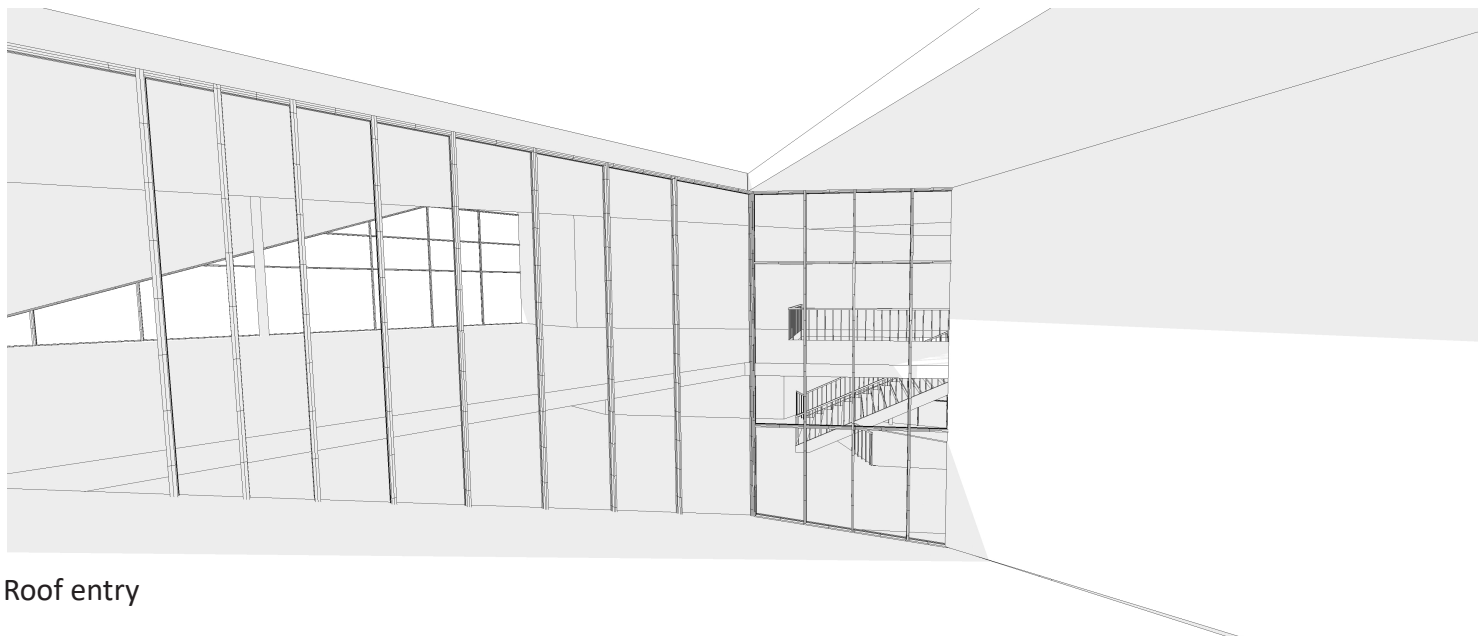
Axo



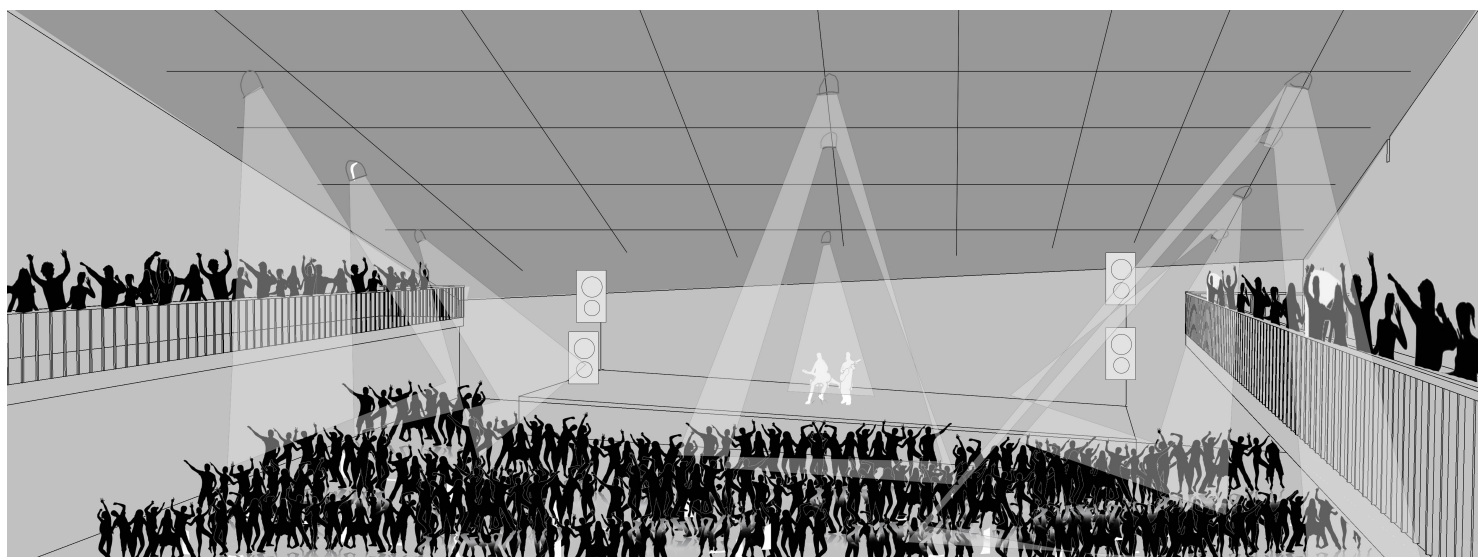
Interior perspectives



Entry/foyer



Roof entry

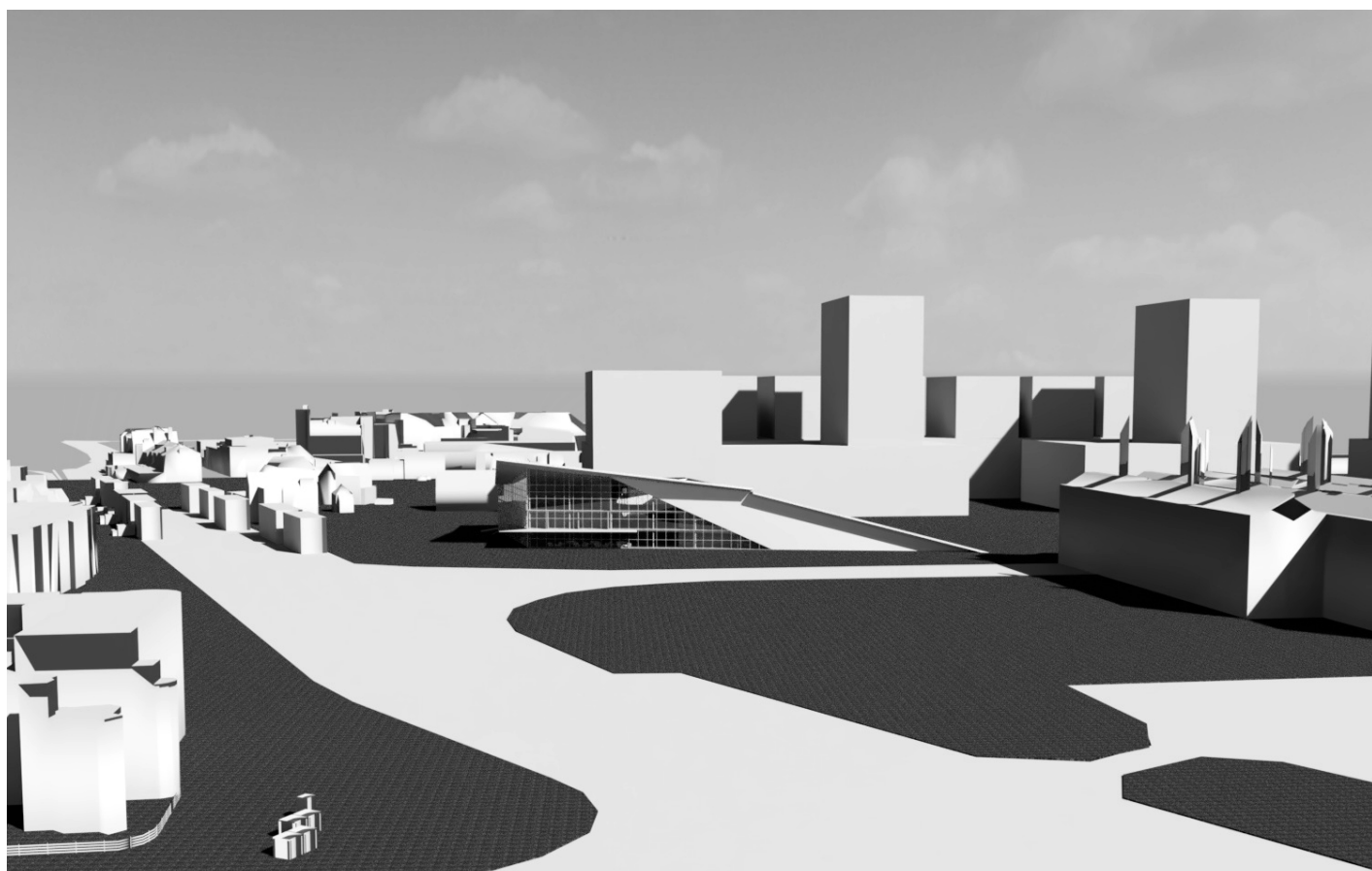


Hall 1

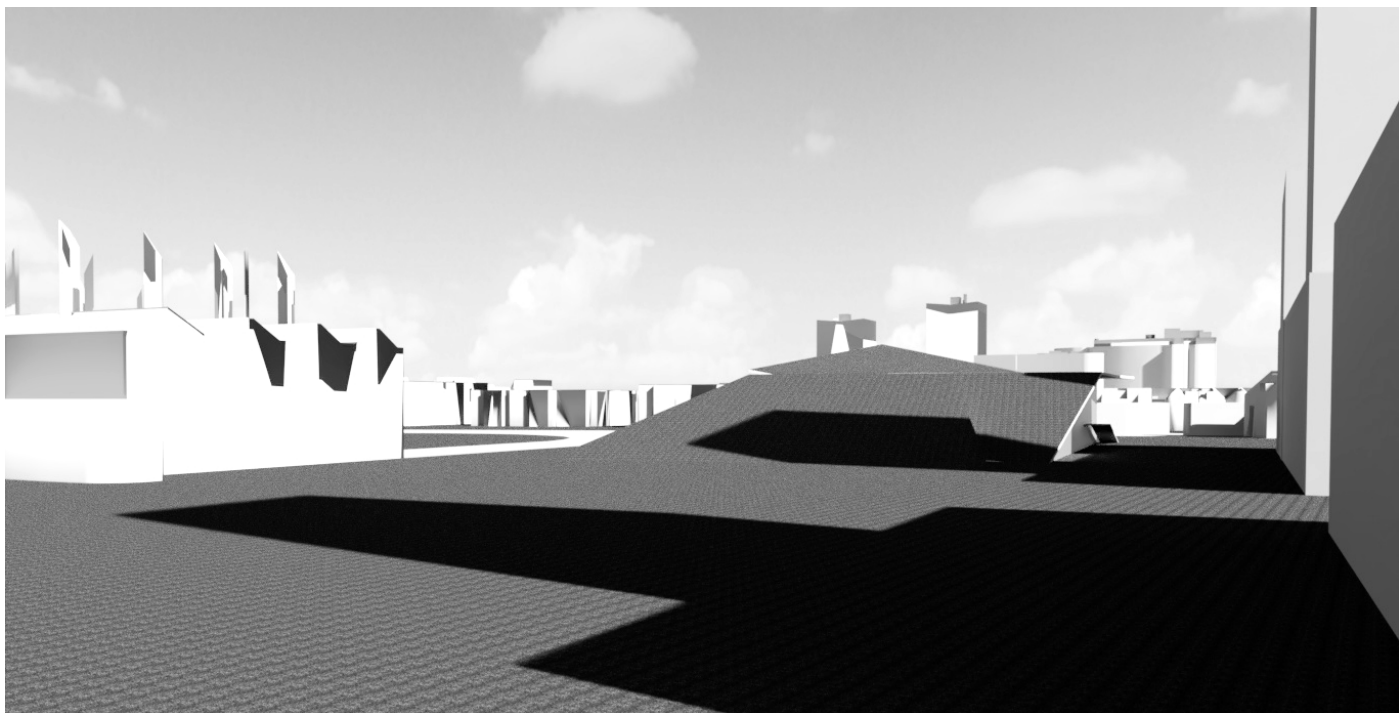
3D



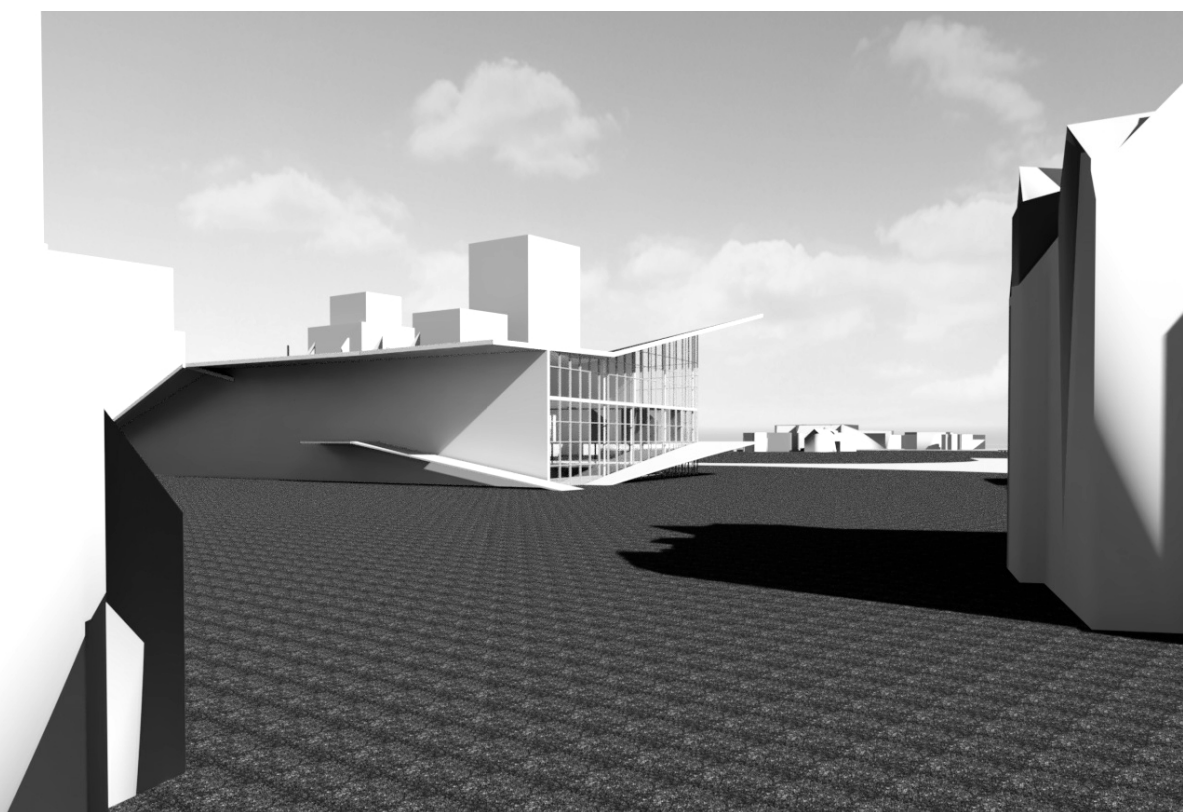
South-East



South-West



North-East

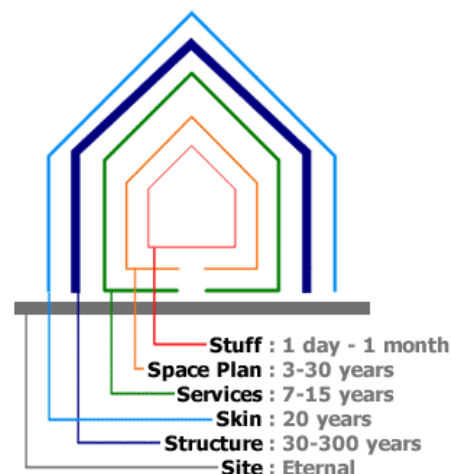


North-West

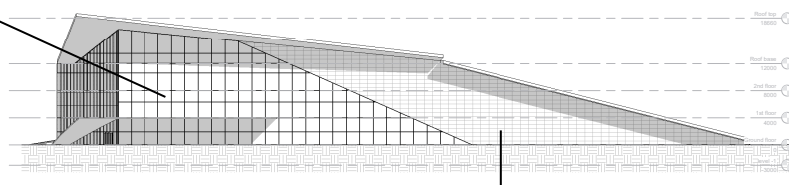
Circularity

Related to the Stuart Brand diagram

- Circular economy in the building goes beyond reusing the volume of the building but also should consider reusing the value embedded into it. This includes the materials used both inside and outside the building.
- To realise circular projects in construction, you need to think beyond business as usual for the building. What other functions buildings and materials can have beyond living or working use, e.g. building as a material bank? Or what roles you as a stakeholder should carry out in the project to make a shift in the system beyond classic project participation?

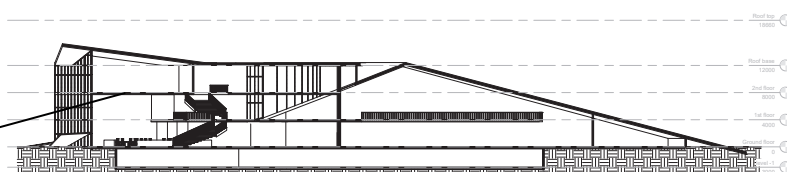


Glass panels can be taken out and replaced a future better insulating type. Old glass can be reused or repurposed.

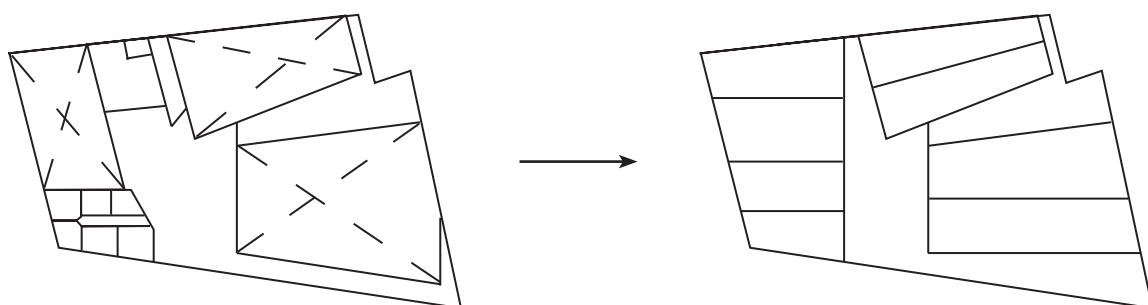


Further explained in materiality, the facade panels applied to the building are easily mounted and demounted. Their production cycle is sustainable and old panels can be recycled or reused on other buildings.

Concrete can be produced in many different ways right now and is a very durable material. When a building is well taken care of, its lifespan outweighs the initial energetic input.



The floor plan of the building can be repurposed. The structure of the roof stands alone, giving the user freedom to change the plan. The concert hall could have floors added and create a bigger space for other functions such as an office or other public functions.

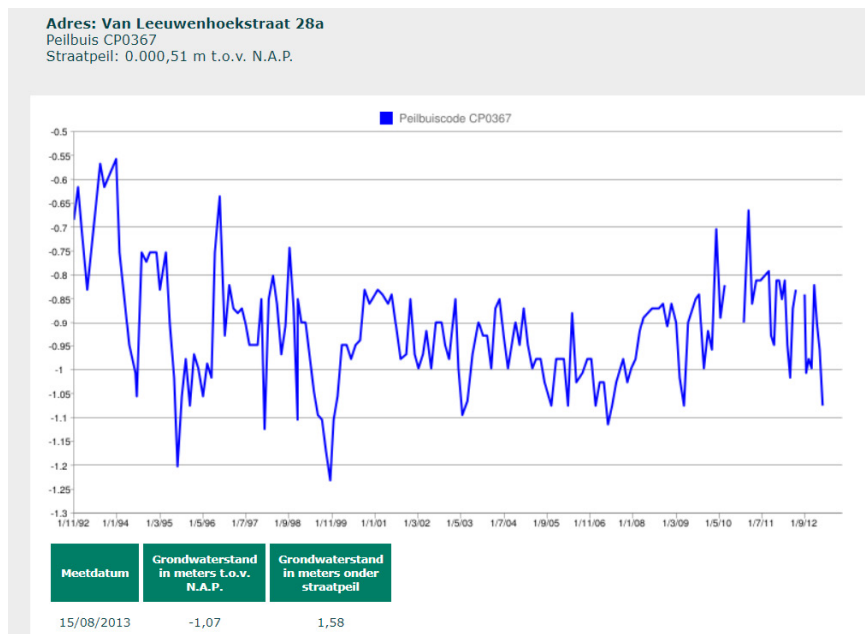


F

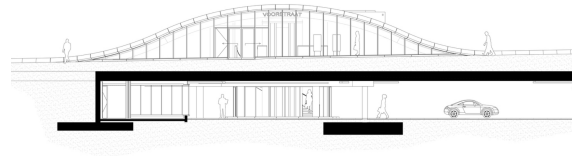
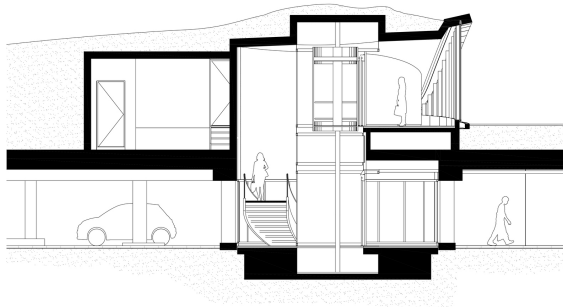
Parameters to
construct

Specific site conditions

Building a parking garage under the building comes with the challenge of high ground water level.



The most recent data provides by the municipality of the Hague is from 2013. On that date they recorder the water level to be 1.58 m under ground level. This creates a challenge when building a parking garage that will be up to 4 m under ground level. It should not start floating.



It is important to seal the garage and keep moisture out, but also apply enough weighted material to keep it from coming up. The project above is the parking garage at the Beach in Katwijk, located in the dunes. It shows the principle of applying mass under the structure as well as above.

Energetic issues

Ventilation

The ventilation of the concert halls is a big energetic swing for the building. Before people enter it needs to be heated up, but once hundreds of people come in, it needs to be cooled down heavily. To deal with this issue an example is taken after the ventilation principles applied in the Ziggo Dome, Amsterdam, where there is only ventilated with air from the outside, unless the outside temperature is higher than the inside temperature (which does not happen a lot in the Netherlands).

Green roof

A green roof mainly has a heat regulating effect. This is greatest in the summer months. With traditional roofing, considerable fluctuations in the indoor temperature can occur. In the summer, the building warms up because a grey roof absorbs heat from the sun. When there is a green roof, the vegetation reflects most of the direct sunlight rather than absorbing it. In addition, the moisture present in the vegetation is evaporated, which also provides additional cooling. All this ensures that the temperature in the building remains lower and so you can save on energy costs for air conditioning. In the summer this also benefits the surroundings and helps mitigate the urban heat island effect.

Energy production

When having a walkable roof solar panels cannot take up this space. However, there is solar glass that can be applied in the facade, called photovoltaic glass (PV). PV Glass lets natural light go through. It also provides thermal and sound insulation, ensuring high filtering power as 99% of UV harmful radiation and up to 95% of IR radiation can be absorbed.

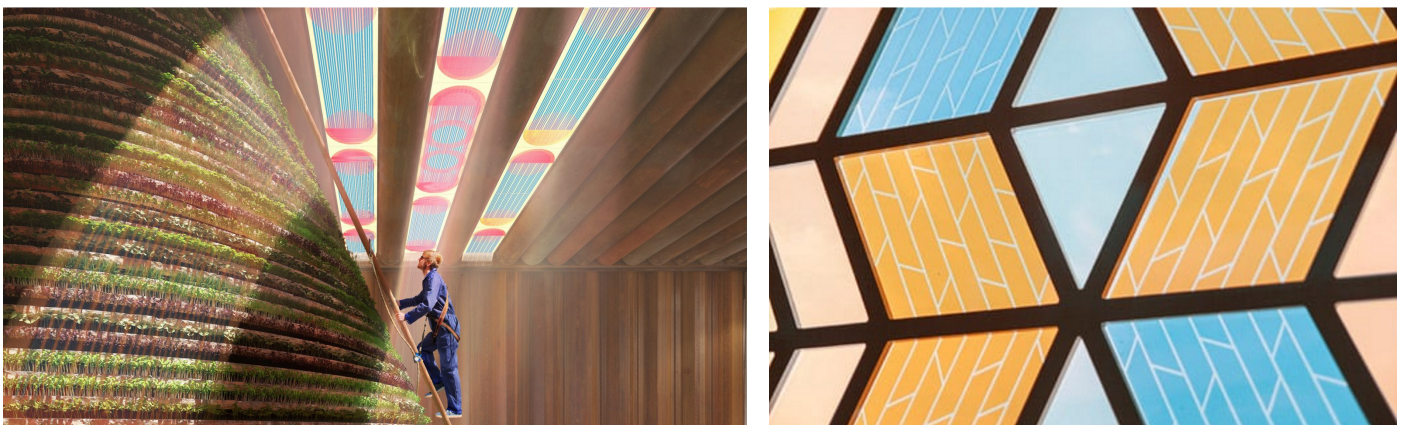


Image from the Dutch pavilion at the Expo 2020 Dubai by Marjan van Aubel

Materiality

Structure

Steel structure: supports a flexible floor plan, can be molded into almost any shape. It can be recycled up to 98%.

Walls and floors

Concrete

Concrete is easily and readily prepared and fabricated in all sorts of shapes and structural systems. Its great simplicity lies in the fact that its constituents are ubiquitous and are readily available almost anywhere in the world.

Thermal performance: +-

The thermal conductivity of concrete is 0.2 to 1.9 W/m·K for lightweight and 0.6 to 3.3 W/m·K for normal weight.

Acoustics: +

Good sound insulation by walls and floors is easily achieved using the inherent mass and damping qualities of concrete. More detailed information on the acoustics page.

Roof

Roof will be parts terrace and for the most part a vegetative roof.

Facade

For the material of the facade a mixture of aluminium curtain walls and concrete walls with paneling finish will be used.

Curtain walls

Thermal performance: +-

Curtain wall frame conductance is a function of the frame material, geometry and fabrication (e.g. thermal break). Aluminum has a very high thermal conductivity. It is common practice to incorporate thermal breaks of low conductivity materials, traditionally PVC, Neoprene rubber, polyurethane and more recently polyester-reinforced nylon, for improved thermal performance.

Acoustics: +-

The acoustic performance of curtain walls is primarily a function of the glazing and internal seals to stop air leakage (covered elsewhere). The sound attenuation capability of curtain walls can be improved by installing sound attenuating infill and by making construction as airtight as possible.

Rockpanel Chameleon

The Rockpanel boards are produced from compressed



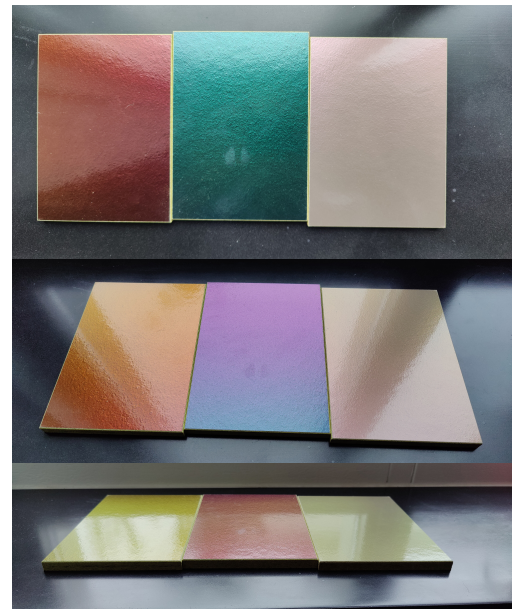
natural basalt, a sustainable and readily available volcanic rock and bonded with an organic binder. The products combine the advantages of stone and workability wood. This particular panel changes colour depending on the angle from which a person is looking, as shown in the image.

Thermal performance: -

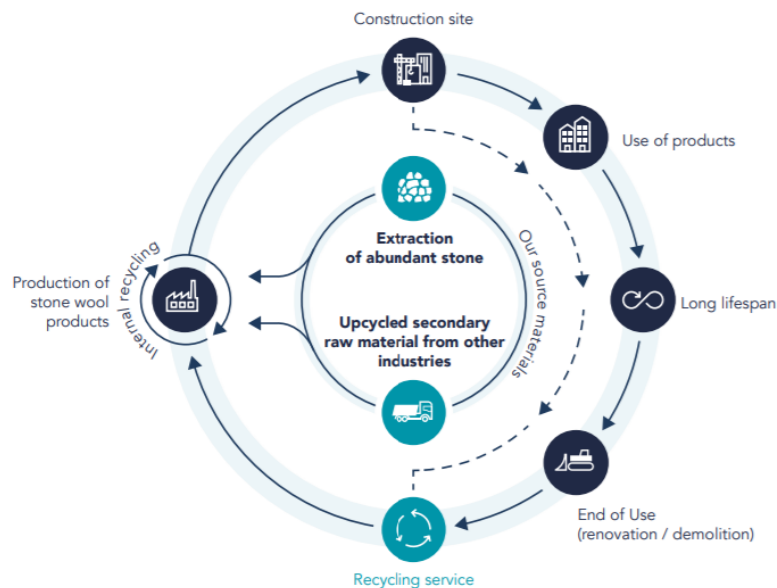
Thermal conductivity $0.37 \text{ W/m}\cdot\text{K}$

Sustainability: +

The panels are made from basalt, a product that the earth produces each year 38000 times more than what is used.



I ordered some samples



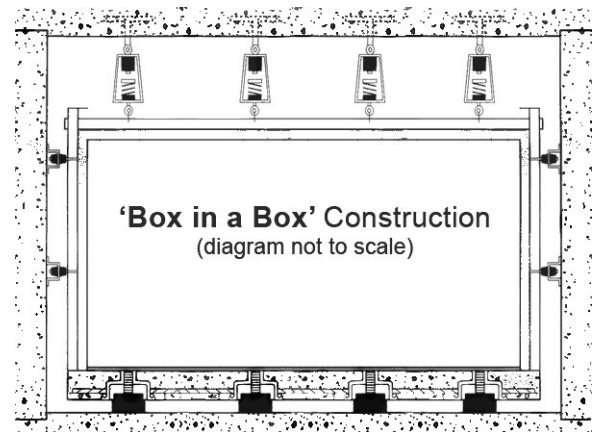
Lifecycle of a rockpanel

Acoustics

Box in a box construction

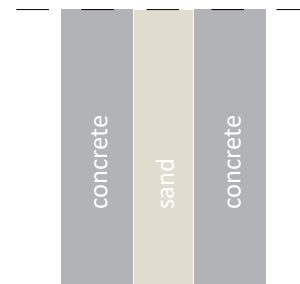
Box-in-box is an acoustic isolation technique that has proved effective in keeping out distracting noise, hence its widespread use in theatres, cinemas, recording studios and other instances where it is imperative to have as-near silence as possible.

As the name suggests, the technique involves constructing a room within a room (which may be the building structure), so that the inner room is acoustically isolated from the outer. This will involve isolating the walls, floors and ceiling of the inner box and using resilient mountings to achieve this.



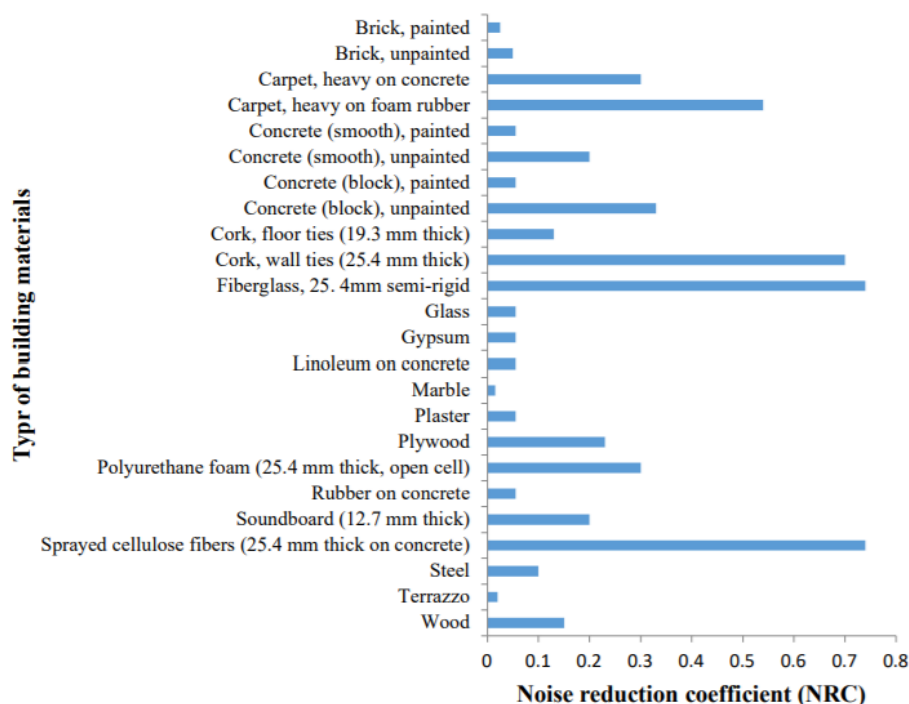
Double walls

The box in box construction is good for reducing noise towards the outside of the building, but to keep noise from traveling between concert halls inside the building double walls can be used. Filling the space between walls with sand is an inexpensive and very efficient way to stop vibrations from travelling through the concrete.



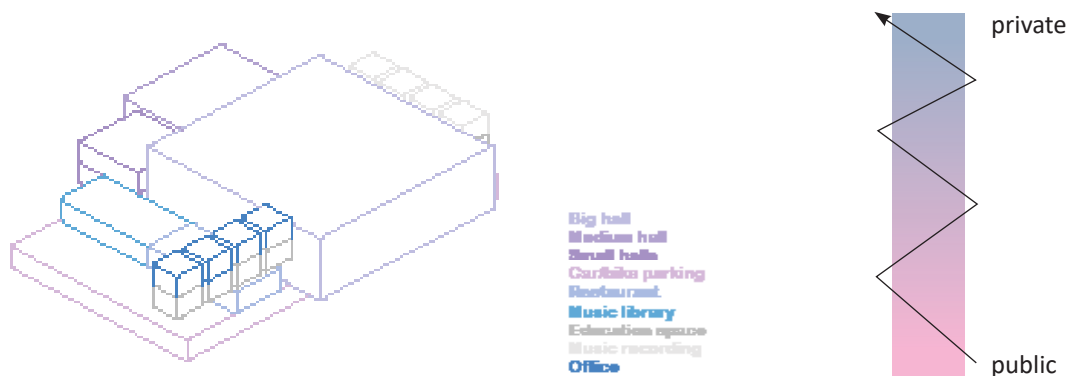
Green roof

Green roofs have important acoustical benefits as well. Green roofs have a higher weight resulting in an increased sound insulation of the roof system. This could lead, depending of the geometry of the building, to strong reductions of indoor noise levels during e.g. a plane fly-over.



Multiplicity

Multiplicity in functions



In the research the theme of a hybrid building was layed out. Having a hybrid building also means having different and often contrasting functions under the same roof. In my building I combine different functions regarding public access, such as concert halls with public music recording studios. The spaces inbetween these function, what in the programme is called the 'undefined space' are the combining factor, which removes the barrier between the two.

Multiplicity in people



Seniors

The older generation, besides from coming to visit a concert, can come and enjoy a visit to the restaurant or the seating area, where they can sit warmly behind the glass and enjoy the view to the greenery and the water with a cup of coffee.



Dancers

All types of amplified music are welcome in the music marvel and with them, all types of listeners are invited into the building. Old, young, male, female, non-binary, it doesn't matter, as long as they have a good time.



Students

There is a music library and study places inside on the second floor. This invited all types of students further into the building. Students love to have an aesthetic study place and what better place than a concert hall by day.

The programme includes an educational purpose, meaning that during the day students will be coming in and out of the building.



Gen Z

Whether they want to have a place to hang or have a nice background for their tiktoks, the youth are an important factor in keeping a place lively (both in real life and on social media).