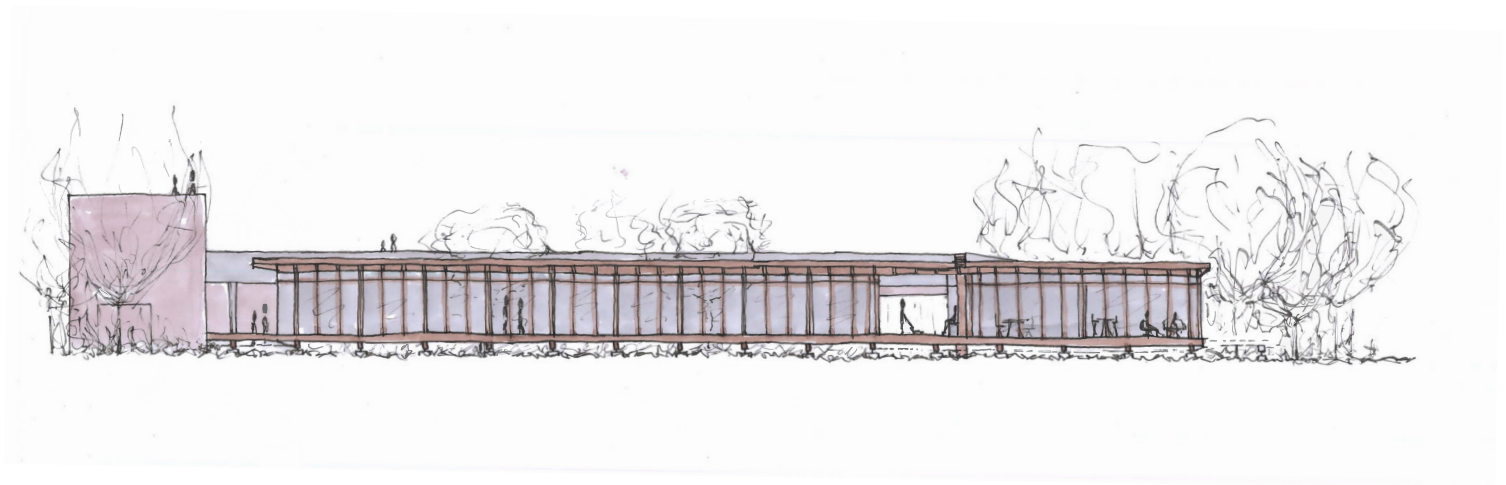


# Process- & researchbook | The sound of the Friche



Elbrich van Stralen

Architecture Graduation Studio Urban Architecture 'Last Green in Town' 2023/2024  
Tutors: Sam Stalker, Eireen Schreurs & Anet Meijer

# Introduction

In front of you is the process book of the graduation project The Sound of the Friche, done under the supervision of the graduation studio Urban Architecture 2023/2024 of the faculty of Architecture and the Built Environment of TU Delft.

The Urban Architecture studio's theme this year is Last Green in Town, focusing on La Friche, a vacant lot in Schaerbeek, Brussels. Mainly because of its biodiversity, this is a piece of land that is causing a lot of commotion. Various plans have been made, from filling up the biodiverse part of the friche to leaving this part open, where making plans for this area proved to be extremely complex. The fact that there are so many different interests of people for this area indicates that it is a place that carries a lot of emotions, history, potential, culture and passion. In short, this place must be treated with secrecy.

The goal of this project is to create a design for a building within a master plan developed by the students for this area. The first quarter of the year was spent in groups researching various topics of interest for the design of this area. During that quarter, The sound of the Friche was also in the starting blocks. After this, the students were again divided into groups and started to create a joint master plan. Meanwhile, the individual project continued.

Because this area is so complex and has so much going on, it is good to close your eyes and think about what really exists. What takes place on the Friche when one is not distracted by it's vision and difficult other issues?

Take you through the process of developing a design for the Friche with a focus on sound.



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## **Start Up I Research proposal & literature**

# Start up I Research proposal

In the first quarter of the year, a research proposal was written in order to define the project and to be able to have discussions about it. On the following pages this proposal can be found with modifications that were made after the consultation with my supervisor. This proposal is leading for the rest of my project.

# Start up I Research proposal

## UPDATE

The initial idea was to do the research over the whole of Schaerbeek. However, after having a discussion with the supervisor, it was decided to narrow it down to The Friche, as this area has so much to say on its own.

## The Sound of ~~Schaerbeek~~ The Friche

Implementing the soundscape of Schaerbeek in the architecture of a building

Elbrich van Stralen

Architecture Graduation Studio Urban Architecture 'Last Green in Town' 2023

Tutors: Leeke Reinders & Eireen Schreurs

# Introduction

Sound is 'the poor relation' of architecture, is what Michael Kimmelman says in his publication in the New York times (*Geluid: het ondergeschoven kindje van de architectuur*, n.d.). He talks about sound as an element that is often forgotten, as Violette Schonberger (n.d.) mentions: 'sound is mainly considered as a consequence of a design decision, not as a guiding design ingredient'. This, while space and its design, think of materialization and dimension, does really affect the perception of sound. For example, churches used to be built together with a composer to make the music sound as good as possible (*Bevroren Muziek*, n.d.). Vice versa is hearing also an important sense for the perception of space. Besides that, it is becoming clear from studies that sound even affects human health (Kou et al., 2021). From all of this, it becomes clear that there are many possibilities within architecture and sound that are currently underexposed.

## Schaerbeek in sounds

Our project is about Schaerbeek, a municipality full of diversity in space and culture. Together with this comes the fact there are also many different sounds to hear: from the silence in a courtyard garden to the hustle and bustle of Brabantstraat, from urban background noise to industrial noise, from birds and other creatures on the friche to the sound of the train at the north station. Our visit on the friche inspired me greatly, because of the contrast of (at first glance) silence versus the urban noise a few meters away. Precisely because Schaerbeek is so full of sound and because this sound says so much about Schaerbeek's diversity, this seems to me to be an interesting topic to explore further and to use as inspiration and basis for my design.

## Music as a method of communication and translation

When looking at sound, there is also an art form, called music, that is part of the concept of sound. I have always been busy in music besides my studies and school by having done preliminary training at the Amsterdam Conservatory of Music and many kinds of other music projects, so it seems very interesting to me to use this knowledge for this research to add an extra layer.

Music is a medium of communication that is very close to human beings, as Alan Lomax (1962) mentions: 'music-making is one of the most strictly patterned forms of human behavior. Its modes of communication are so limited that even a casual listener can quickly distinguish the best performer and identify the pieces in an idiom of whose technique and content he knows' (p. 425). As a translation of sounds into architecture, music can thus act as an important mode of communication in this research.

There are numerous architects who have used musical pieces as inspiration for their building design, think of the Jewish Museum in Berlin by Libeskind and the Philips Pavilion by Xenakis and Le Corbusier. Capanna (2009) mentions in her article that music can be used in architecture in several ways: as inspiration, abstracting music into 'a closure that architecture shares with all other forms of artistic expression' (p. 258); as image, translating the graphic layout of a piece of music into architecture; and as method, looking for example at the instrumentation and dynamics in a piece. In my Thesis for MSc 2 I explored the similarities between composition in music and architecture, which can complement this research.

## The research

This research focuses on the main question: In what way can the sound of Schaerbeek be implemented in the architecture of a building there? This research will consist of three parts: soundscaping, composition and designing.

### Soundscaping

In the first section, a soundscape of Schaerbeek will be created by making tapes. This, to analyze and map what sounds can be found there. As already said before, Schaerbeek is an area full of diversity, which may mean that there is also a great diversity of sounds to be found. First, how best to make a soundscape is studied by literature review. Also a plan will be made what the locations and moments are which will be taped on. Examples of locations for this could include the Brabantstraat, one of the parks, a living area, the friche, etc. Different times of day and night can be considered. After this has been planned, it will be put into practice by going to the area and taping the sounds. As a final step, the tapes will be arranged and processed.

### Composition

In the compositions part musical compositions are created, by delving into creating compositions using environmental sounds. For this, next to literature, I use my knowledge from music to make this translation. The aim is to make compositions that express the scenes taped before the best. The compositions will be recorded and written down in a score. If necessary, other instruments can be added next to piano to make the translations as clear as possible.

### Design

The last part is where it all comes together. The question how to implement sound and music to architecture will be posed. Ways of doing this will be explained by literature review and case studies. After this, the soundscape and compositions will be implemented in the design process. Implementing will spread across different scales, from architecture to material.

### Conclusion

For the conclusion I hope the research about sound will give me a good inspiration for the design and bring a deeper meaning to the architecture of the building I have designed. My purpose is to find in this way a way of going deeper into the context of Schaerbeek. I also aim for coming to a design that, maybe indirectly, tells the story of the urban environment of the building.

## Sources of inspiration

There are several articles and books that have inspired me to come to this topic. For example, OASE issue 78 discussed space and sound (*Immersed. Architectuur en geluid*, n.d.). This article 'broadens the discussion of acoustics beyond the merely technical aspects' (*Immersed. Architectuur en geluid*, n.d.). In addition, a number of times a sound and architecture festival Tuned City has been held, that addresses sound in a city. There is also a platform made for this festival, where is a lot of sharing about the ways of seeing sound and projects related to it (Tuned City, 2023).

There are also architects which I think are very interesting who connect music and architecture, such as Daniel Libeskind and Iannis Xenakis. Libeskind was a musician and addressed the similarity between music and architecture in, for example, his book *The walls are alive* (The Guardian, 2017). Iannis Xenakis is a composer and architect and has written several articles and the book *Music and Architecture* (Grant, 2010) about this.

#### UPDATE

The soundscapes need not be made anymore, because the group of the productive city had already made them a sufficiently extensive soundscape.

When talking about soundscaping and composition, Alan Lomax is an interesting researcher to look at. He has written an album of songs by making tapes in prisons. He has also written articles that could be valuable to this research, such as *Song Structure and Social Structure* (Lomax, 1962) .

More interesting articles for my research and an explanation why they are relevant can be found in the bibliography below.

## Literature

Beckers, R. (n.d.). *Bevroren muziek*. Bureau Europa. Retrieved November 2, 2023, from <https://www.bureau-europa.nl/bevroren-muziek/>

Interesting because it addresses the similarities between music and architecture.

Capanna, A. (2009). Music and Architecture: A Cross between Inspiration and Method. In *Birkhäuser Basel eBooks*. [https://doi.org/10.1007/978-3-7643-8976-5\\_8](https://doi.org/10.1007/978-3-7643-8976-5_8)

Delves into the possibilities of using music in architecture.

*Geluid: het ondergeschoven kindje van de architectuur*. (n.d.). Stedebouw & Architectuur. <https://www.stedebouwarchitectuur.nl/artikel/geluid-het-ondergeschoven-kindje-van-de-architectuur>

Inspiring for citing the importance of using sound in architecture. It also discusses sound in cities and refers to interesting sources.

Grant, M. J. (2010). *Music and Architecture. by Iannis Xenakis. comp., trans., and ed. Sharon Kanach*. Oxford University Press. <https://doi.org/10.1093/ml/gcq046>

Xenakis has immersed himself in the combination of music and architecture. This is a whole book on how he sees connections in this and many examples are given.

*Immersed. Architectuur en geluid*. (n.d.). <https://www.oasejournal.nl/nl/issues/78>

This is an issue of the Oase Journal that deals with space and sound. Soundscape and acoustics are also discussed here. This issue is interesting for broadening my research.

Kahn, D. A. (1997). John Cage: Silence and Silencing. *The Musical Quarterly*, 81(4), 556–598. <https://doi.org/10.1093/mq/81.4.556>

Interesting because of the approach to silence as sound or actually music. This is also a component that may be important for my research.

Kimmelman, M. (2015, December 29). Dear architects: sound matters. *The New York Times*. <https://www.nytimes.com/interactive/2015/12/29/arts/design/sound-architecture.html?mtrref=undefined&assetType=PAYWALL&mtrref=www.nytimes.com&gwh=0A62FC0F8F680BDC3503C6D6F269098A&gwt=pay&assetType=PAYWALL>

New York Times article explaining the importance of sound to architects through three-dimensional audio. There are also examples from an urban environment used. From these I can draw inspiration for choosing the scenes of the soundscape of Schaerbeek.

Kou, L., Kwan, M., & Chai, Y. (2021). Living with Urban Sounds: Understanding the effects of human mobilities on individual sound exposure and psychological health. *Geoforum*, 126, 13–25. <https://doi.org/10.1016/j.geoforum.2021.07.011>

Deals with sound in the urban environment and what its effects are. An interesting study of what sound does to the psychological health of people is described.

Lomax, A. (1962). Song structure and social structure. *Ethnology*, 1(4), 425.  
<https://doi.org/10.2307/3772850>

Especially interesting for explaining that music is so close to human beings and thus a good way to communicate atmospheres and feelings.

Sacks, O. (2006). The power of music. *Brain*, 129(10), 2528–2532.  
<https://doi.org/10.1093/brain/awl234>

Like Lomax's article, interesting to find an explanation of why music is so expressive.

Schönberger, V. (n.d.). *Gelaagd geluid*. Architectenweb.  
<https://architectenweb.nl/nieuws/artikel.aspx?ID=51630>

One of the first sources that inspired me because Schönberger explains the potentials of sound within architecture and a city.

Schulte-Fortkamp, B., & Jordan, P. (2016). When Soundscape meets Architecture. *Noise Mapping*, 3(1).  
<https://doi.org/10.1515/noise-2016-0015>

This article explores the importance of creating a soundscape and how it is linked to architecture.

The Guardian. (2017, November 30). The walls are alive. *The Guardian*.  
<https://www.theguardian.com/books/2002/jul/13/featuresreviews.guardianreview5>

Explanation by Daniel Libeskind about his designs based on music. This may be interesting for the case studies I want to do.

Tuned city. (2023, May 10). *Tuned City – Sound / space / context*. Tuned City.  
<https://www.tunedcity.net/>

Interesting website about sound in the city. This website can be inspiring for setting up the soundscape.



# Start up I Literature

After the first meeting with Eireen about the proposal I started working on my research. Because the Urban Design process would soon start, I decided to first dive into the literature of sound and architecture to see in what ways one can work with sound in architecture. That way I could look for a better match for making the groups for the Urban Design. I started reading the sources from my proposal again and other interesting sources to gather more information about this topic.

## **Literature I consulted:**

Beckers, R. (n.d.). Bevroren muziek. Bureau Europa. Retrieved November 2, 2023, from <https://www.bureau-europa.nl/bevroren-muziek/>

Muecke, M. W., & Zach, M. S. (2007). Essays on the intersection of music and architecture (Ser. Resonance, v. 1). Culicidae Architectural Press.

Sacks, O. (2006). The power of music. *Brain*, 129(10), 2528–2532. <https://doi.org/10.1093/brain/awl234>

## **Readings of Daniel Liebeskind:**

Podcast on Perspective:

[https://www.wnycstudios.org/podcasts/open-ears-project/episodes/daniel-libeskind-on-perspective?utm\\_source=tw&utm\\_medium=spreddfast&utm\\_content=sf109684418&utm\\_term=W-QXR&sf109684418=1](https://www.wnycstudios.org/podcasts/open-ears-project/episodes/daniel-libeskind-on-perspective?utm_source=tw&utm_medium=spreddfast&utm_content=sf109684418&utm_term=W-QXR&sf109684418=1)

Reading the Music of Architecture:

<https://www.dailymotion.com/video/xgkrpf>

Ted Talk Architecture is a Language:

<https://youtu.be/yEkDosanxGk?si=jUfKxYFFQ1bUoiZa>

Emotions in Architecture:

<https://www.youtube.com/watch?v=j64YQdrE5CU>

Musicality in Architecture:

<https://www.youtube.com/watch?v=r-zxSCkO5D4>

## **Section 1 | Sound analysis of the Friche**

# Section 1 | Soundscaping

First of all, a soundscape must be made of the Friche. Since the group of the productive city had already made one of the Friche, I decided to use this one first. It turned out to be large enough for my research.

## The soundscape of the productive city group

The group of the productive city made recordings all over the friche. Out of this they made a compilation in which they placed the sounds in the sequence of a walk around the friche (Fig. 1). In addition, they gave me the raw recordings that were categorized by the specific locations (Fig. 2). I can use this to go deeper into specific locations.

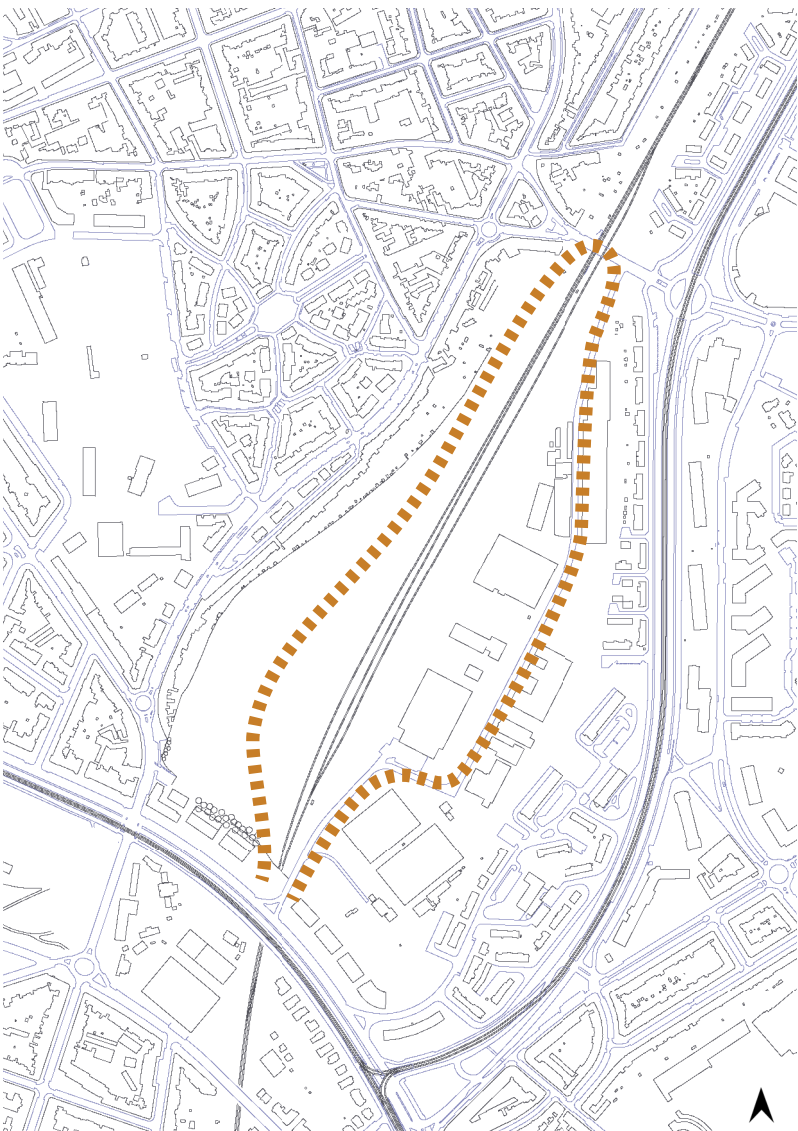


Figure 1. Soundscape1:10.000

## Raw recordings

Industrial walk
Truck dropping of container
Bird, water, conversation on background
Beer company
Exit
Friche walk
Friche standing still
Walking towards garden area
Garden to pond
Train
Leaving the Friche
Ping-pong tennis court
Children on rugby field
Indoor tennis
Industrial walk

Figure 2. Specific locations

# Section 1 | Soundscaping

## Global listening to the sounds of the walk

First, the sound clip of the walk across the Friche was listened to. In this way it was oriented what sounds could be heard. The observations of this can be found in Fig. 3. This recording has been the basis for creating the different zones.

## Zoning

Since compositions will be made of this area in order to express different atmospheres, the sounds must be sorted in some way. Based on the recording of the walk, this was done by dividing the walk into different zones (Fig. 4). The zones were created based on similarities in sound.

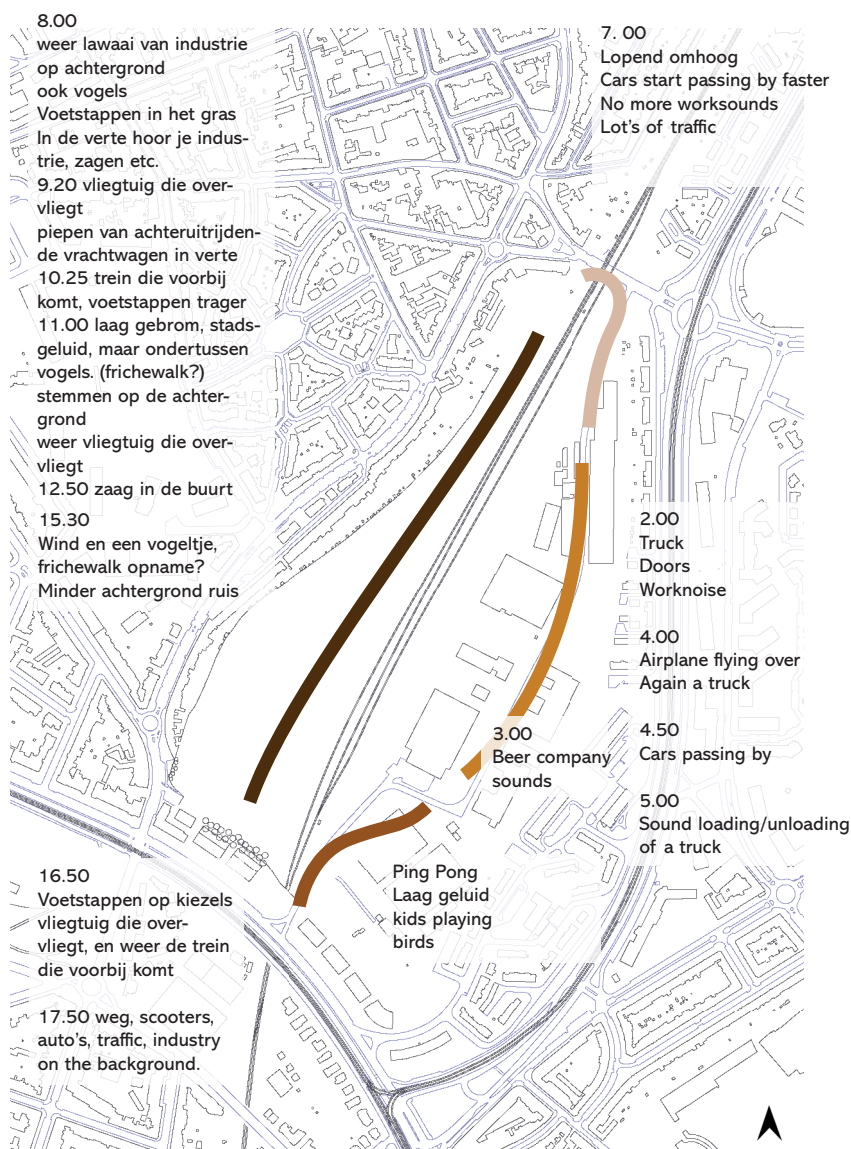


Figure 3. Zoning 1:10.000

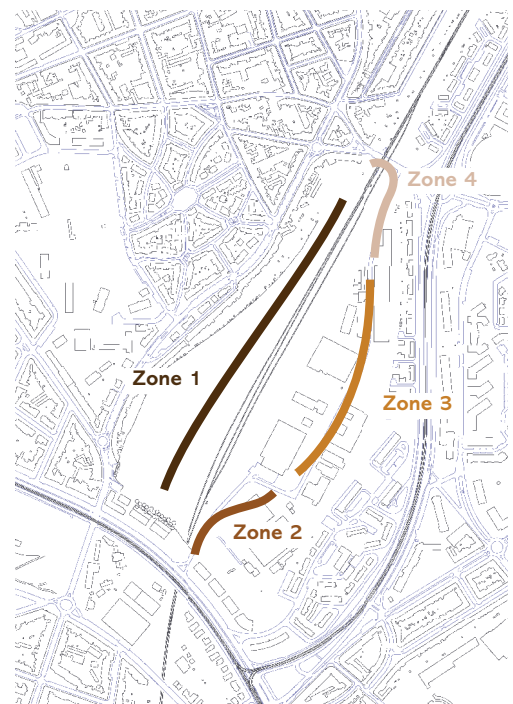


Figure 4. Zoning

# Section 1 | Composition | Techniques

Various composition techniques were used for composing. A small insight into these is shown below.

## Tempo

The tempo of the compositions was based on the speed of the footsteps that could be heard in the recordings. For example, the tempo of the footsteps in zone 1 (70 beats per minute) was lower than that in zone 2 (110/120 beats per minute).

## Footsteps

In each composition, footsteps can be heard as a common thread. This is a constant tone, varying in speed from piece to piece, based on the speed of the footsteps in the recordings. The speed of the footsteps reflects a lot about how the pedestrian observes the world around him. If the pedestrian feels at ease and unhurried, they will walk slower than the opposite. The environment influences this feeling. Below can be seen an example of the application of footsteps.



## Melody

When creating melodies, attention is paid to rhythm and pitch. The sound of birds is relatively high so high notes are used. The bass tones are used for low sounds of trucks. In addition, the rhythm and phrasing of the sounds of the recordings are converted into a corresponding rhythm/phrase in the music. An example for this is the shouts of people playing pingpong.

2

21

**Straight**

A musical score snippet in D major (two sharps) and 4/4 time. The score consists of two staves: a treble staff and a bass staff. The treble staff contains chords and single notes, with a final measure featuring a rapid sixteenth-note run. The bass staff contains a rhythmic pattern of eighth and sixteenth notes. The text *Ball drops* is written below the bass staff in the third measure, and *Irritated voice* is written below the bass staff in the fourth measure. The word **Straight** is written above the treble staff in the fourth measure.

## Section 1 | Composition | Techniques

## Harmony

In the compositions, different harmonies are played with. First of all, it must be said that it is usually subjective what kind of feeling one has with a certain sound and what kind of harmony is attributed to it. A few examples of choices made are: the choice to write the piece in minor major (joyful, open versus sad, sometimes ominous); the color of the chord and its intervals (dominant, major, minor; fourths stacking or, for example, compact)

### Ominous chord choice

[illegible]

Major (open) and fifth interval (open character)

**Pond**

13 Ebmaj7

*p* Water flowing, play moving

The musical score for 'Pond' is written for piano. It features a treble and bass staff. The key signature is E-flat major (two flats) and the time signature is 3/4. The tempo is marked '13'. The chord is Ebmaj7. The melody in the treble staff consists of eighth notes, while the bass staff has a simple accompaniment of quarter notes. The piece ends with a fermata over the final note.

# Section 1 | Composition | Zone 1

The following pages will show the various compositions and their process. For each zone, the annotations that formed the basis for the composition, will be displayed. After this, the compositions will be showed. Explanations of what the music portrays are inscribed in the sheet music in *italic font*. Names have been given to the different parts of the music as well.

## Conclusions listening to sounds of zone 1

vrijdag 29 december 2023 14:36

### ZONE 1


Orchestra of birds

... m m ... m m ... lll ll ...  
different sounds/species

Footsteps

/// // // // // // // // // // // // // // //  
slowly → 70bpm

Train passing by

...  ... very loud!

City noise in background

\_\_\_\_\_ low & quit

Airplane

...  ... very low

Orchestra of birds

... m m ... m m ... lll ll ...

different sounds/species

Train passing by

...  ...

very loud!

Footsteps

/// // // // // // // // // // // // // // //

slowly → 70bpm

Traffic in background

...  ...  ...  ...

quit

City noise in background

\_\_\_\_\_

low & quit

Airplane

...  ...

very low

Pitch ↑

# Section 1 | Composition | Zone 1

Listen:

<https://clipchamp.com/watch/sQwxabO6mfW>

## Zone 1

### Walking on the Friche

Elbrich van Stralen

#### Intro

♩ = 70

Walking, playing birdsounds

The Intro section consists of four measures in 4/4 time. The treble clef staff contains whole rests. The bass clef staff contains a sequence of eighth notes: G2, A2, B2, C3, D3, E3, F3, G3, A3, B3, C4, D4, E4, F4, G4, A4, B4, C5, D5, E5, F5, G5, A5, B5, C6, D6, E6, F6, G6, A6, B6, C7, D7, E7, F7, G7, A7, B7, C8, D8, E8, F8, G8, A8, B8, C9, D9, E9, F9, G9, A9, B9, C10, D10, E10, F10, G10, A10, B10, C11, D11, E11, F11, G11, A11, B11, C12, D12, E12, F12, G12, A12, B12, C13, D13, E13, F13, G13, A13, B13, C14, D14, E14, F14, G14, A14, B14, C15, D15, E15, F15, G15, A15, B15, C16, D16, E16, F16, G16, A16, B16, C17, D17, E17, F17, G17, A17, B17, C18, D18, E18, F18, G18, A18, B18, C19, D19, E19, F19, G19, A19, B19, C20, D20, E20, F20, G20, A20, B20, C21, D21, E21, F21, G21, A21, B21, C22, D22, E22, F22, G22, A22, B22, C23, D23, E23, F23, G23, A23, B23, C24, D24, E24, F24, G24, A24, B24, C25, D25, E25, F25, G25, A25, B25, C26, D26, E26, F26, G26, A26, B26, C27, D27, E27, F27, G27, A27, B27, C28, D28, E28, F28, G28, A28, B28, C29, D29, E29, F29, G29, A29, B29, C30, D30, E30, F30, G30, A30, B30, 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# Section 1 | Composition | Zone 1

2

## Pond

11 Ebmaj7 Abmaj7

*p* Water flowing, play moving

Another flow (different pitch)

City noise blends in

13 Gbmaj7 Fmaj7

Another flow again

....

15 Ebmaj7 Abmaj7

Energy, play moving

17 Dbmaj7 C6 8<sup>1</sup> B6 Bb6 8<sup>1</sup> 8<sup>1</sup>

Water drips, sparkling open sound

Another drip

Transition back to nature, water fading away

## Birds

20 Bb 8 Bb#5 Bb6 Bb7 8<sup>1</sup>

Bird 1

Footsteps

City noise in the background

•

•

24

B $\flat$

8

Footsteps fade out

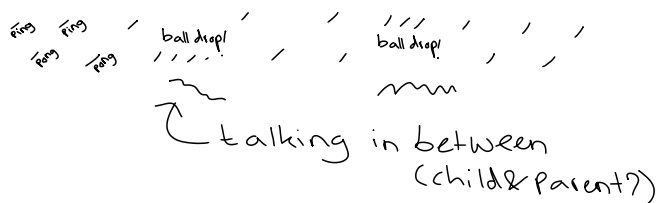
8

# Section 1 | Composition | Zone 2

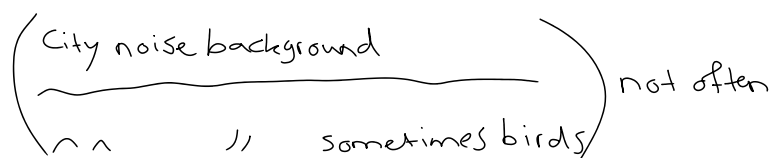
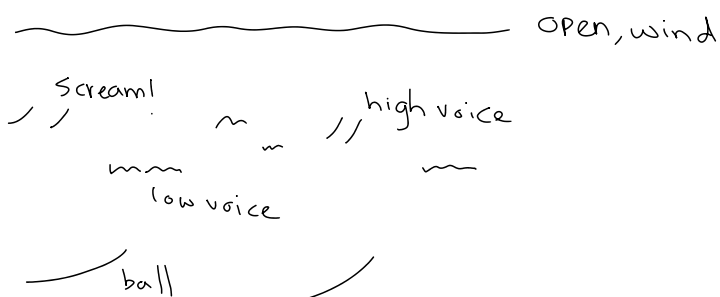
## Conclusions listening to sounds of zone 2

### ZONE 2

#### Ping-pong playing



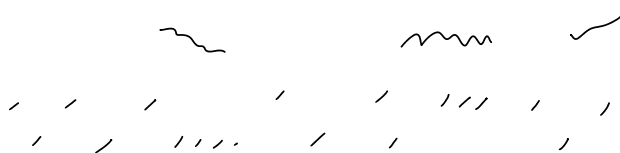
#### Rugby playing



#### Ping-Pong

talking in between  
(child & parent?)

Ping-Pong ball



#### Rugby

Voices

ball

open, wind



# Section 1 | Composition | Zone 2

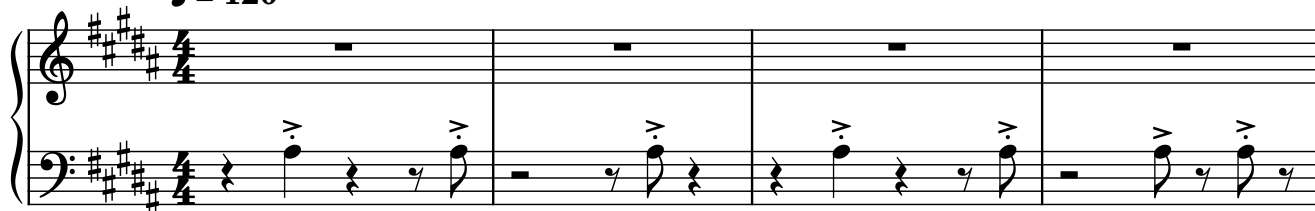
## Zone 2

Playing sports

Elbrich van Stralen

### Footsteps

Swing ♩ = 120



### Entering the pingpong club



### Start of the match



## Section 1 | Composition | Zone 2

21 **Straight**

*Ball drops*

*Irritated voice*

25 **Swing**

*open*

*Entering the open Rugby field*

**Rugby field**

29 **open**

*Open, soft wind*

$\text{♩} = 110$

35 **Straight**

*Throw of ball*

*Voice*

39

*Wind*

*Voice*

43

*Running*

# Section 1 | Composing | Zone 2

3

45

8<sup>-7</sup>

*Openess*

47

*Wind, openess*

**Pingpong**

♩ = 120  
Swing

49

*Voice player 1*

*Red.*

53

*(Red.)*

*Pingpong ball fading out*

57

*(Red.)*

## Section 1 | Composition | Zone 3

*Not necessary anymore*

## Section 1 | Composition | Zone 4

*Not necessary anymore*



## **Section 2 | P2 Products**

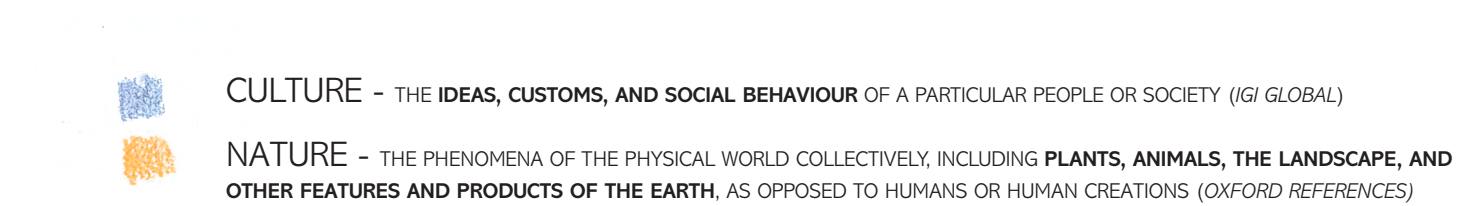
## Section 2 | Design | Translation

In section 2, compositions were made. Now comes the design task: How can the sound of the friche be implemented in the design of a building? In other words: How to translate the music into something spatial?

The first composition, Zone 1, is used to take the first steps toward a design. It is used to create a design tool for the organization of the building.

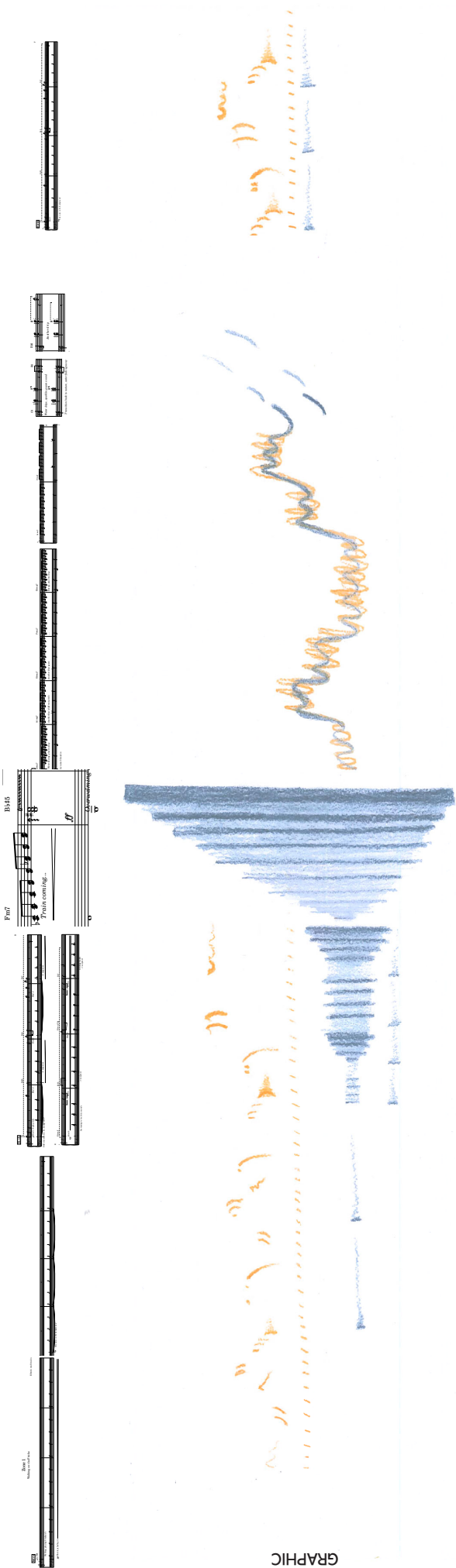
### Translation

The translation can be seen on the following pages. First, there is a graphic notation of the music. In this, a distinction is made between culture and nature:

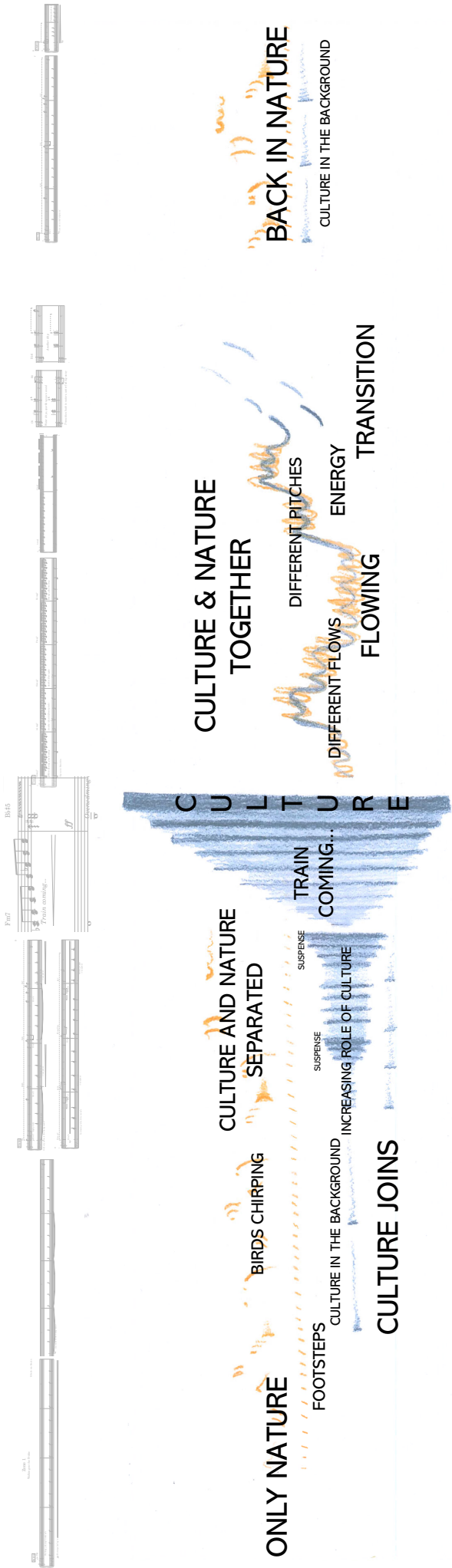


Next, the graphic notation is translated into a spatial notation. This is the design tool used for the individual design discussed later.

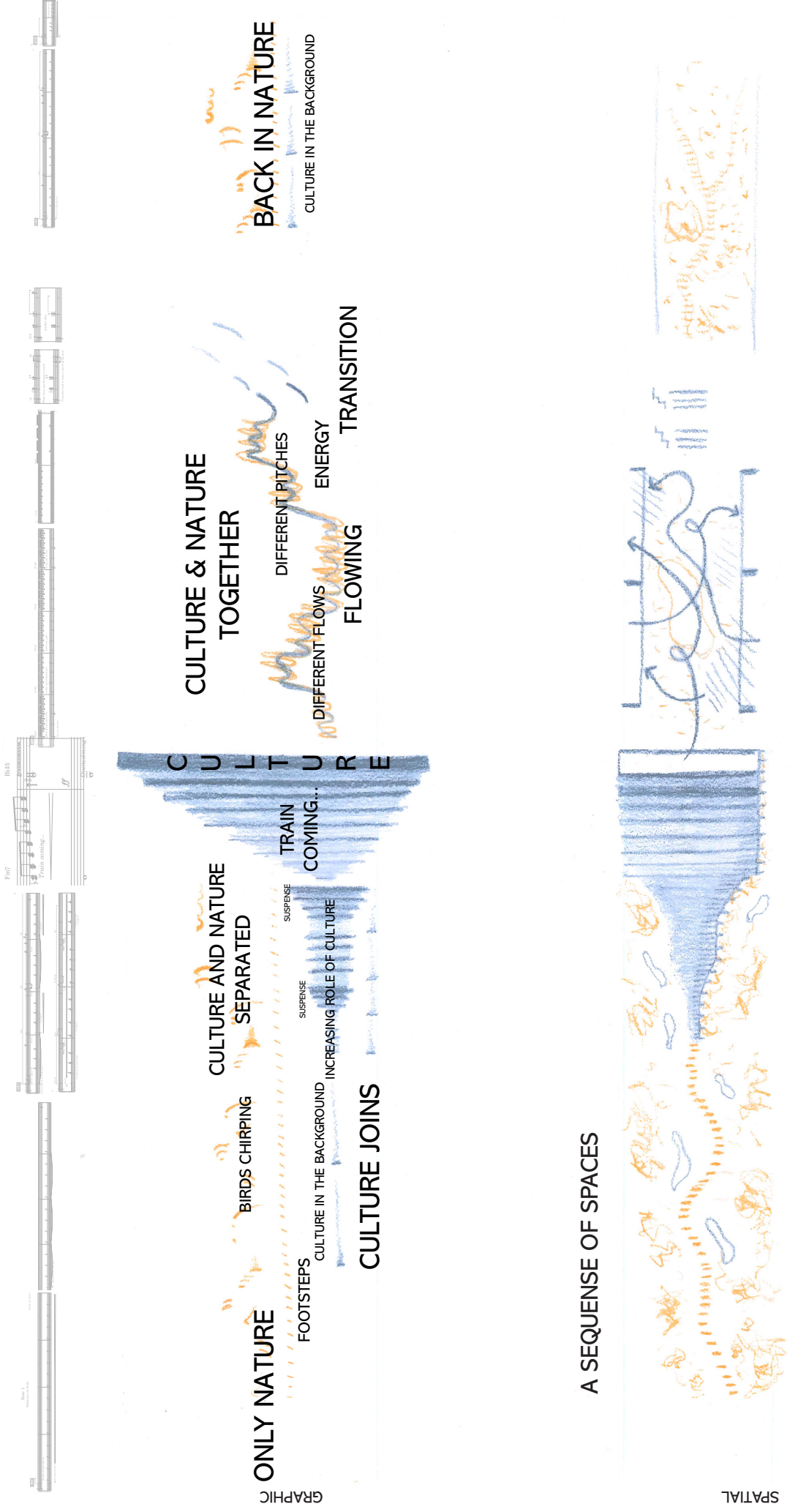
Section 2 | Design | Translation



Section 2 | Design | Translation

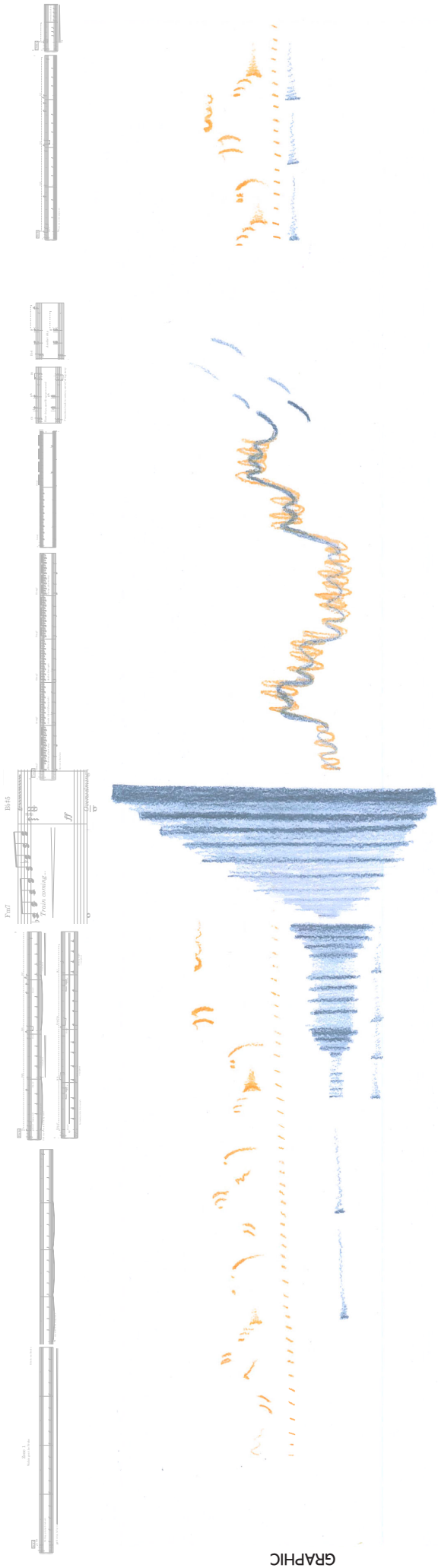


Section 2 | Design | Translation

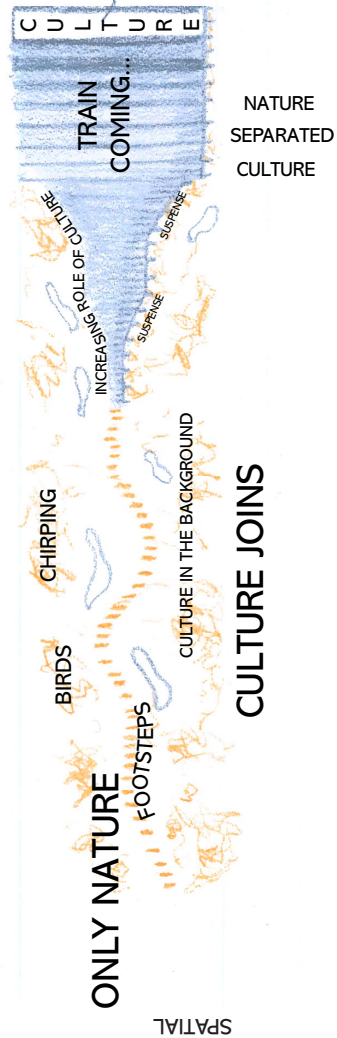


SPATIAL

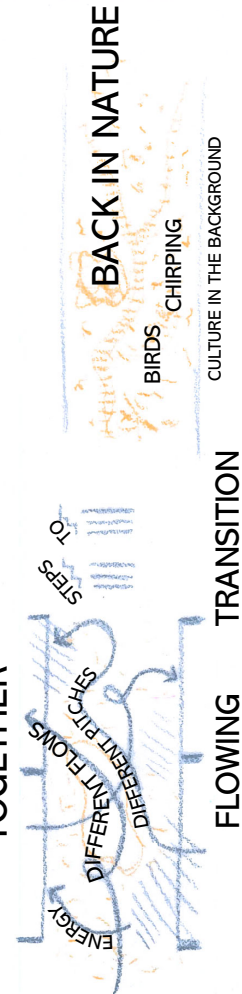
Section 2 | Design | Translation



A SEQUENCE OF SPACES



CULTURE & NATURE  
TOGETHER



FLOWING  
TRANSITION

BACK IN NATURE

BIRDS  
CHIRPING  
CULTURE IN THE BACKGROUND

## Section 2 | Design | Urban design

### Personal first thoughts and aims for the urban design

My first thoughts and aims for the urban design were:

- let the west side of the friche as much **as nature as possible**
- **densifying on the east** and along the borders of the westside of the friche
- **Green based**, industry inclusive urban plan on the east

Location of the design

- a place with **contrasts**, on the border **between built and nature**
- a place where people meet, to **bring people together**, bring them to nature, **meeting the silence**

### Visual representation of aims for the urban design

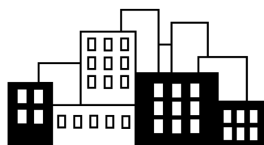
Contrasts



Sequense of spaces



Close to nature & liveliness



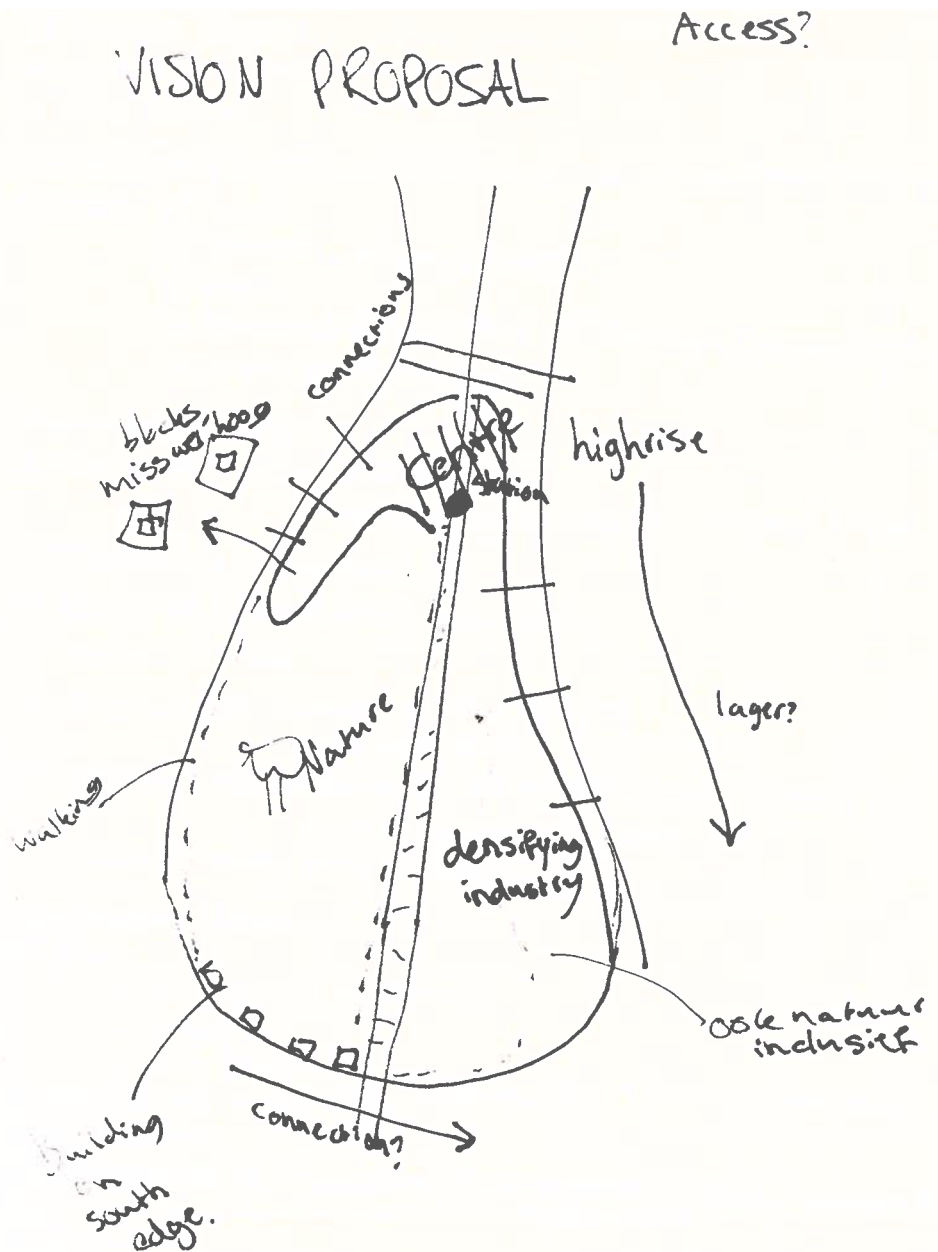
Letting the Friche bee



## Section 2 | Design | Urban design

### Personal first thoughts about the friche

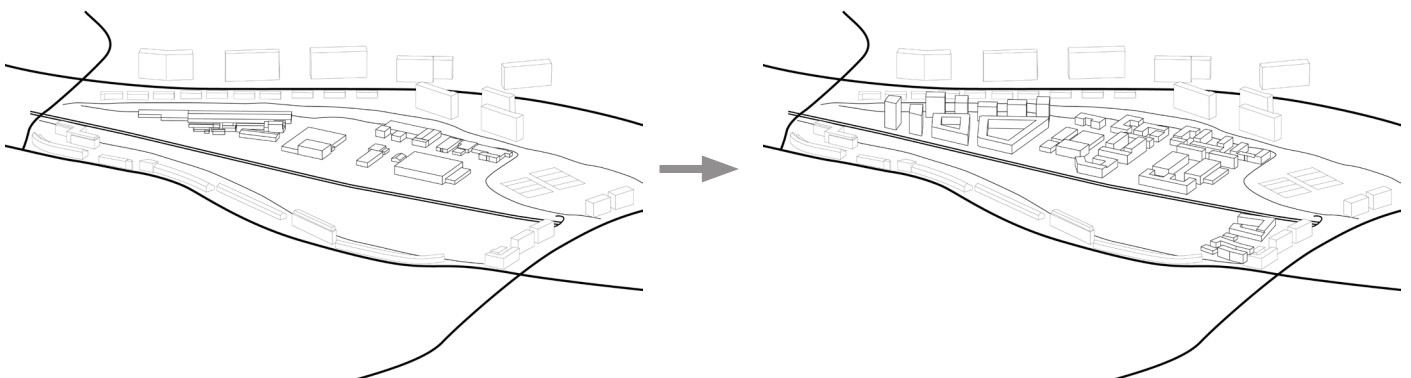
My own thoughts about an urban vision proposal before talking to the new group is displayed on the right.





## Section 2 | Design | Urban design

### Masterplan group 5 | 1:6000



## Section 2 | Design | Urban design

### Principles group 5



Rest

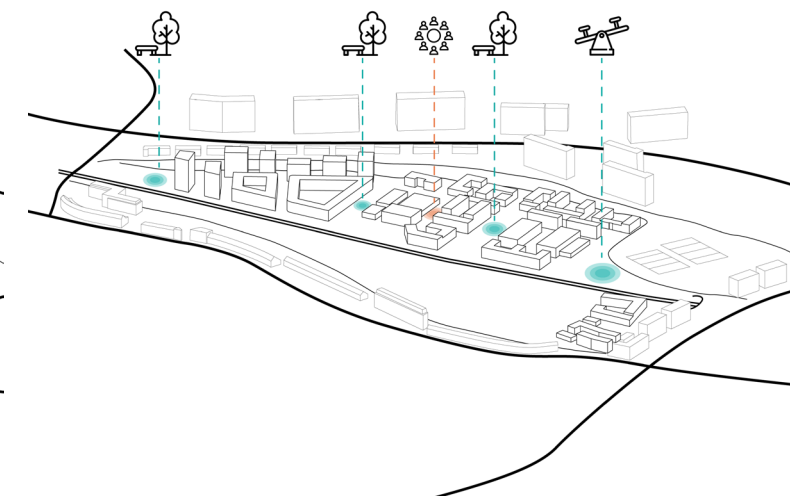
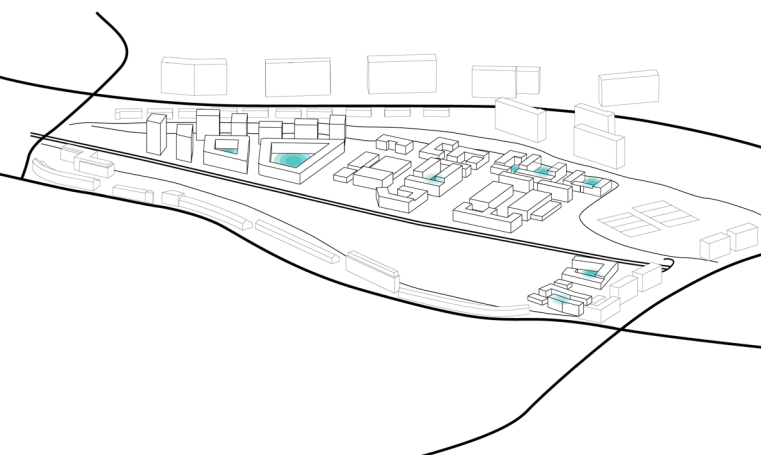
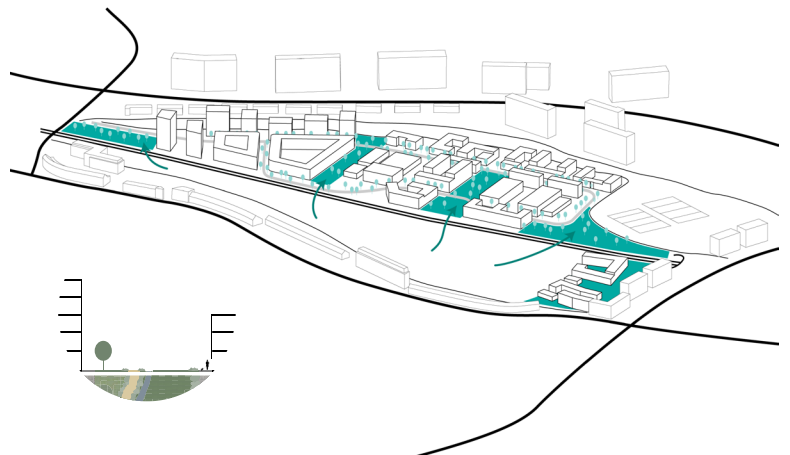
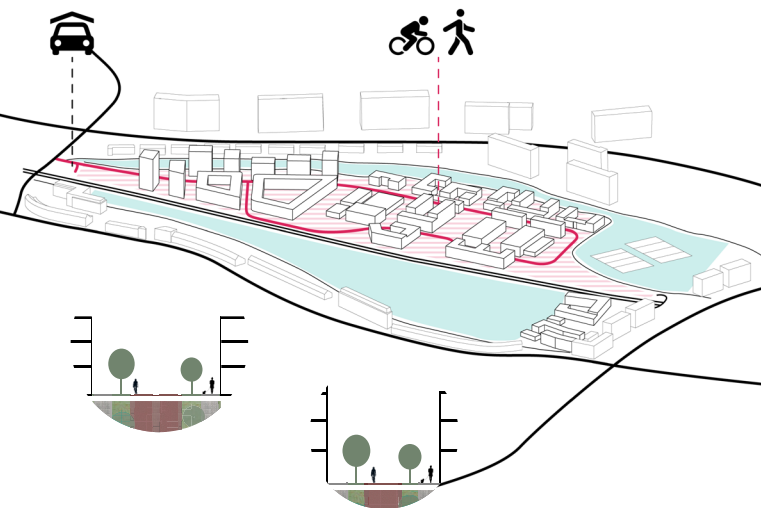
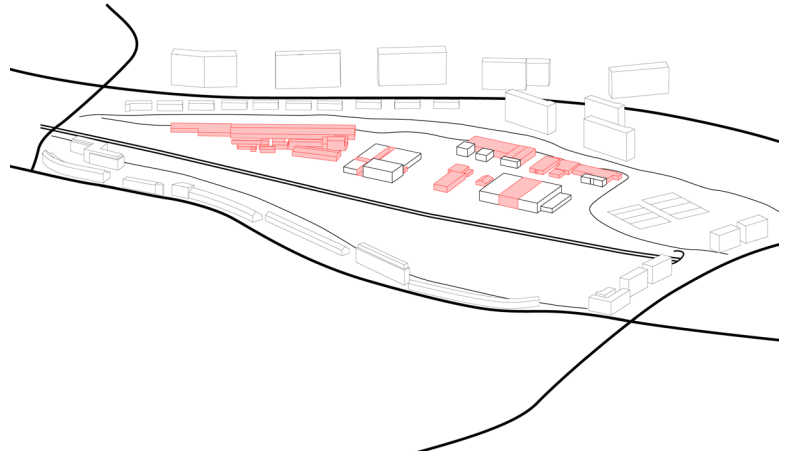
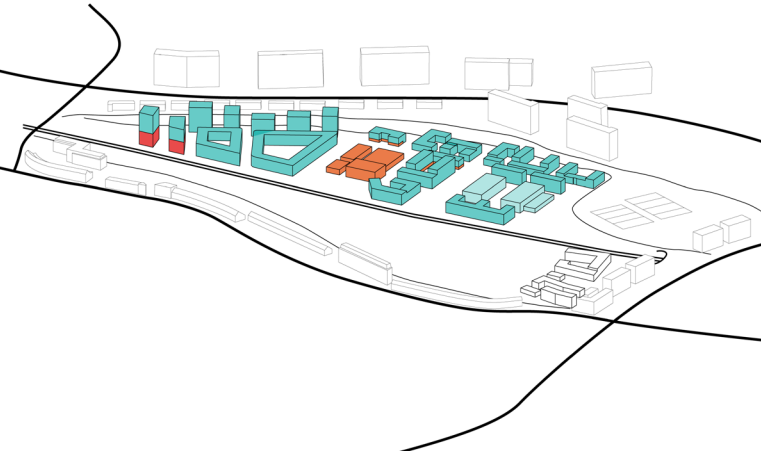


Nature



## Section 2 | Design | Urban design

### Masterplan group 5

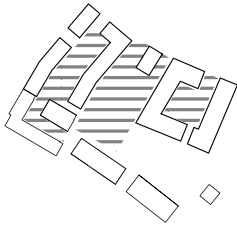


# Section 2 | Design | Urban design

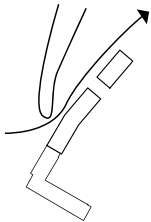
## Principles for the site of the group

### Rest

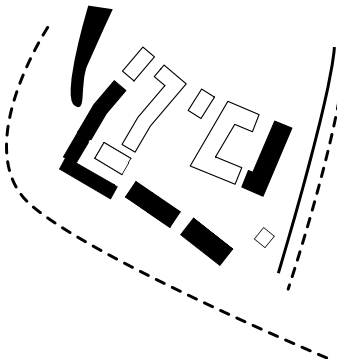
Creating courtyards



Hidden access

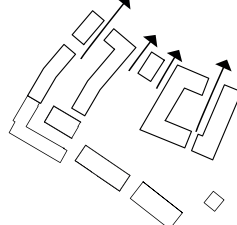


Blocking noises

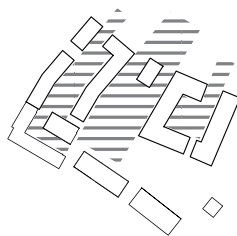


### Connection to nature

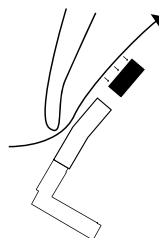
Creating sightlines to the Friche



Bringing Friche into the blocks

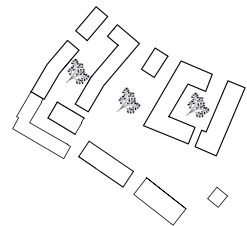


Creating a regulated entrance to the Friche

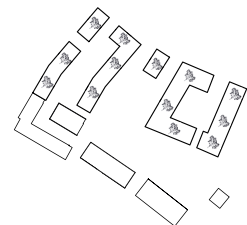


### Nature

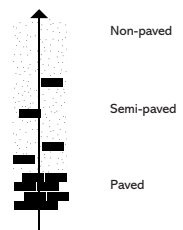
Biodiversity in the blocks



Nature inclusive buildings



Gradient of paving

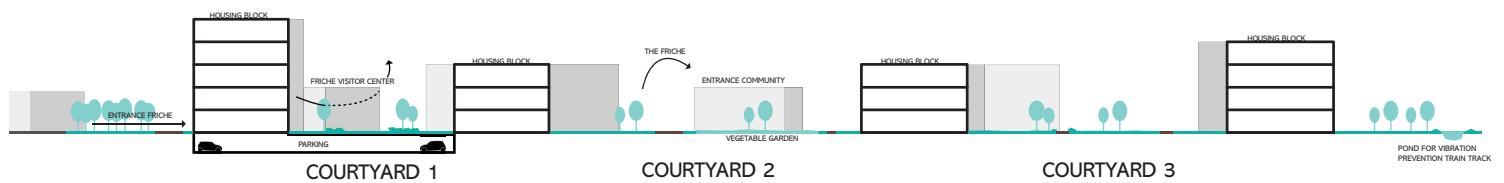


## Section 2 | Design | Urban design

### Plan of site of the group | 1:1700



### Section



SECTION CHOSEN PART OF MASTERPLAN 1:1000

## Section 2 | Design | Translation

### Using the composition as a design tool | 1:1000



## Section 2 | Design | Translation

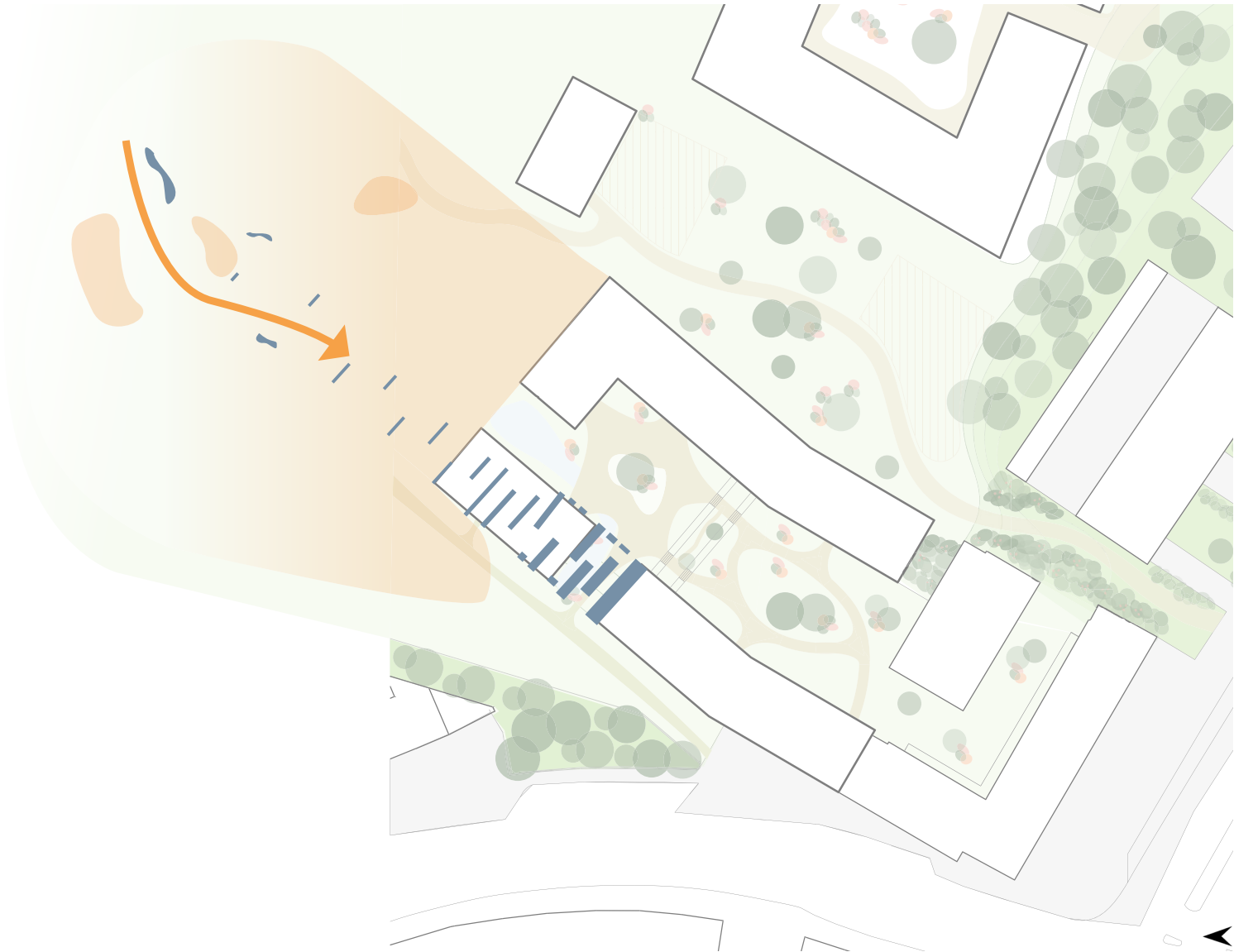
### Using the composition as a design tool | 1:1000





## Section 2 | Design | Translation

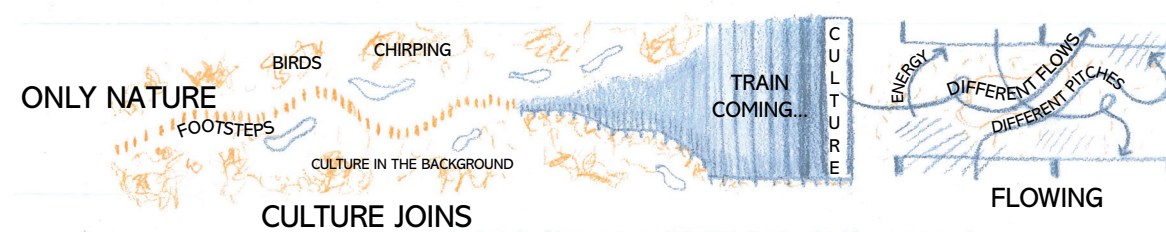
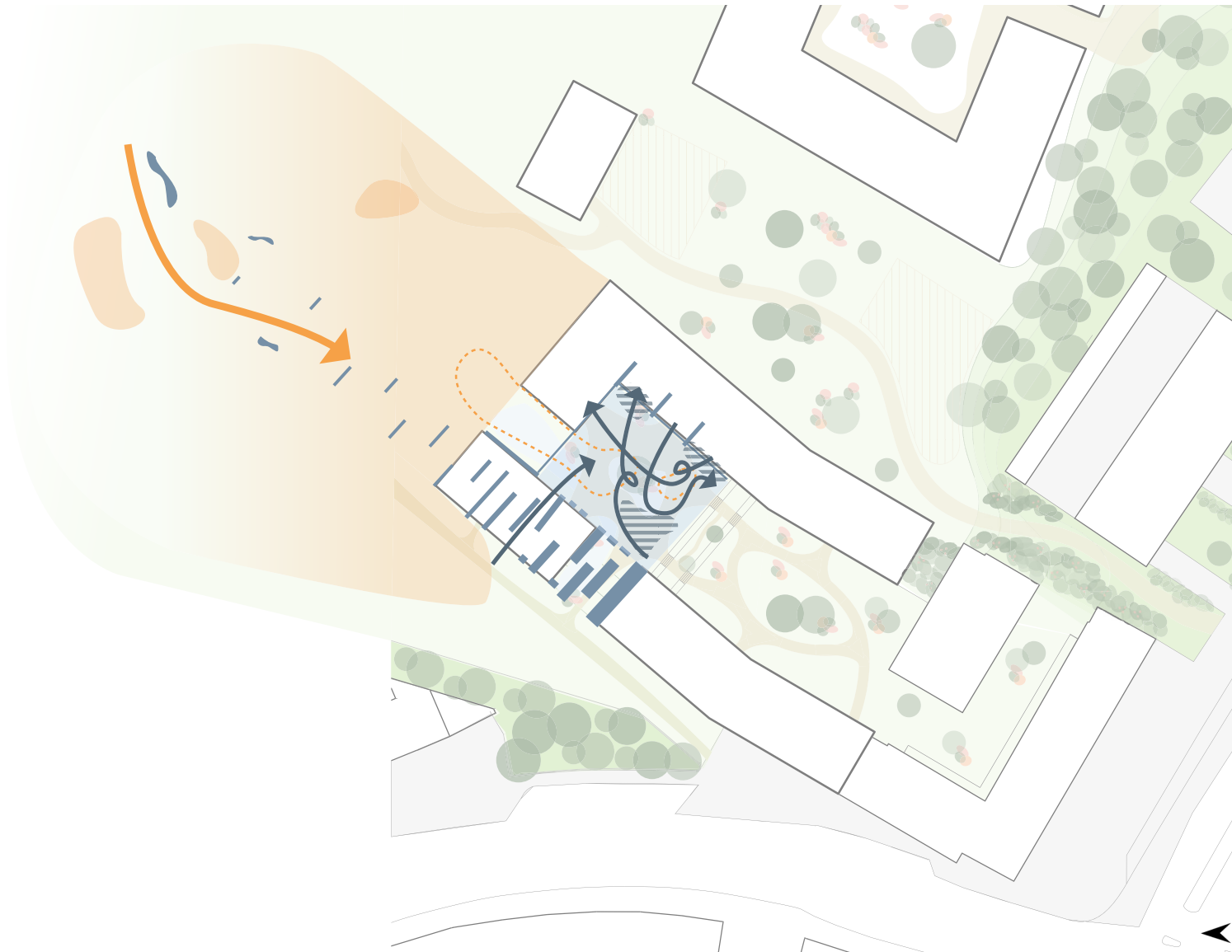
Using the composition as a design tool | 1:1000





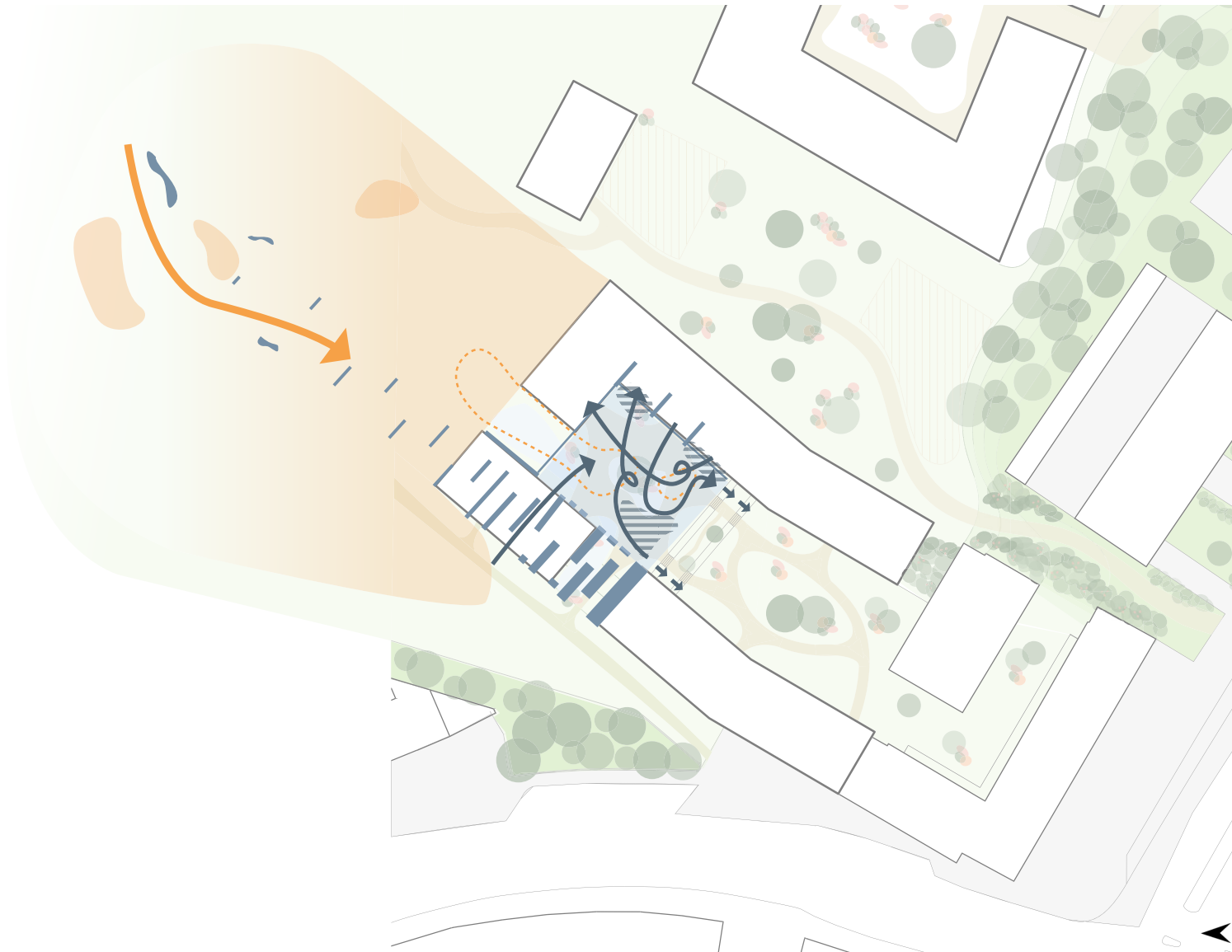
## Section 2 | Design | Translation

### Using the composition as a design tool | 1:1000



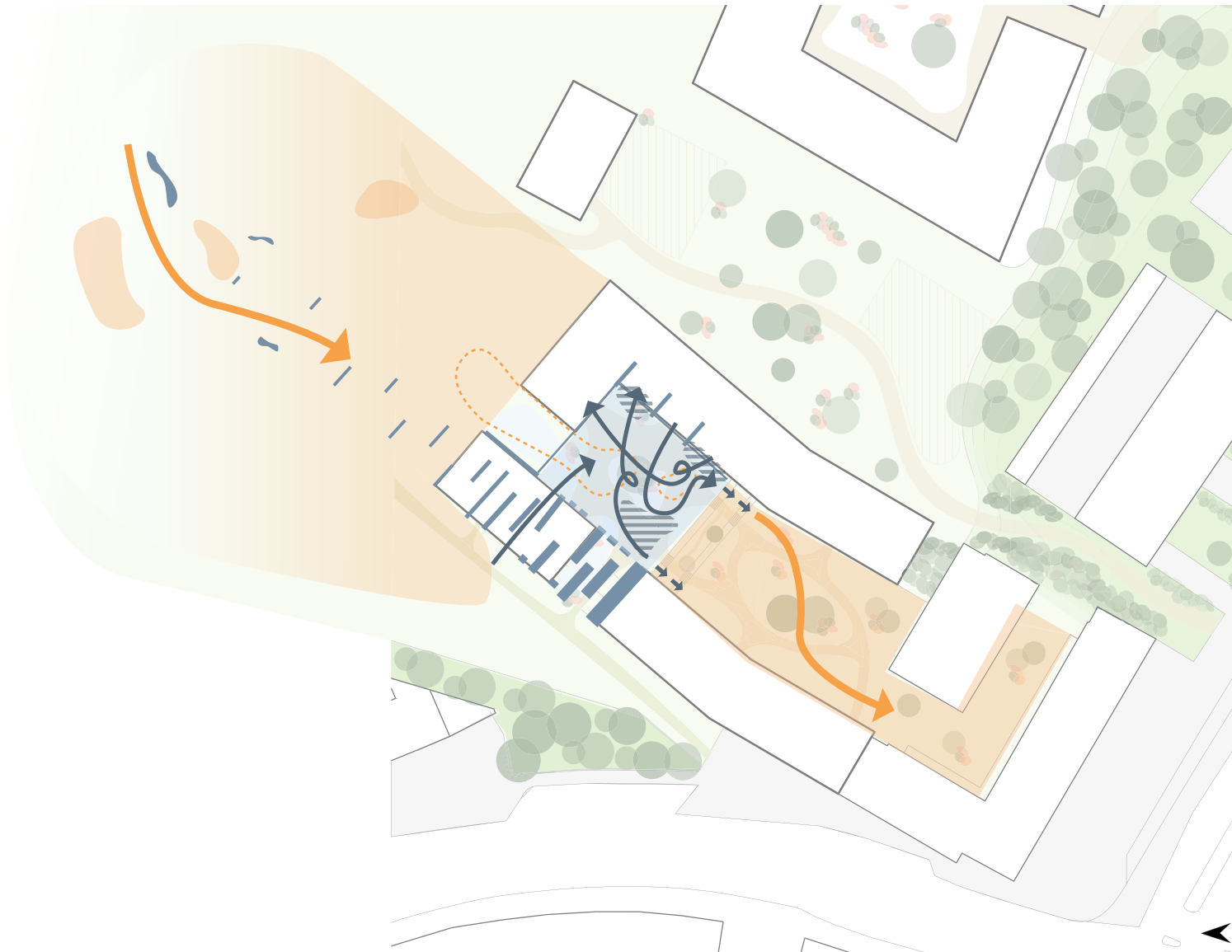
## Section 2 | Design | Translation

### Using the composition as a design tool | 1:1000



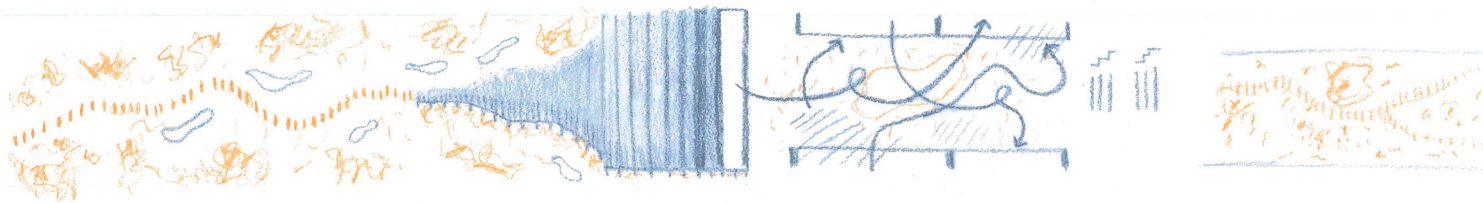
## Section 2 | Design | Translation

### Using the composition as a design tool | 1:1000



## Section 2 | Design | Translation

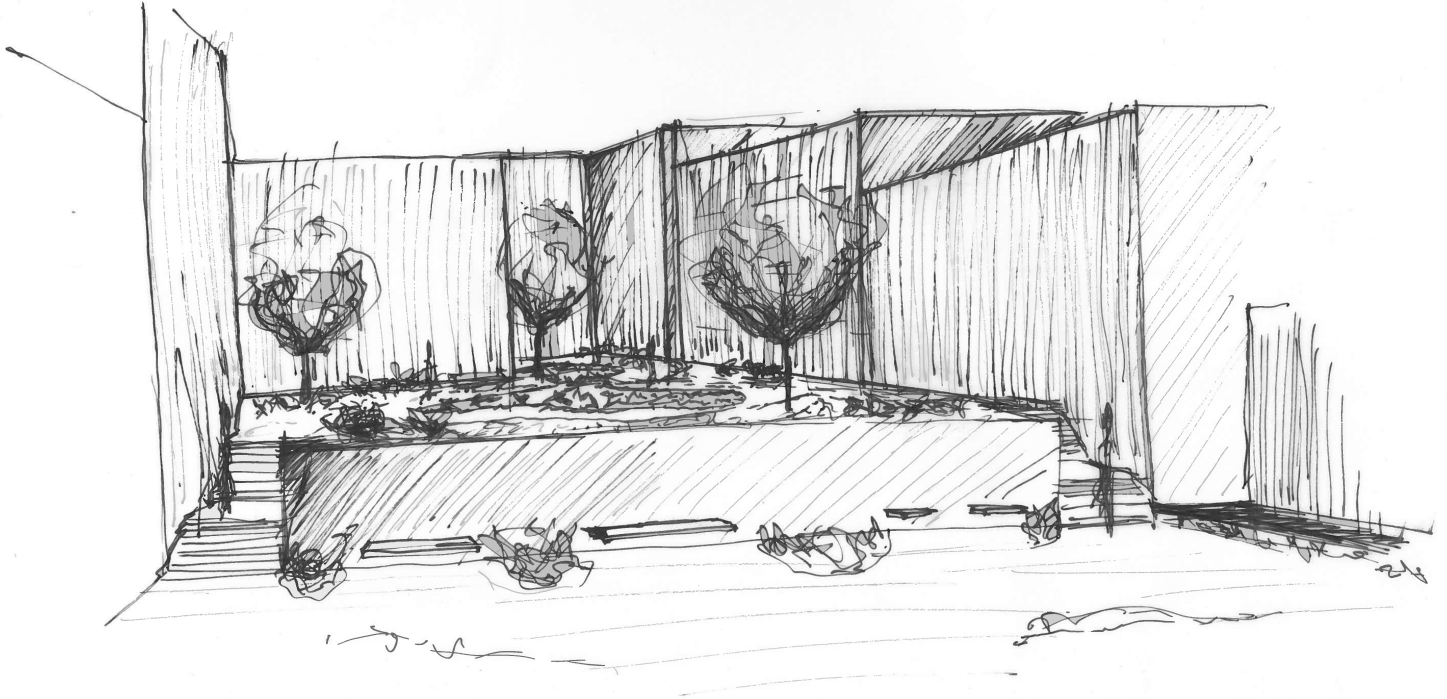
Overview en new planv I 1:1000



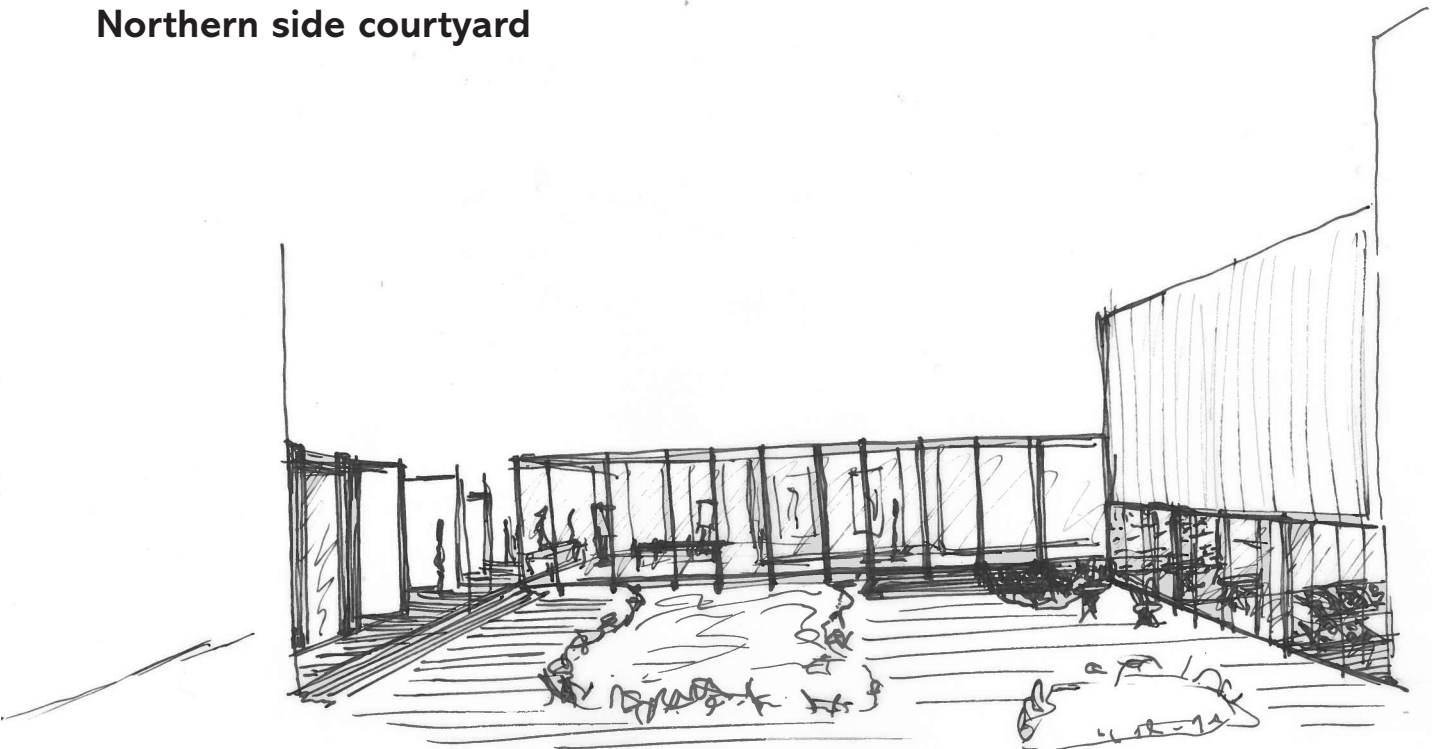


## Section 2 | Design | Atmospheres

### Southern side courtyard

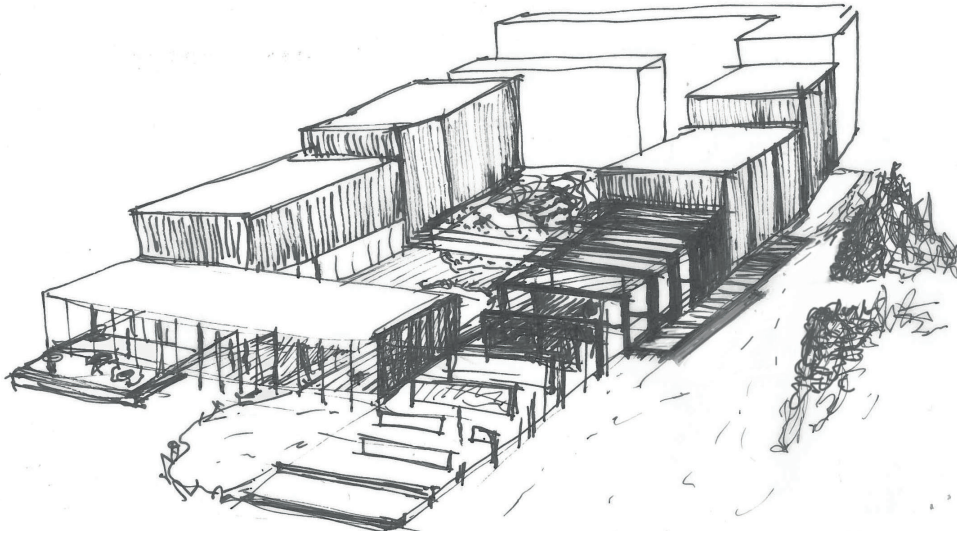


### Northern side courtyard

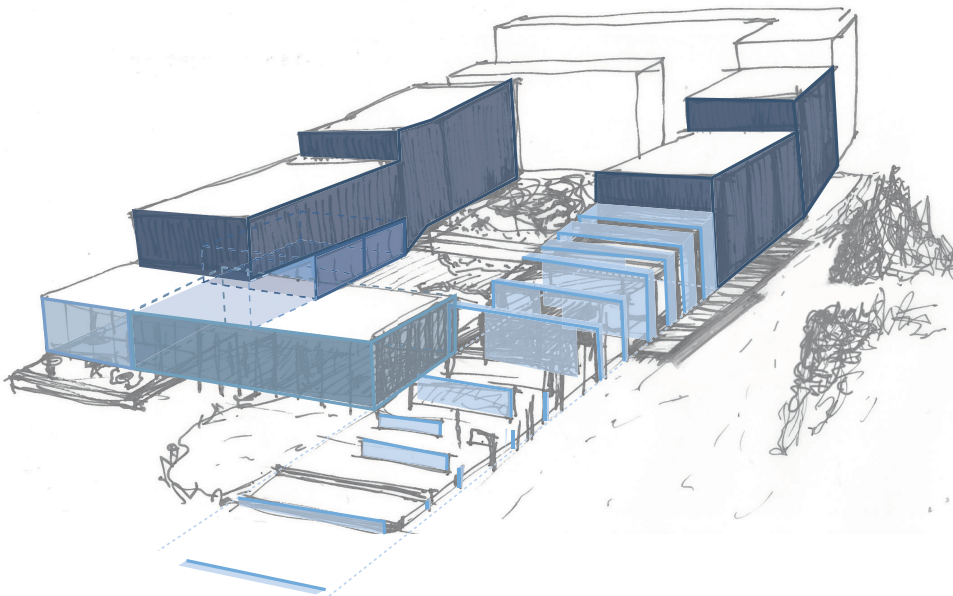


## Section 2 | Design | Perspective & program

### Perspective

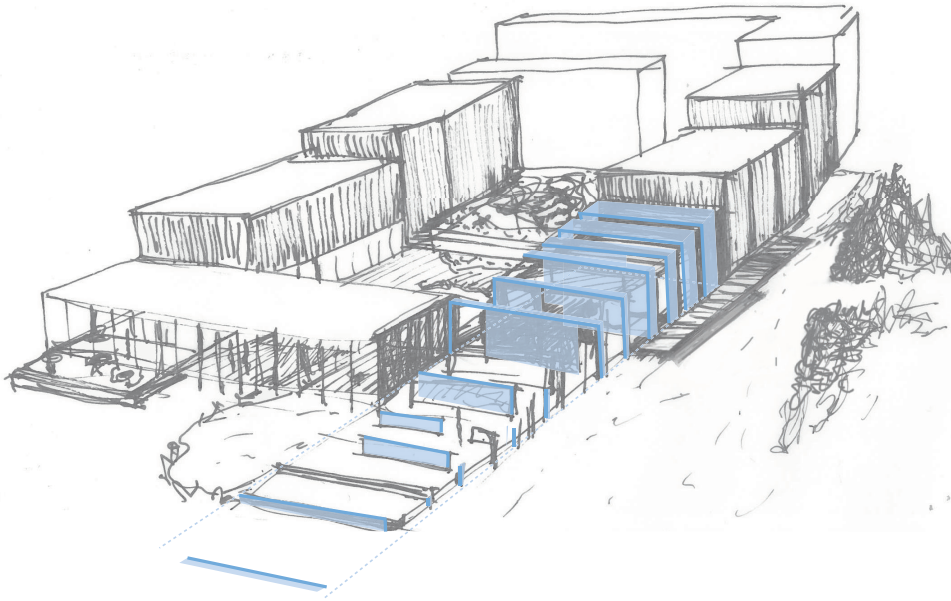


**Total program | 4929 m<sup>2</sup>**

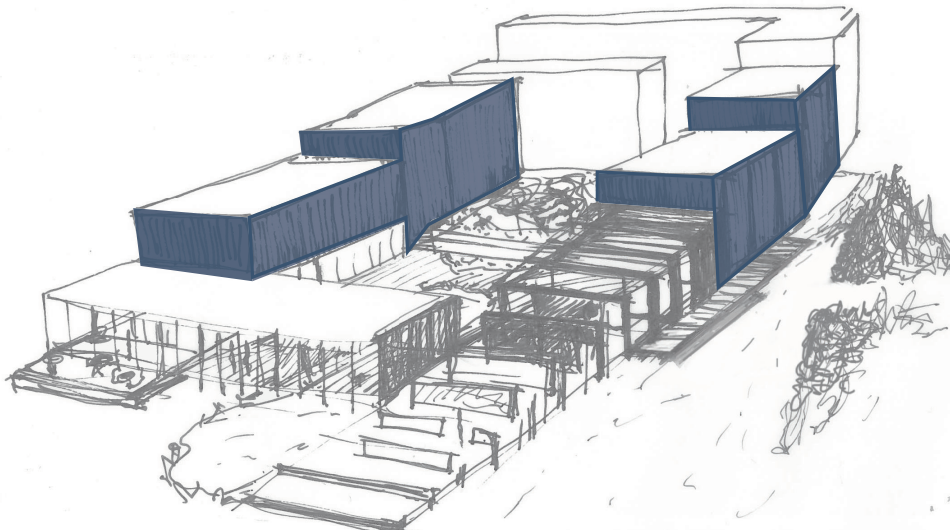


## Section 2 | Design | Perspective & program

**Visitors center** | 170 m<sup>2</sup> (building only)



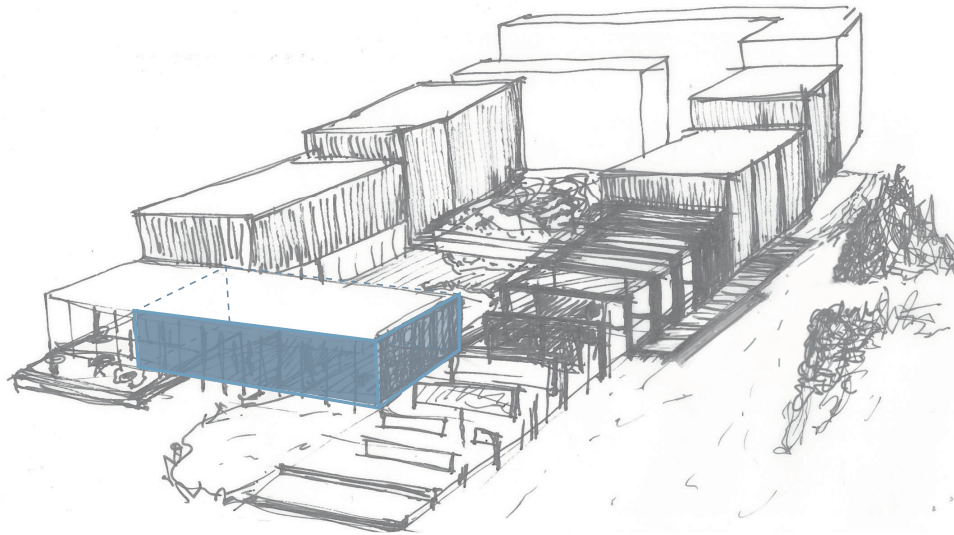
**Housing** | 4075 m<sup>2</sup>



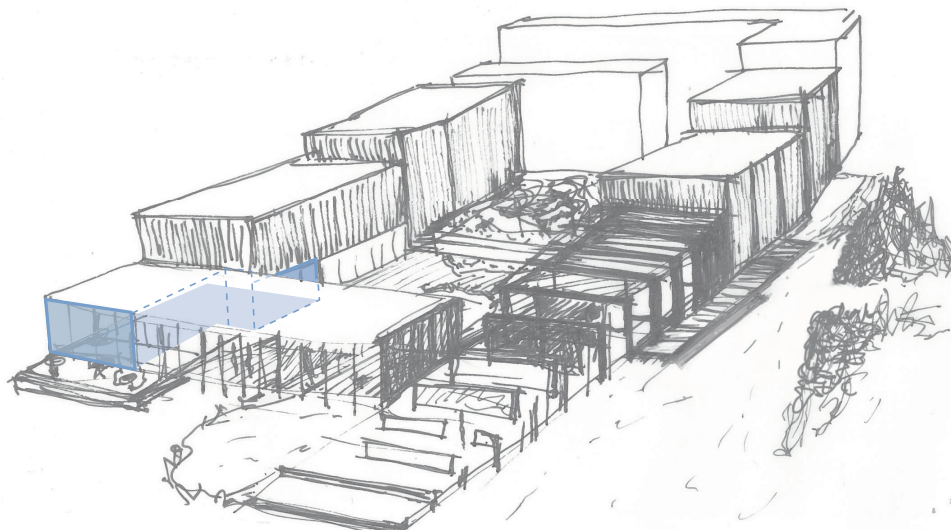


## Section 2 | Design | Perspective & program

**Workshop & auditorium | 293 m<sup>2</sup>**



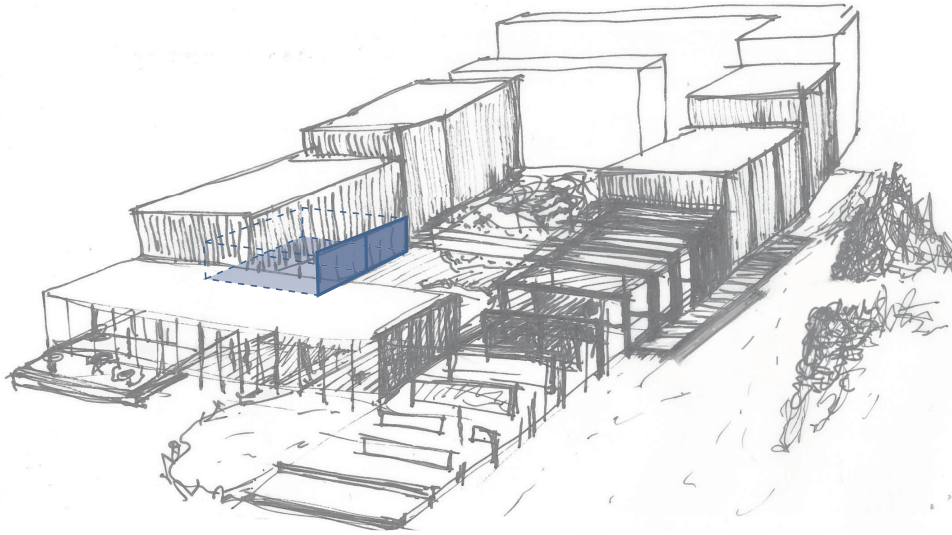
**Bookstore- & visitorscafe | 200 m<sup>2</sup>**





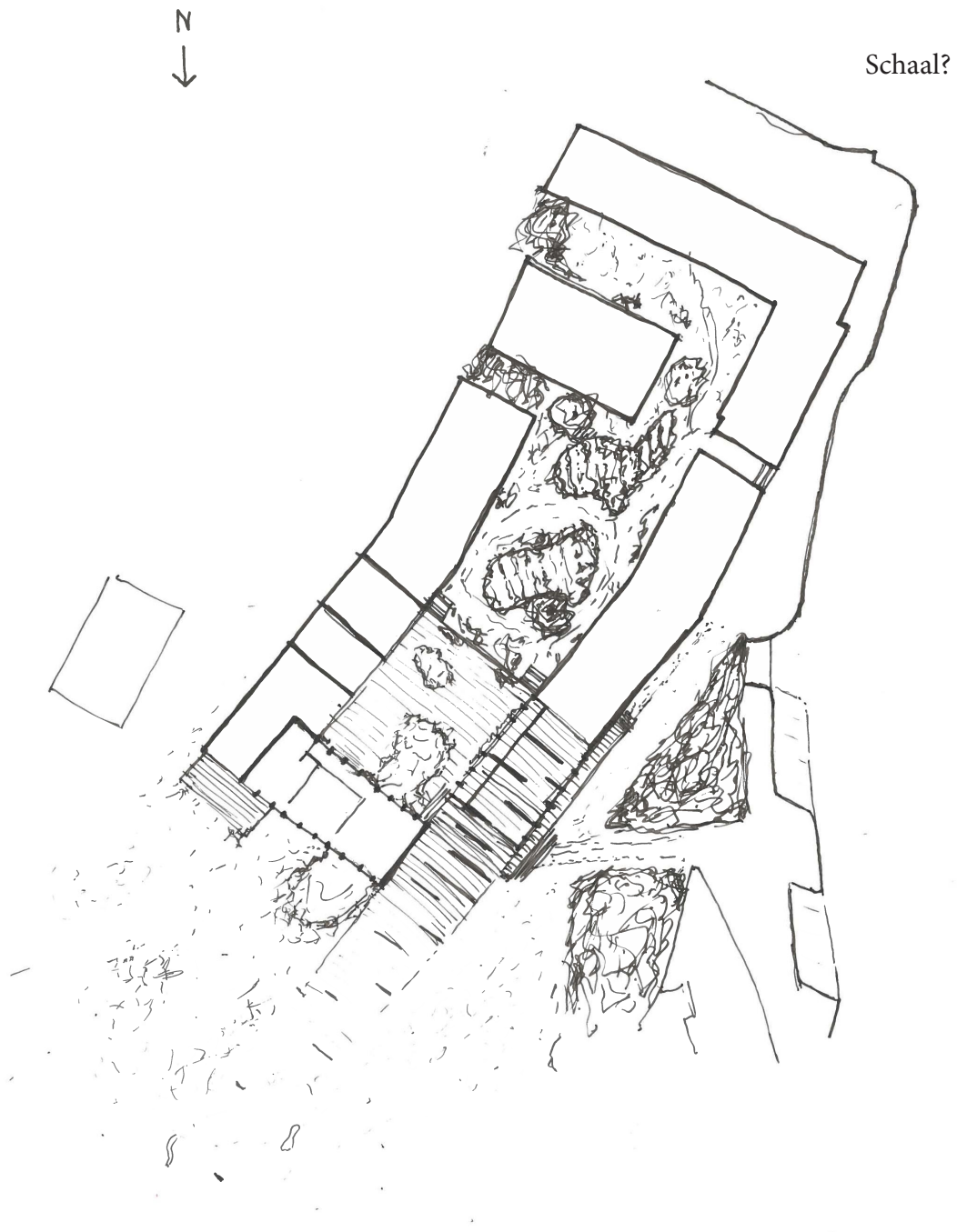
## Section 2 | Design | Perspective & program

Grocery & repaircenter | 191 m<sup>2</sup>



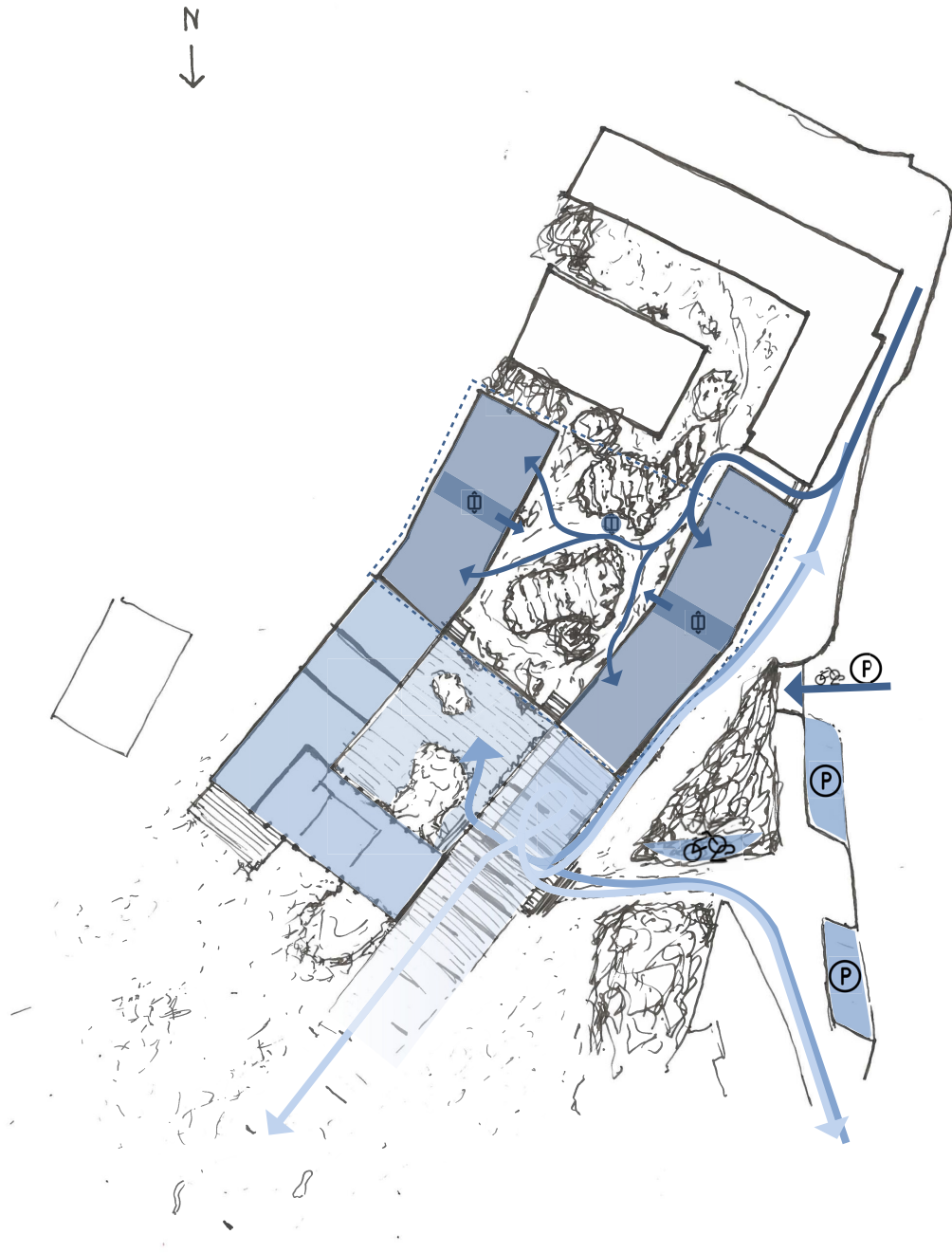
## Section 2 | Design | Plan

Plan of courtyard | 1:1000



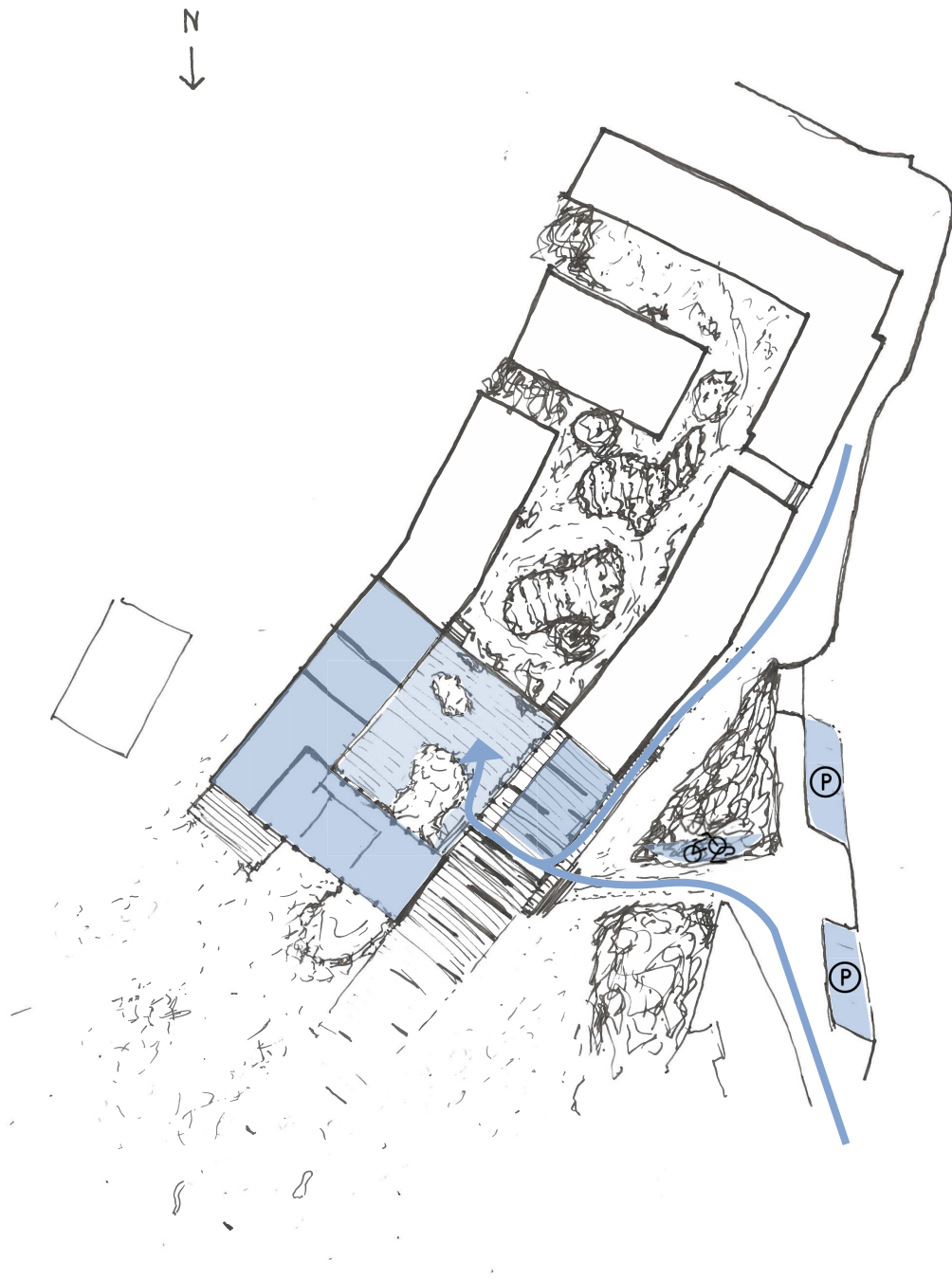
## Section 2 | Design | Plan & working

Total working | 1:1000



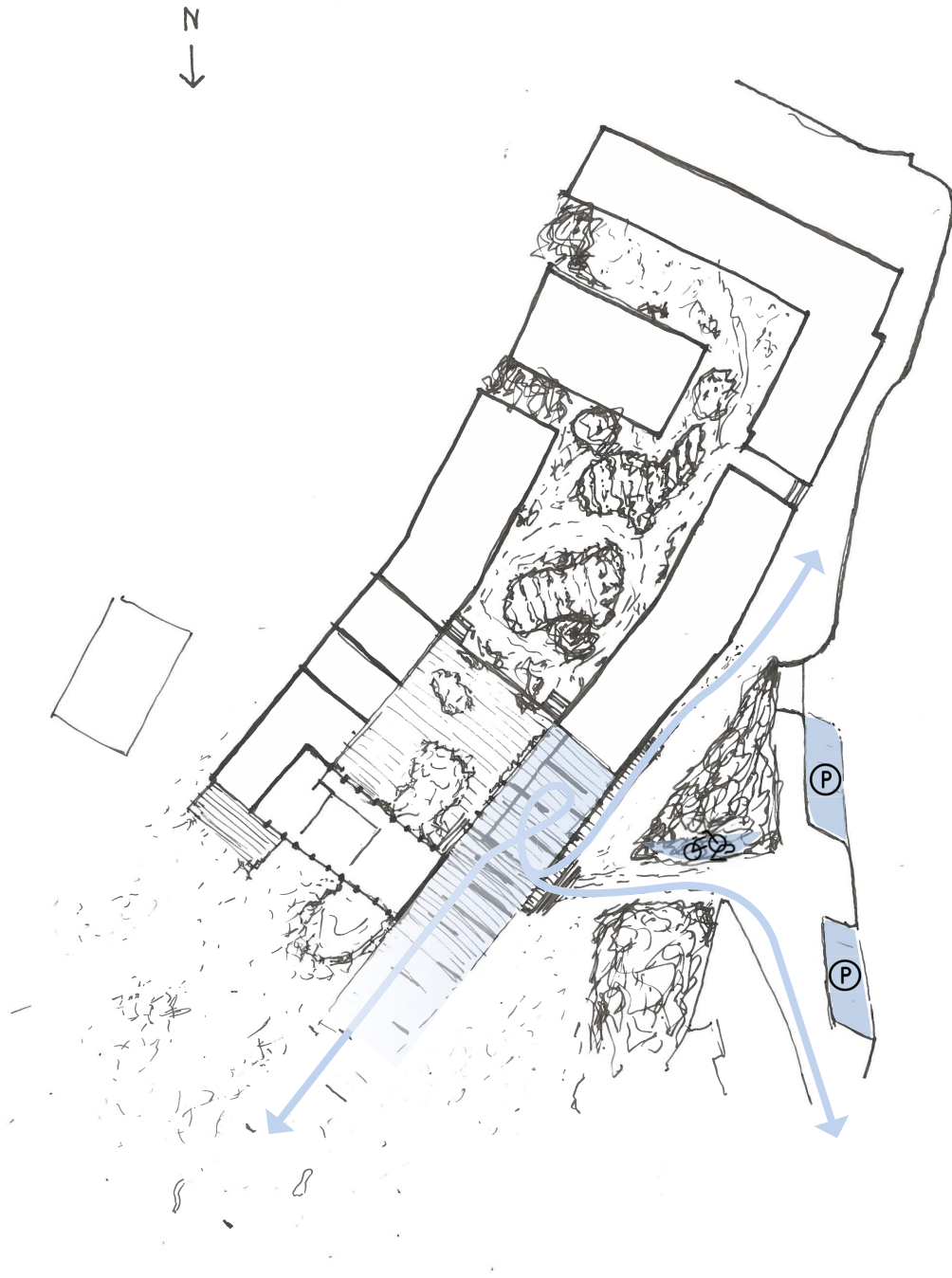
## Section 2 | Design | Plan & working

Visitor of the courtyard | 1:1000



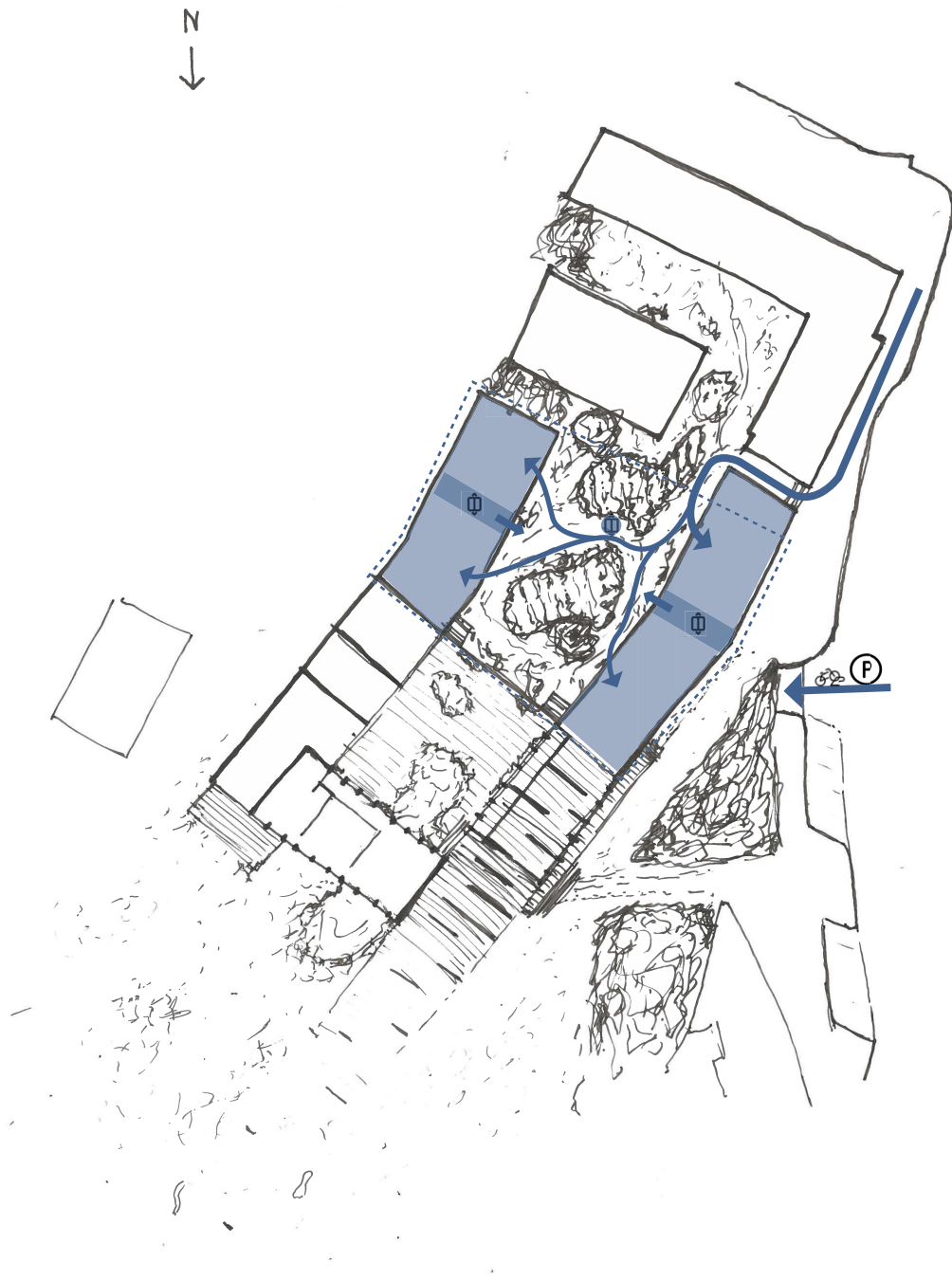
## Section 2 | Design | Plan & working

### Visitor of the Friche | 1:1000



## Section 2 | Design | Plan & working

Resident of the courtyard | 1:1000

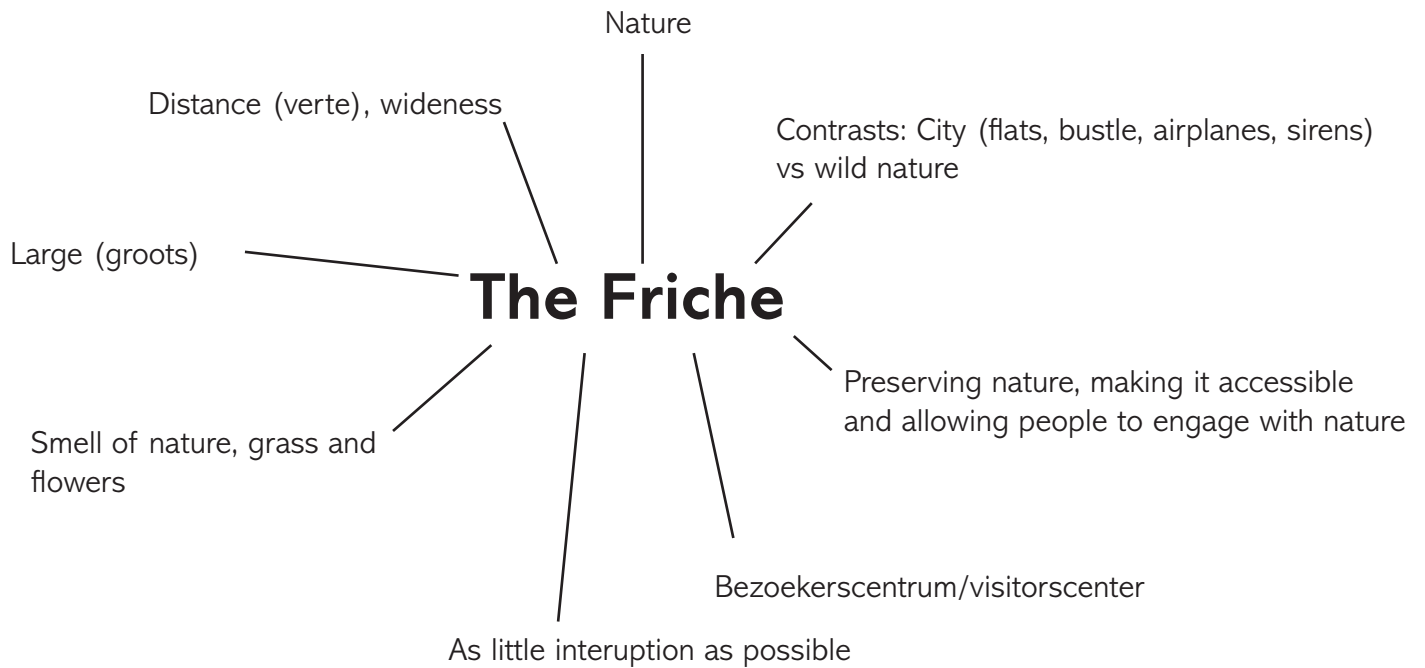


## Section 2 | Design | First Idea's

In section 3, designing will start. Yet this did not go so strictly, because ideas came to me already during the first visit of the site. The process of how the design came about is described here. Over the course of six months, more and more of these ideas became concrete.

### First Idea's

The first idea's when walking on the westside of the friche in september:



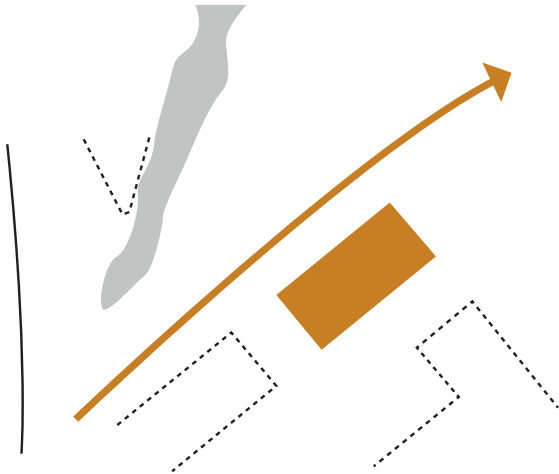


## Section 2 | Design | Process of ideas before courtyard

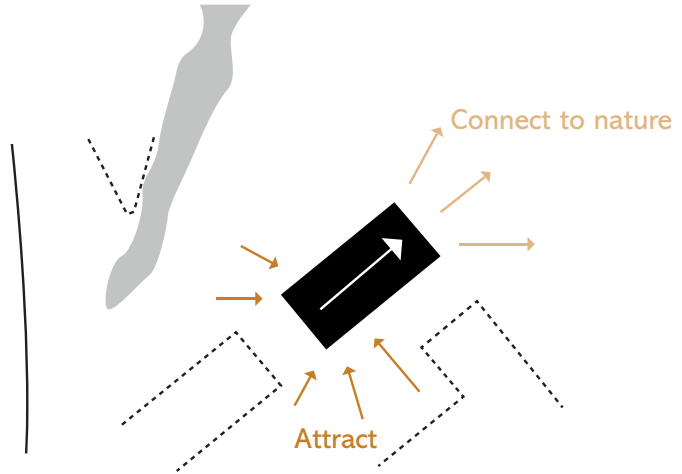
### Design idea's for first sesion | Designing a visitorscenter

#### Design Principles

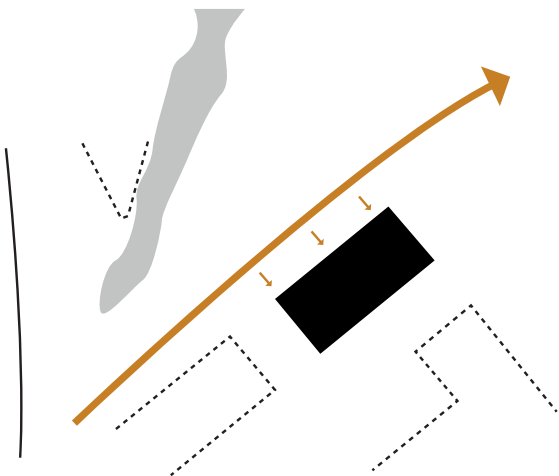
Entrance to the Friche



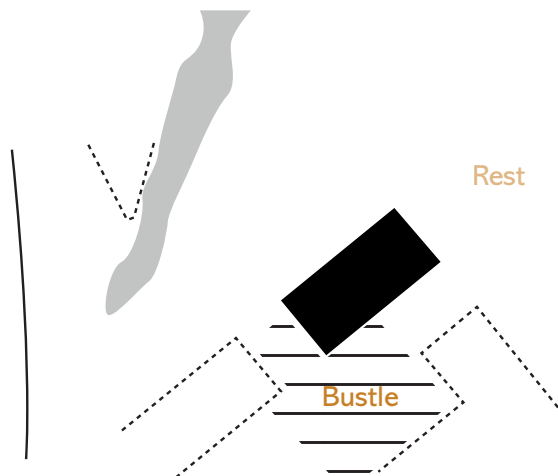
Building as a transporter



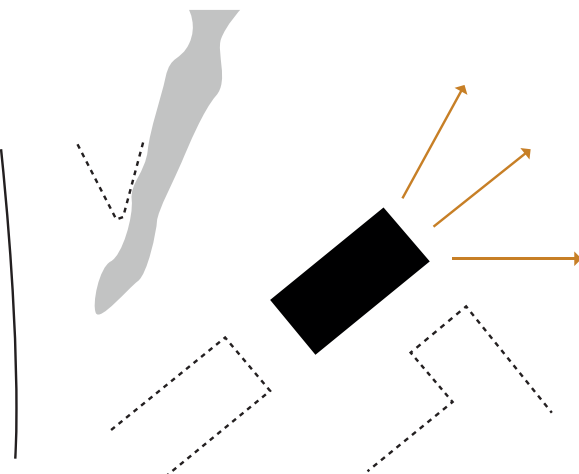
Inviting



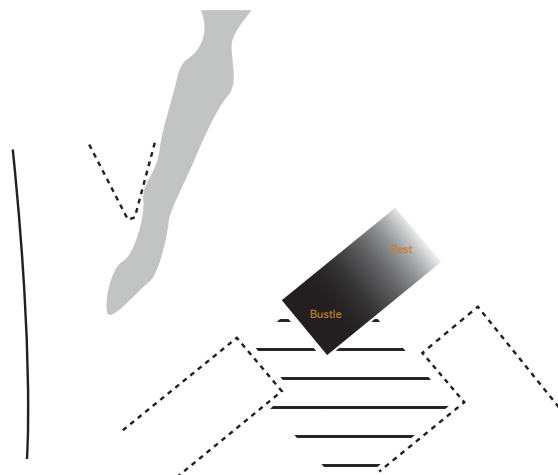
Contrast of sides



View on the Friche



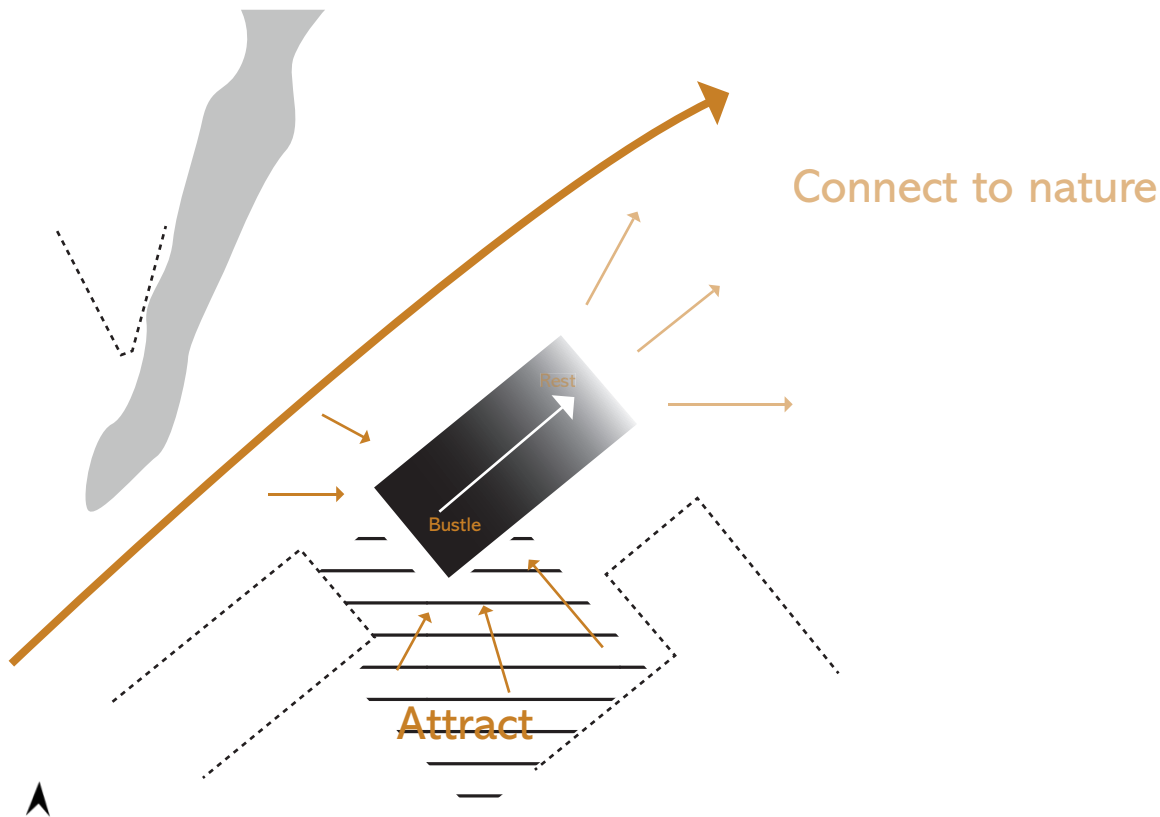
Contrast in building





## Section 2 | Design | Process of ideas before courtyard

### Conclusion design principles

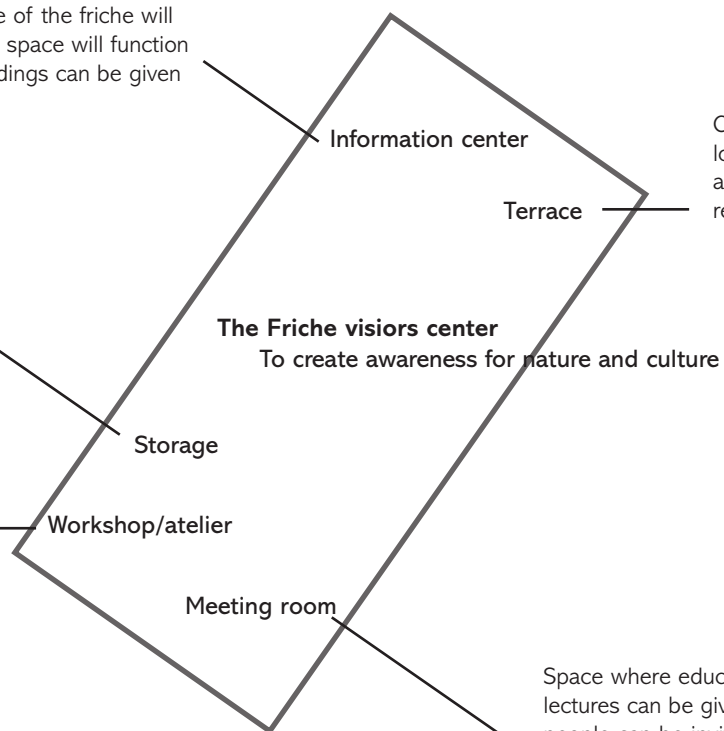


### First idea of program | community & nature coming together

Where information about the nature of the friche will be given. In the 'closed' hours, this space will function as a place where concerts and readings can be given (incl. view).

Storage for the purpose of the nature reserve

Place for locals to develop themselves creatively, place for education and place to work on projects for the Friche



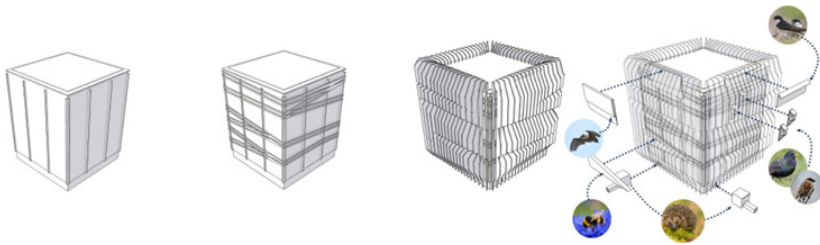
Café where visitors and locals can drink their coffee and rest. Idea of a mountain refuge, peaceful and quite

Space where educational lectures can be given and people can be invited to talk about nature in the city

## Section 2 | Design | Process of ideas before courtyard

### Architectural idea's

#### Nature-inclusive

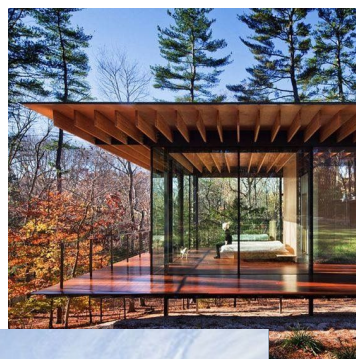


#### Opening to nature



#### Following horizontal lines of nature

#### Low impact building



More...

## Section 2 | Plan for the next half year

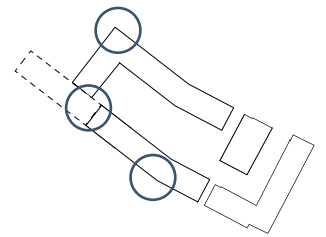
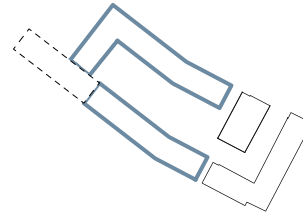
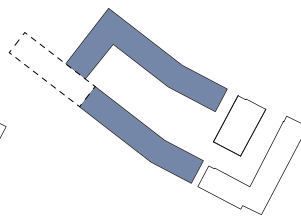
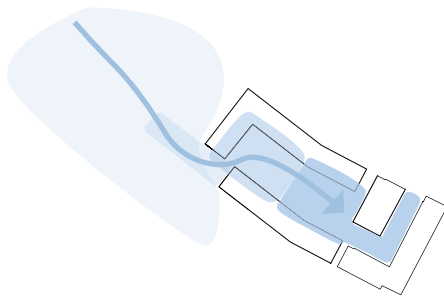
### Plan for next half year

ORGANISATION

PLANS

FACADES

DETAILS



↑ Inspiration

↓ Communication

↑ Inspiration

↓ Communication



## **Section 3 | Sound research western side Friche**

# Section 3 | Sound research | Overview sonic plan

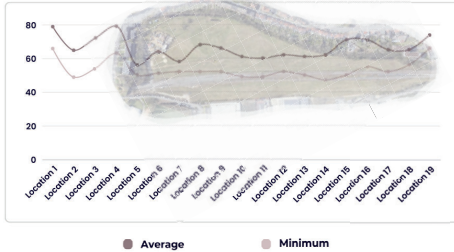
## SONIC PLAN OF THE FRICHE

### Sound in the urban environment

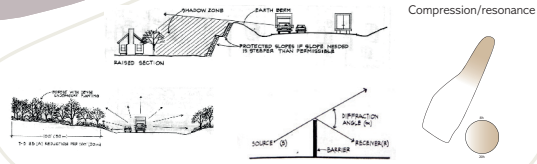
Sound is the crossing between people and their environment - 'van Lengen'

Sound connects people & environment; the human and non-human; the object, subject & place

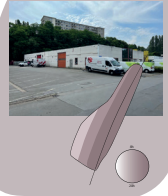
### Analysis of decibels



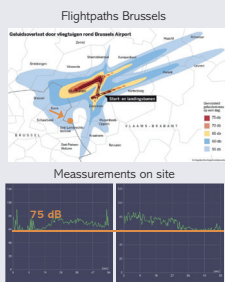
### Acoustic concepts



### Industry



### Airplanes crossing



### Circus



### Traffic & City



### Trains coming along



### BIRDS

#### Chiffchaff



**Habitat:** Dense undergrowth and low trees, breeds on or near the ground in forests, urban areas, and semi-open landscapes with trees and bushes.  
**Breeding:** Dense vegetation or near the ground.  
**Diet:** Insects, larvae, and berries, foraging restlessly.  
**Migration:** From August to October to winter in Spain, Portugal, or North Africa, returning between April and May.

#### Blue tit



#### Blackcap



**Breeding:** In low dense shrubbery from mid-April to late June.  
**Habitat:** In forests and semi-open landscapes with rich undergrowth, especially favoring brambles. Also found in parks and gardens. Prefers older trees and shrubs in natural forest settings. Often heard singing in spring but not easily seen. Flies infrequently, mainly vocalizes.  
**Diet:** Insects during breeding and berries and fruits throughout the rest of the year.  
**Migration:** Mid-August to mid-October to South England or the western Mediterranean, returning early to the Netherlands, even in March.

#### Robin



#### Black-headed gull

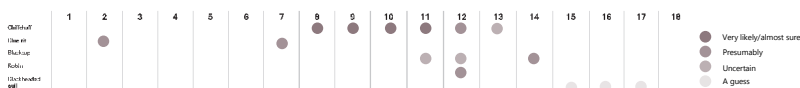


**Habitat:** Inland near freshwater and also in coastal areas. Forages in diverse landscapes, especially water-rich grasslands, and tidal flats. Found widely outside breeding season, including in farmland and urban areas.  
**Diet:** Insects, fish, and scavenged scraps. Known to steal food from other birds and probe mudflats for invertebrates.  
**Migration:** Southward, or stay, spans from February to April, crossing land and sea day and night.

### Layers of sounds

Order of birds: Chiffchaff, Blue tit, Blackcap, Robin, Black-headed gull  
Traffic passing by: very loud  
Footsteps: slowly → fast  
Traffic in background: quiet  
City noise in background: low  
Airplane: very low

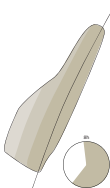
### Analysis birds



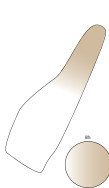
#### Airplane



#### Train



#### Resonance/compression



#### Traffic/City



#### Circus



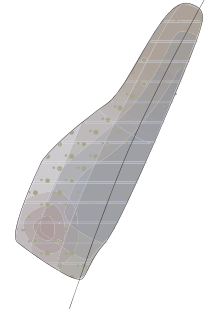
#### Birds



#### Industry



### Total



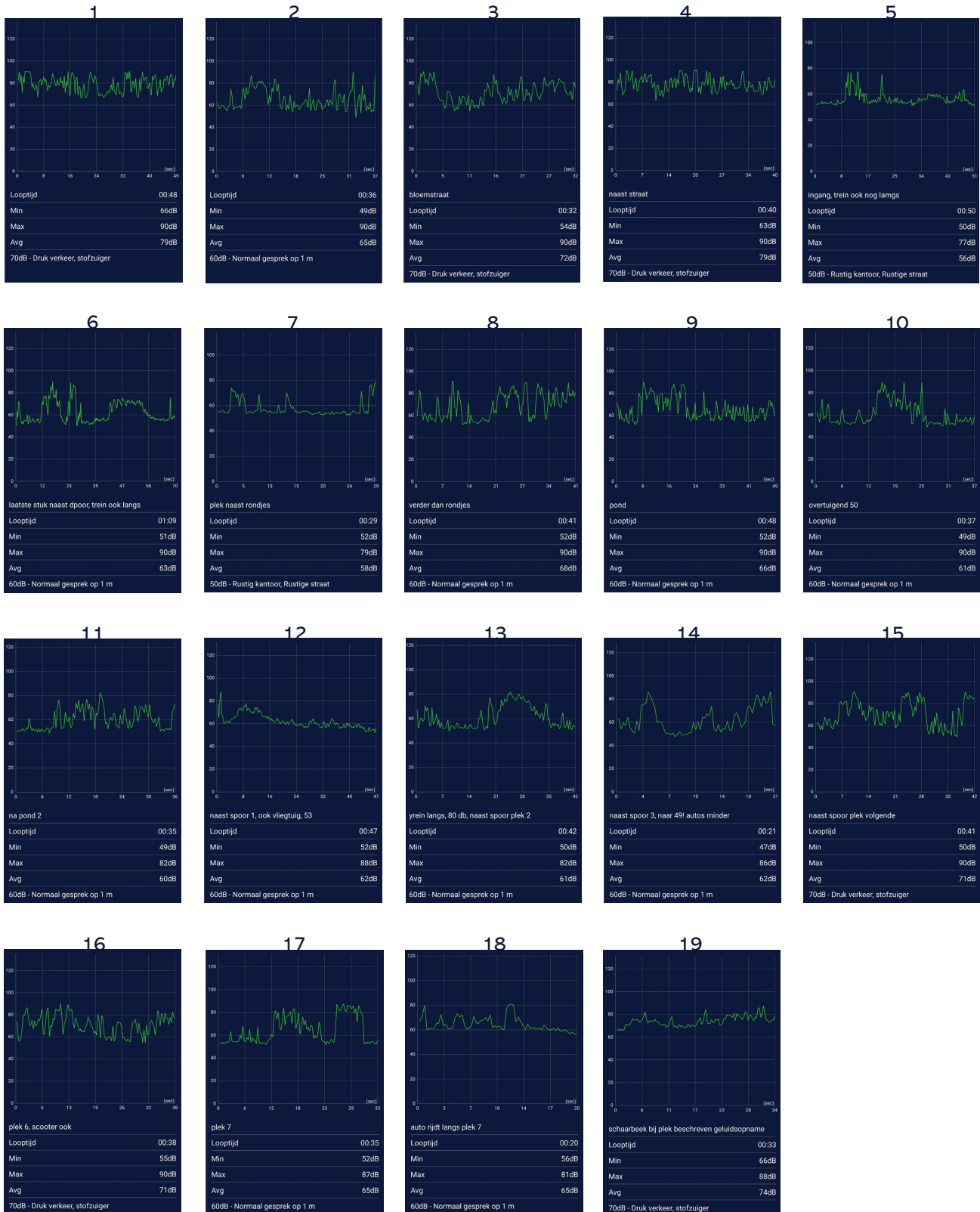


## Section 3 | Sound research | Walkingroute

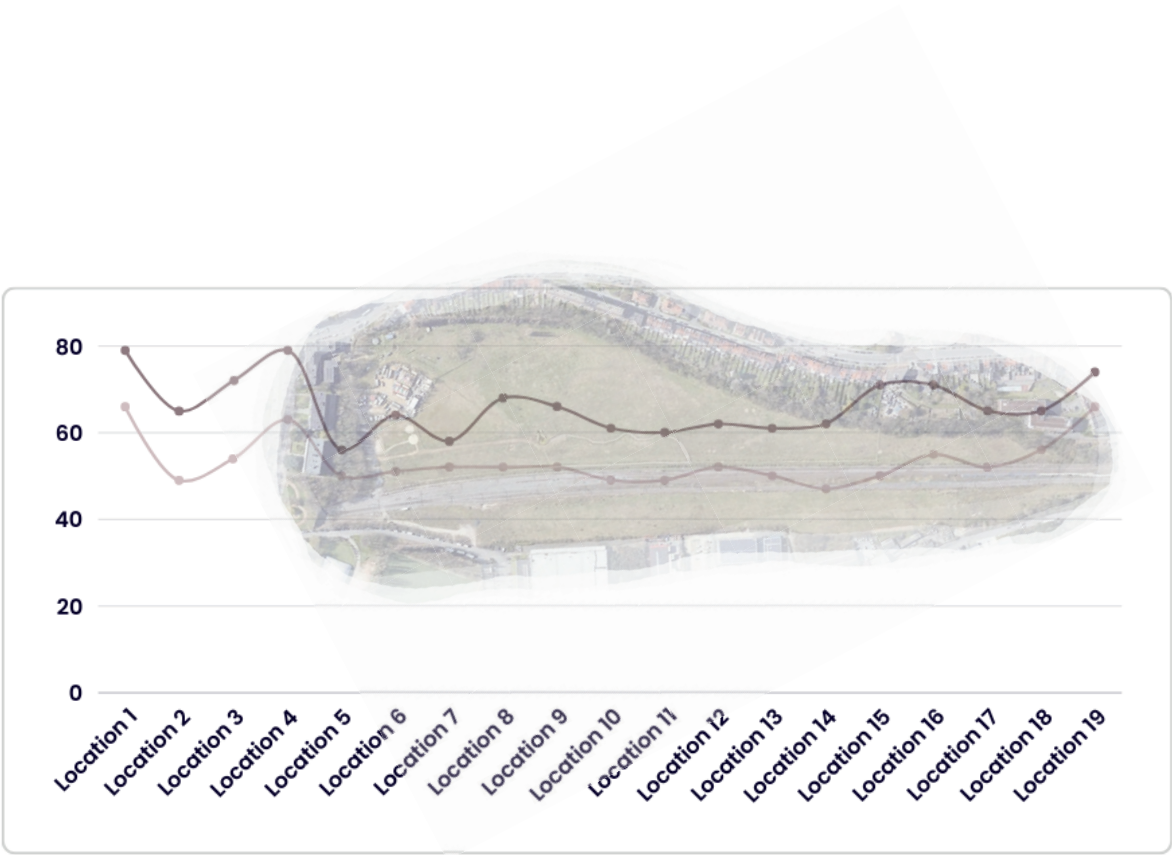


# Section 3 | Sound research | Measurements on the Friche

## RESULTS OF DECIBEL MEASUREMENTS



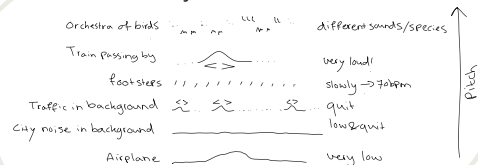
Section 3 | Sound research | Table of measurements



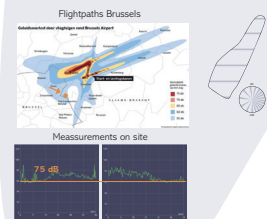


# Section 3 | Sound research | Observations

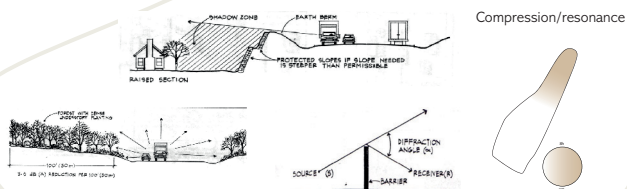
## Layers of sounds



## Airplanes crossing



## Acoustic concepts



## Trains coming along



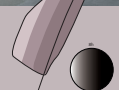
## Traffic & City



## Circus



## Industry



Section 3 | Sound research | Observed birds

BIRDS

Chiffchaff



**Habitat:** Dense undergrowth and low trees, breeds on or near the ground in forests, urban areas, and semi-open landscapes with trees and bushes.  
**Breeding:** Dense vegetation or near the ground.  
**Diet:** Insects, larvae, and berries, foraging restlessly.  
**Migration:** From August to October to winter in Spain, Portugal, or North Africa, returning between April and May.

**Habitat:** Forested areas with old deciduous trees, nesting in tree hollows. In urban and village settings, prefers nest boxes, parks, and gardens, and winters in reed beds.  
**Breeding:** From late March to July, nest in tree hollows or nest boxes  
**Diet:** Insects, their larvae, spiders, and other invertebrates. In winter, consumes seeds (birch, larch, hornbeam, Spanish oak), peanuts. Found in reeds during winter to search for insects in the stems. Often forages high in trees, on thin branches and twigs.  
**Migration:** Resident year-round, with more activity between mid-September and mid-November (winter residents).

Blue tit



Blackcap



**Breeding:** In low dense shrubbery from mid-April to late June  
**Habitat:** In forests and semi-open landscapes with rich undergrowth, especially favoring brambles. Also found in parks and gardens. Prefers older trees and shrubs in natural forest settings. Often heard singing in spring but not easily seen. Flies infrequently, mainly vocalizes.  
**Diet:** Insects during breeding and berries and fruits throughout the rest of the year.  
**Migration:** Mid-August to mid-October to South England or the western Mediterranean, returning early to the Netherlands, even in March.

**Breeding:** From April to July, in tree hollows, walls, or dense climbing plants, with a messy construction of grasses and leaves  
**Habitat:** Not found in treeless areas. Prefers mature forests, gardens, and parks, especially where bushes and herbs are abundant.  
**Diet:** Insects, spiders, berries, and seeds  
**Migration:** Spain and Portugal from August to November, or stay in the Belgium. Lasts until late April, mostly at night.

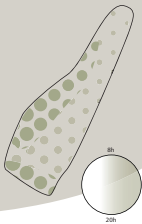
Robin



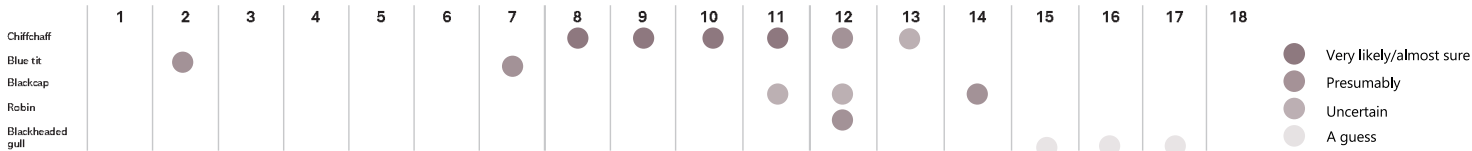
Black-headed gull



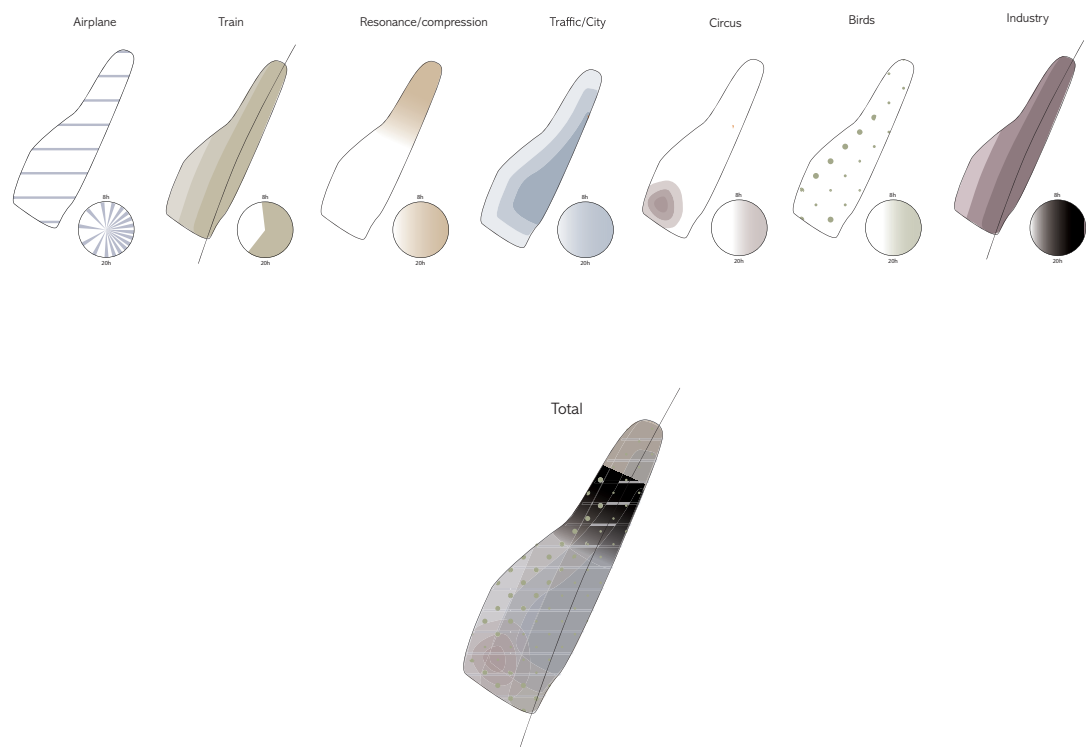
**Habitat:** Inland near freshwater and also in coastal areas. Forages in diverse landscapes, especially water-rich grasslands, and tidal flats. Found widely outside breeding season, including in farmland and urban areas.  
**Diet:** Insects, fish, and scavenged scraps. Known to steal food from other birds and probe mudflats for invertebrates.  
**Migration:** Southward, or stay, spans from February to April, crossing land and sea day and night.



Analysis birds

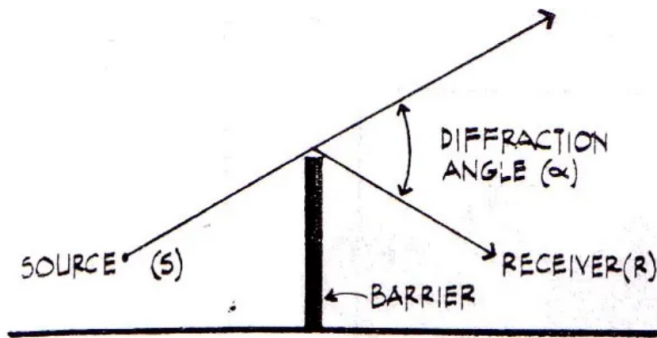


Section 3 | Sound research | Sounds combined

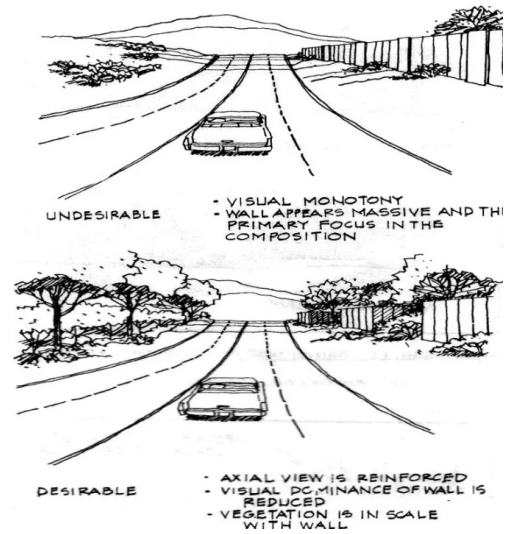


# Section 3 | Sound research | Further research

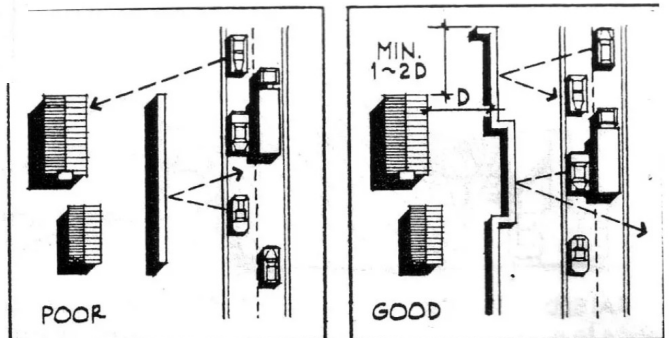
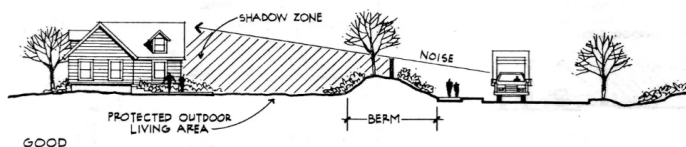
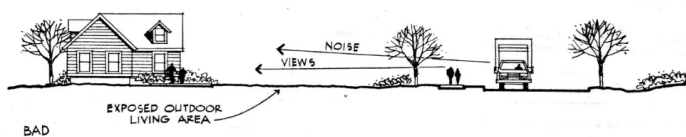
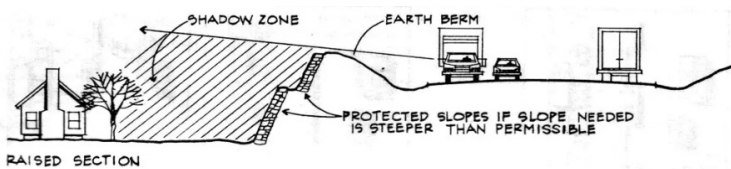
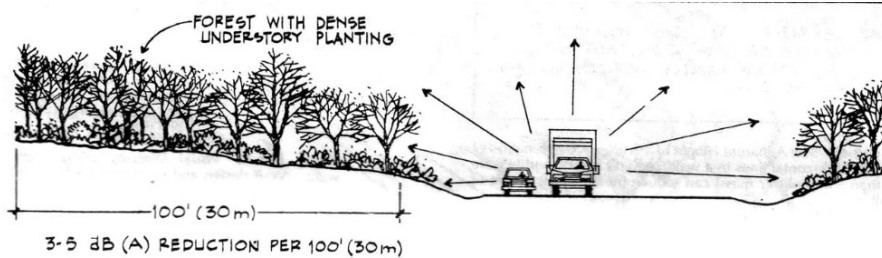
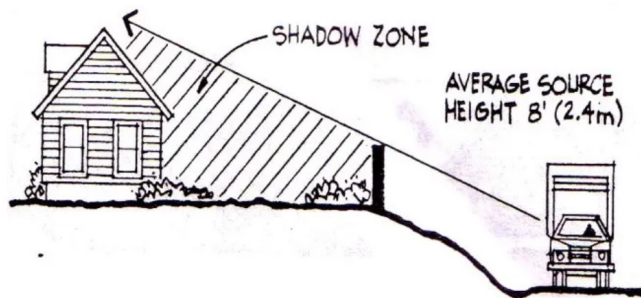
How sound works - principles



Borders & interpretations



Shadow zones



Creating on the border between new neighbourhood and train

is already at friche but emphasize



## Section 3 | Sound research | Further research

## Max Neuhaus' Times Square - emphasizing sounds



Experiencing space - IJssel  
Biennial Ronald van der Meijs



Mandei Architects - museum



# de luwteplek

een ruimtelijk onderzoek naar  
stilte, rust en verstilling in de stad

Geert Peymen en Pleuntje Jellema



## THE ROLE OF SOUND ART IN SOUNDSCAPE DESIGN

Marcel Cobussen<sup>1\*</sup>

<sup>1</sup> Academy of Creative and Performing Arts, Leiden University, The Netherlands

## ABSTRACT

What can sound artists contribute to the sonic design of public art? In this article, we explore why it is important to involve sound artists in this design process? Although slowly, it seems as if a transformation is taking place. Sound is no longer considered an impediment to public urban spaces: not only can we notice – at least in The Netherlands – more attention for the sonic design of public art, but also sound artists are being included in the measurement and noise reduction policies to a more managed approach in which citizens are asked after their own experiences and needs. This opens the prospect to not only involve sound artists in the design of public art, but also to offer sound artists the opportunity to contribute in a positive sense to the experience of an environment, and it is possible to make sound art a part of the urban design process. Enter sound artists. Not only are they experienced and (often) unbiased listeners which may help to not denounce creative ideas, but they also have a lot of experience from previous projects; artists can also offer unexpected solutions to specific problems; they can work with the unexplored soundscapes of the city; they can work with the different types of site-involving activities; and instead of focusing exclusively on the reduction of noise levels, artists must be able to suggest alternative negotiations regarding sound.

**Keywords:** *sound art, sound design, public urban spaces*

## 1. INTRODUCTION

Although more and more research makes clear that people's well-being depends for a large part on the quality of their sonic environment, this has not always led to a substantial amount of attention among urban planners, architects, and interior designers. The most common sonic features of a site, at least not tantamount to the attention spent on the visual design of a particular space or on the choice of materials, are the ambient soundscape, the background soundscape, and endurable (semi-)public spaces. There definitely is an urgency and necessity to pay more careful attention to the sonic design of the living environment. The question arises whether this is a necessary condition for the good of a society. Because of a lack of attention for sound and the sounding environment in their education, urban and interior designers and architects are not always well-equipped to carefully, creatively, and accurately design a space consciously, acoustically and natural sonically. They often do not do so, and this is a serious shortcoming. Knowledge on psychoacoustics, vibrations, etc., but are often less attentive to the way people experience a space. The design of the living environment is not only a social, cultural, political and aesthetic issues connected to sound. Hence, in my proposal here in this paper to get sound surroundings in the (re)designing process of (semi-)public spaces, and private spaces, I will try to make a contribution.

<sup>1</sup> Whereas a public space is open and accessible to the general public, semi-public spaces may be restricted to those utilizing a good or service. Examples include outdoor restaurant seating, entertainment venues and seating areas. The difference between the two may also affect the kind of (sonic) interventions that are possible or legally permitted.

## **Section 4 | Final design**

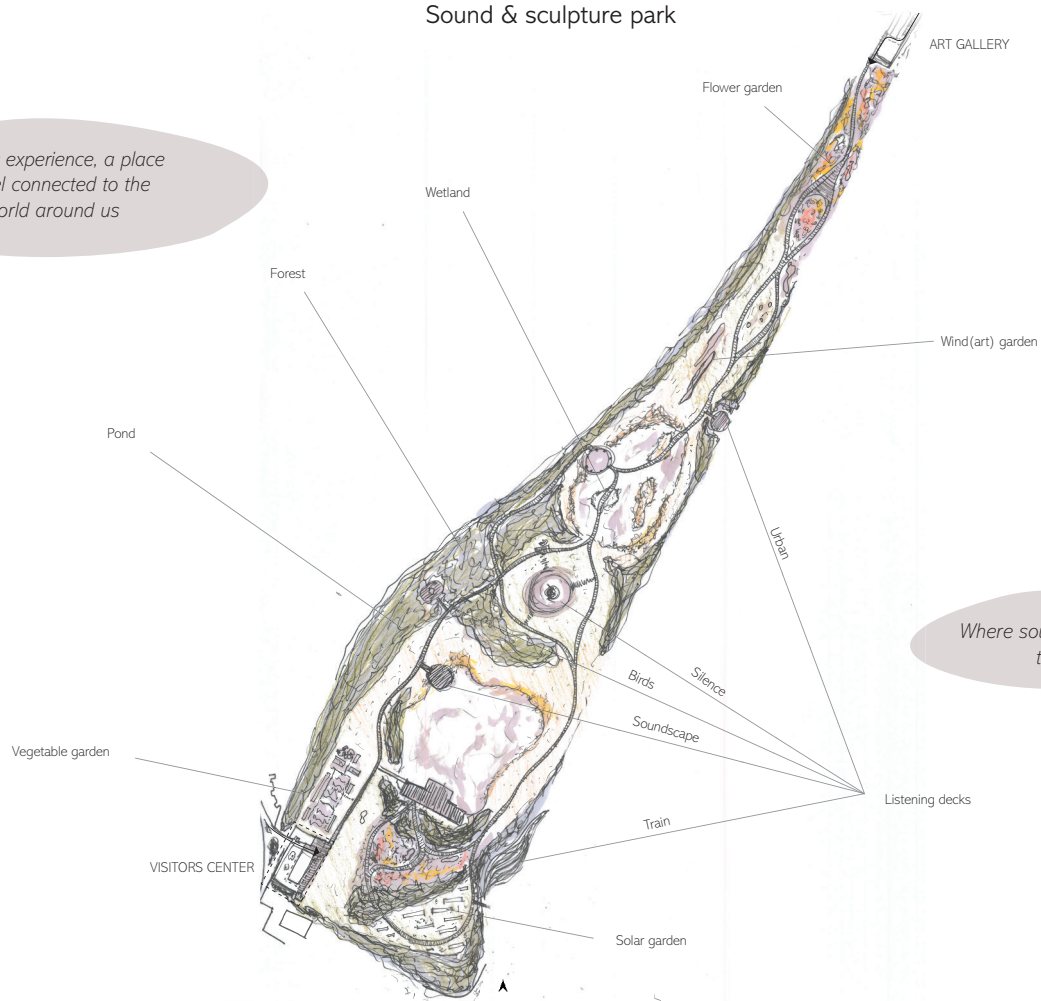
See appendix for designprocess

# Section 4 | Final design | Posters

## LANDSCAPE DESIGN

Sound & sculpture park

*A sonic experience, a place  
to feel connected to the  
world around us*

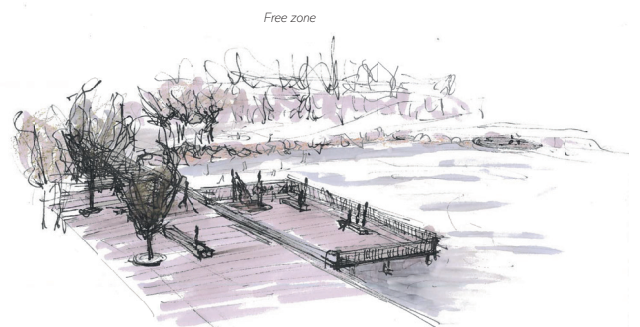
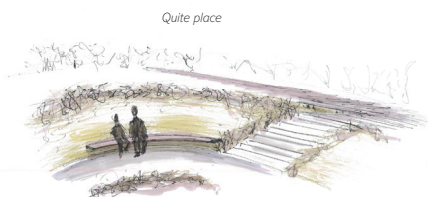
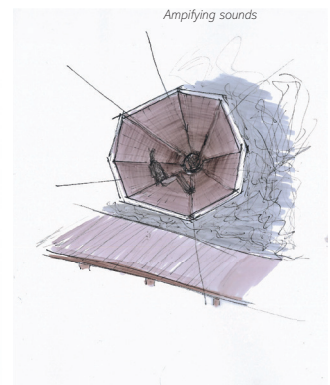
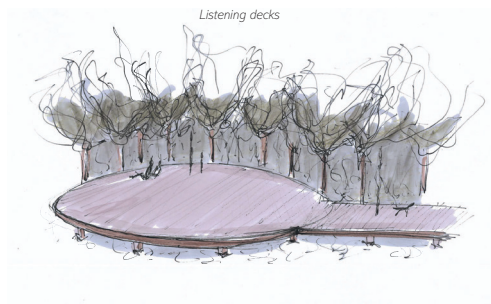


*Where sound & art comes  
together*

Section landscape relation to context | 1:1000



Sounds & moments

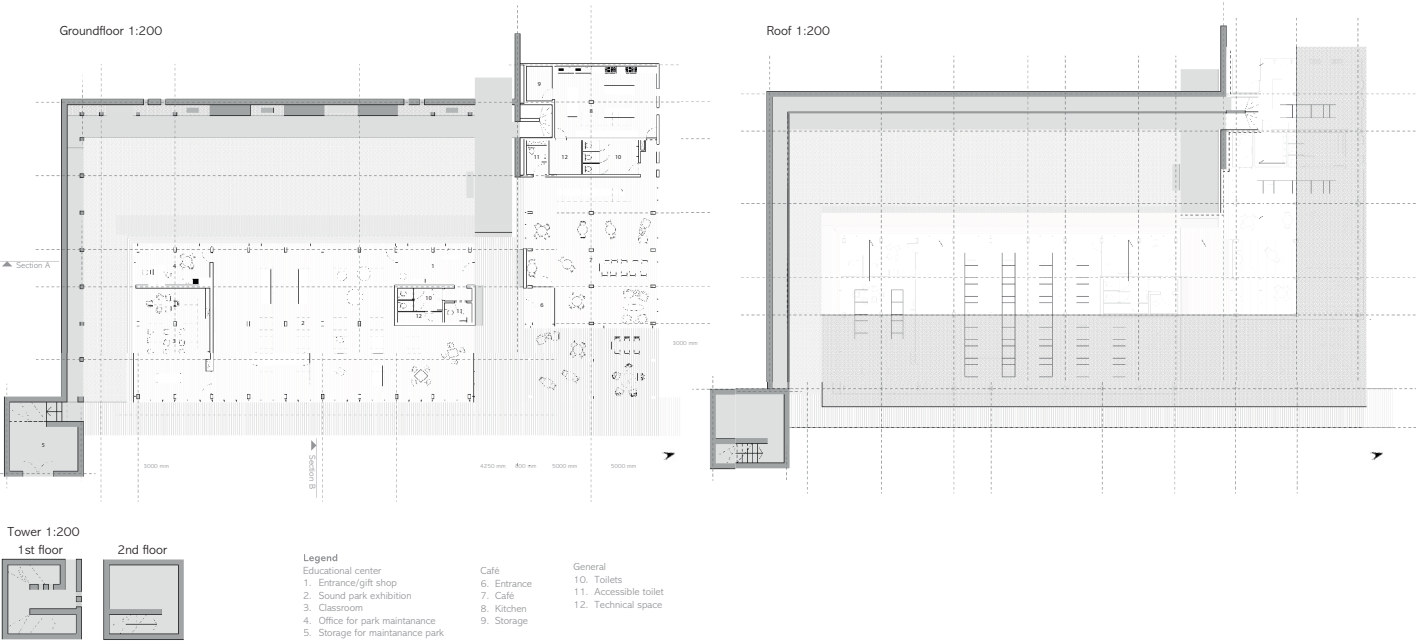




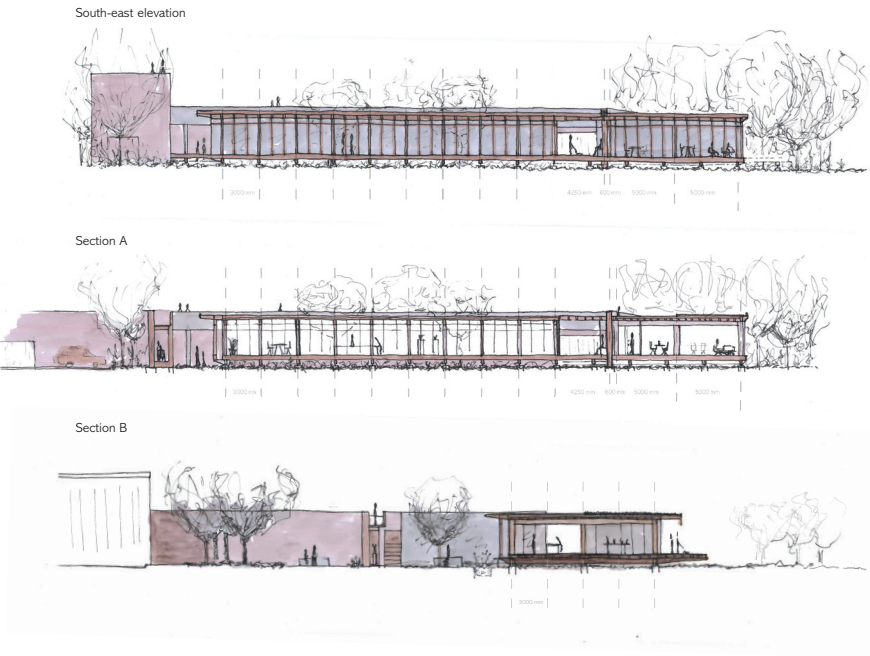
Section 4 | Final design | Posters

FRICHE VISITOR CENTER DESIGN

Plans 1:200



Elevation & sections 1:200



Urban Plan 1:400



Materialisation





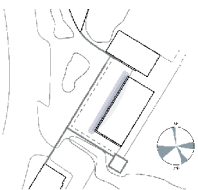
# Section 4 | Final design | Posters

## SONIC PLAN OF THE DESIGN

Overview of sonic plan



Rain from roof



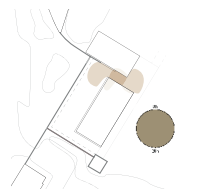
Traffic



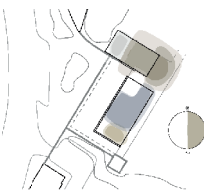
Life



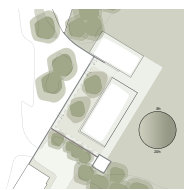
Soundart



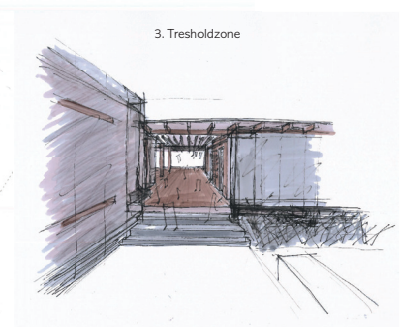
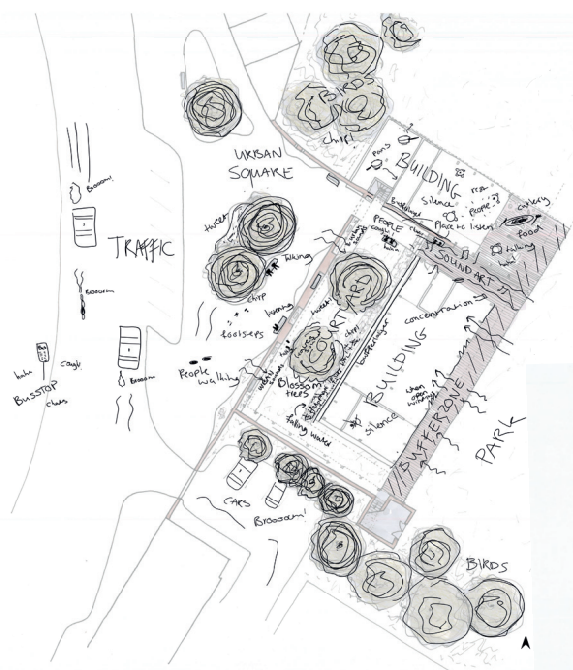
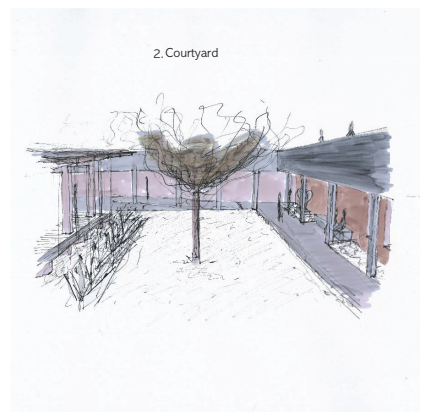
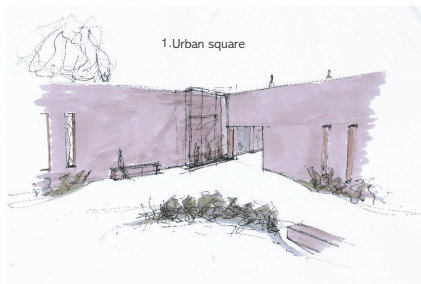
Use



Green



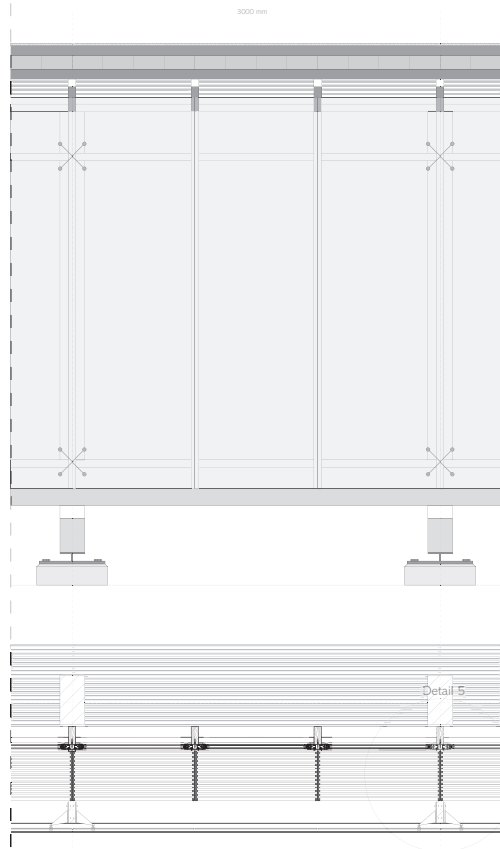
Sounds & moments



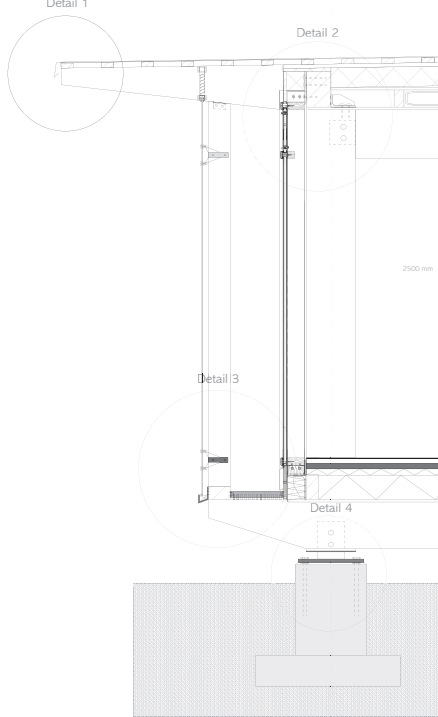
# Section 4 | Final design | Posters

## TECHNICAL BUILDING DESIGN

Fragment 1:20

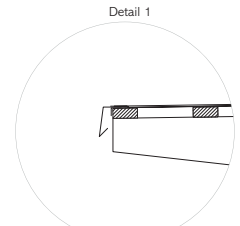


Detail 1

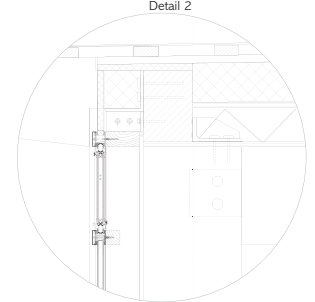


Details

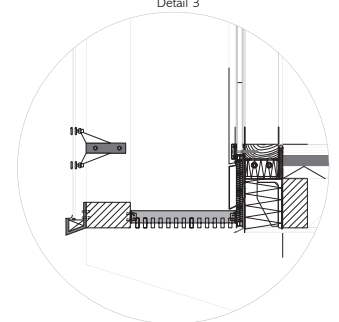
Detail 1



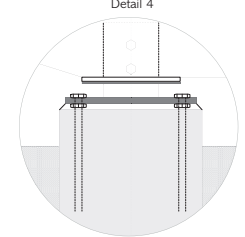
Detail 2



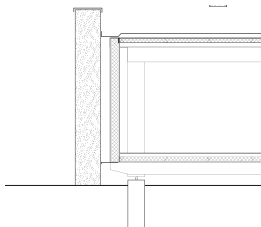
Detail 3



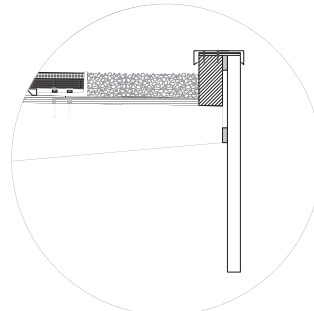
Detail 4



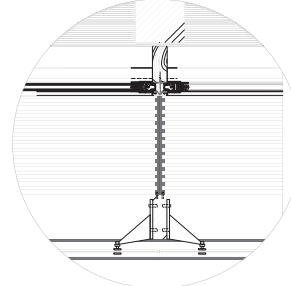
Connection rammed earth wall to building



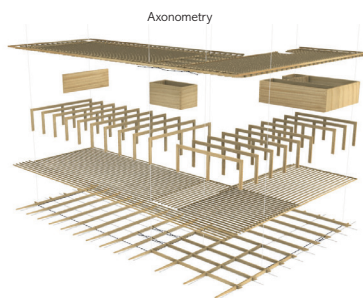
Detail 6 (roof landscape side)



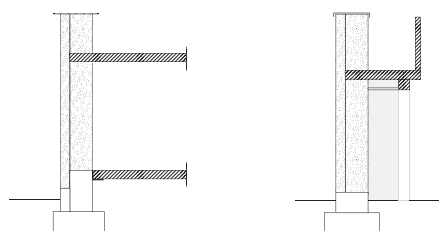
Detail 5



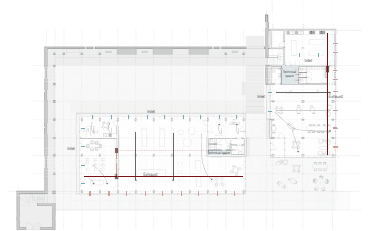
Construction



Principal rammed earth tower & wall

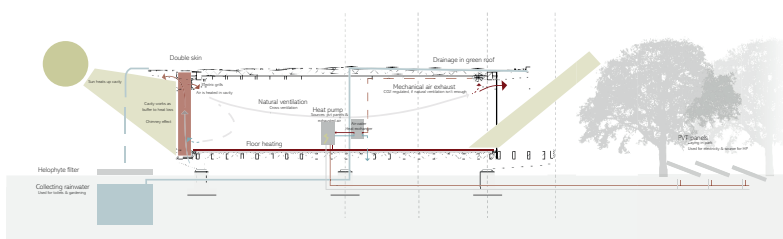


Ventilation scheme 1:400

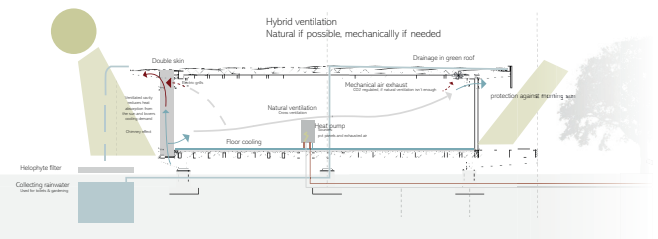


Climate scheme 1:100

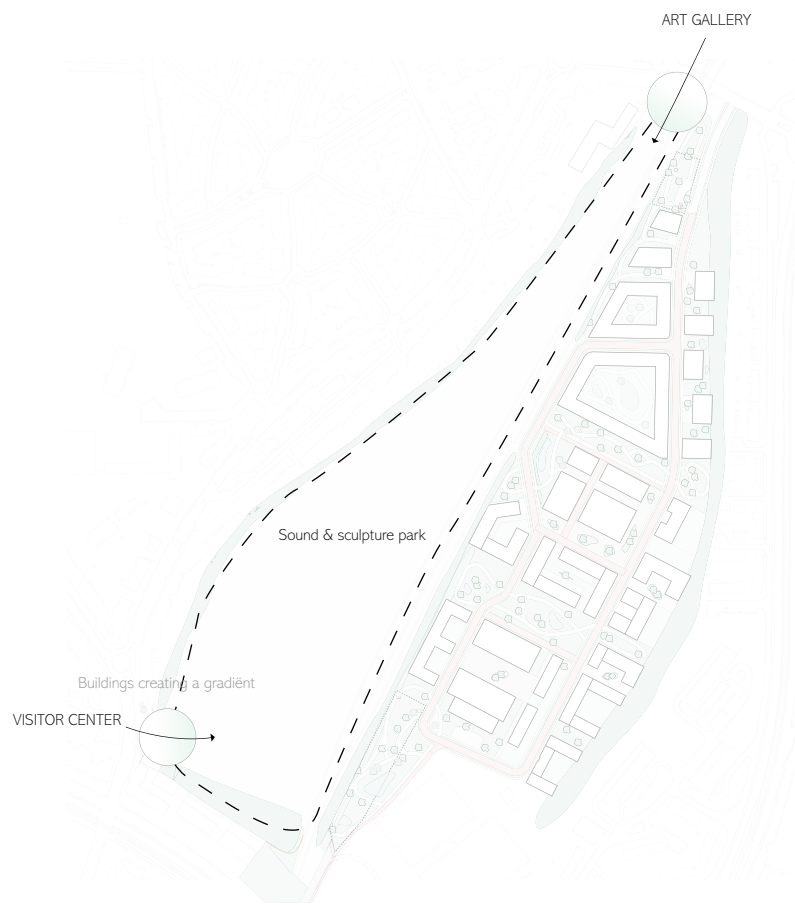
Winter situation



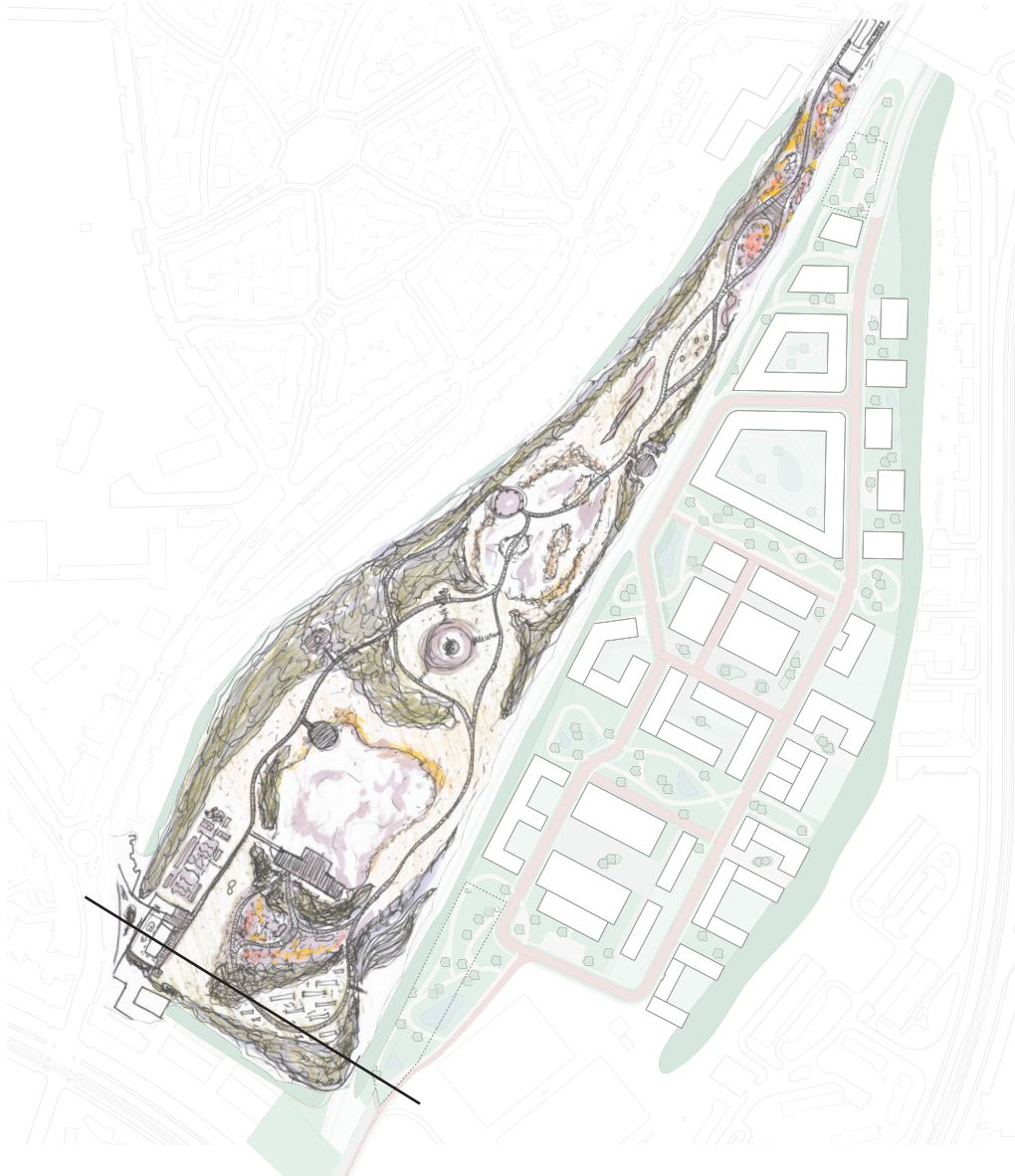
Summer situation



Section 4 | Final design | Vision on masterplan scale

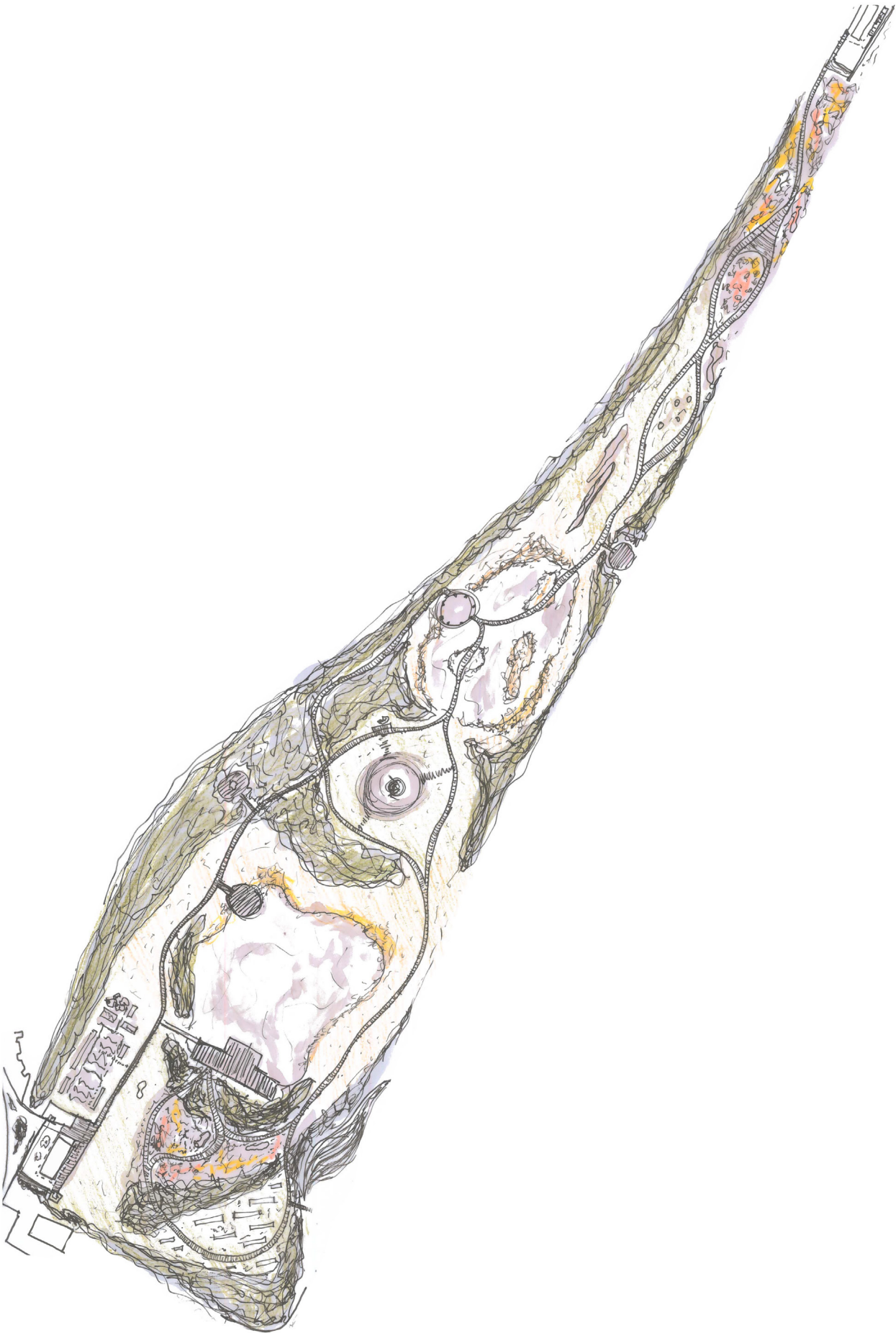


## Section 4 | Final design | Landscape

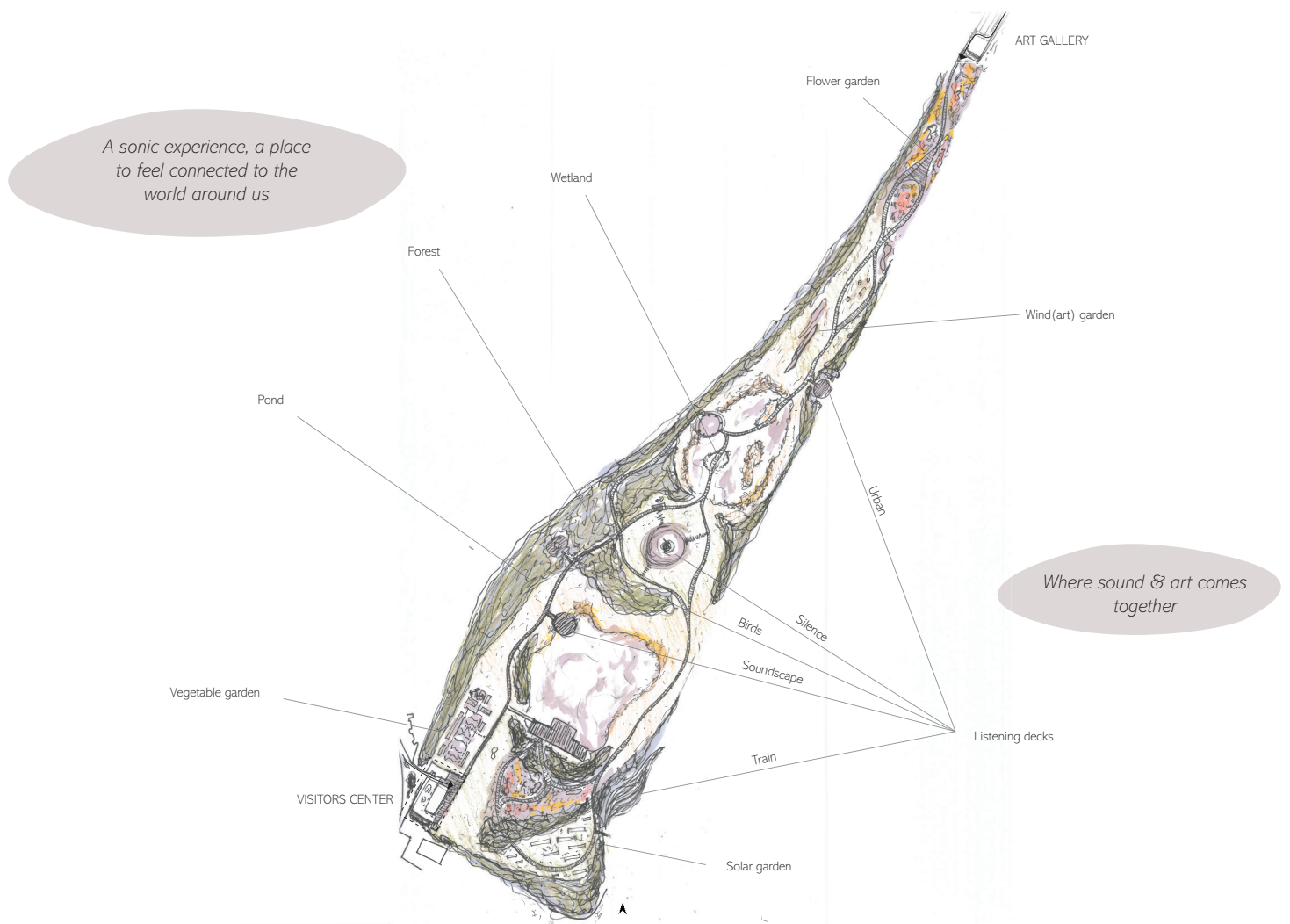




Section 4 | Final design | Landscap



## Section 4 | Final design | Landscape



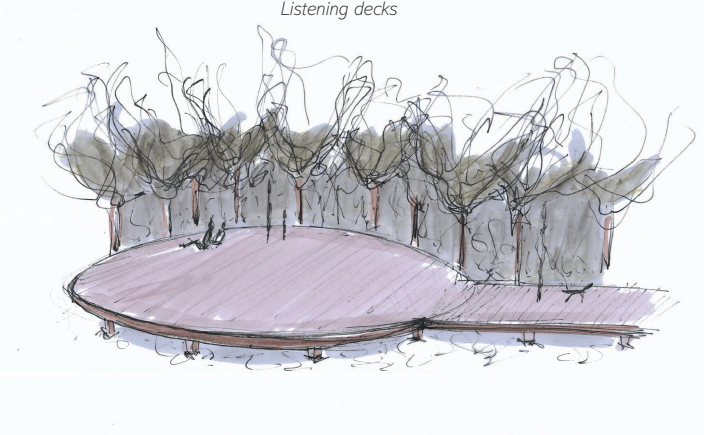
## Section 4 | Final design | Landscape



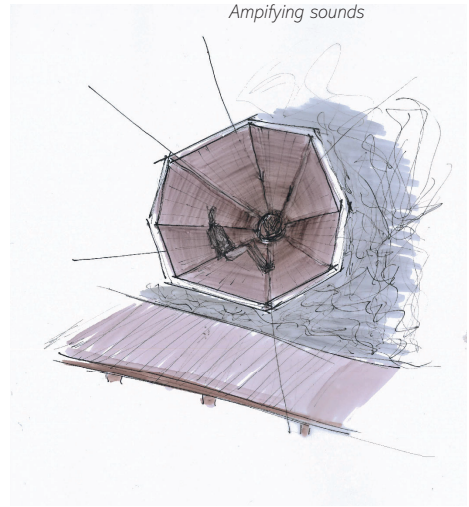


## Section 4 | Final design | Landscape

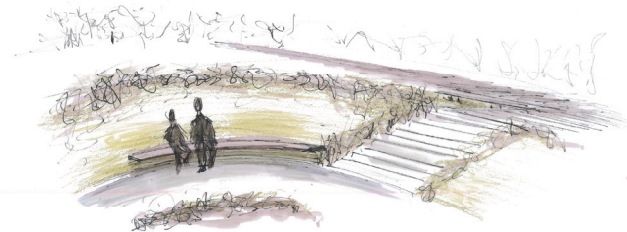
*Listening decks*



*Ampifying sounds*



*Quite place*



*Free zone*

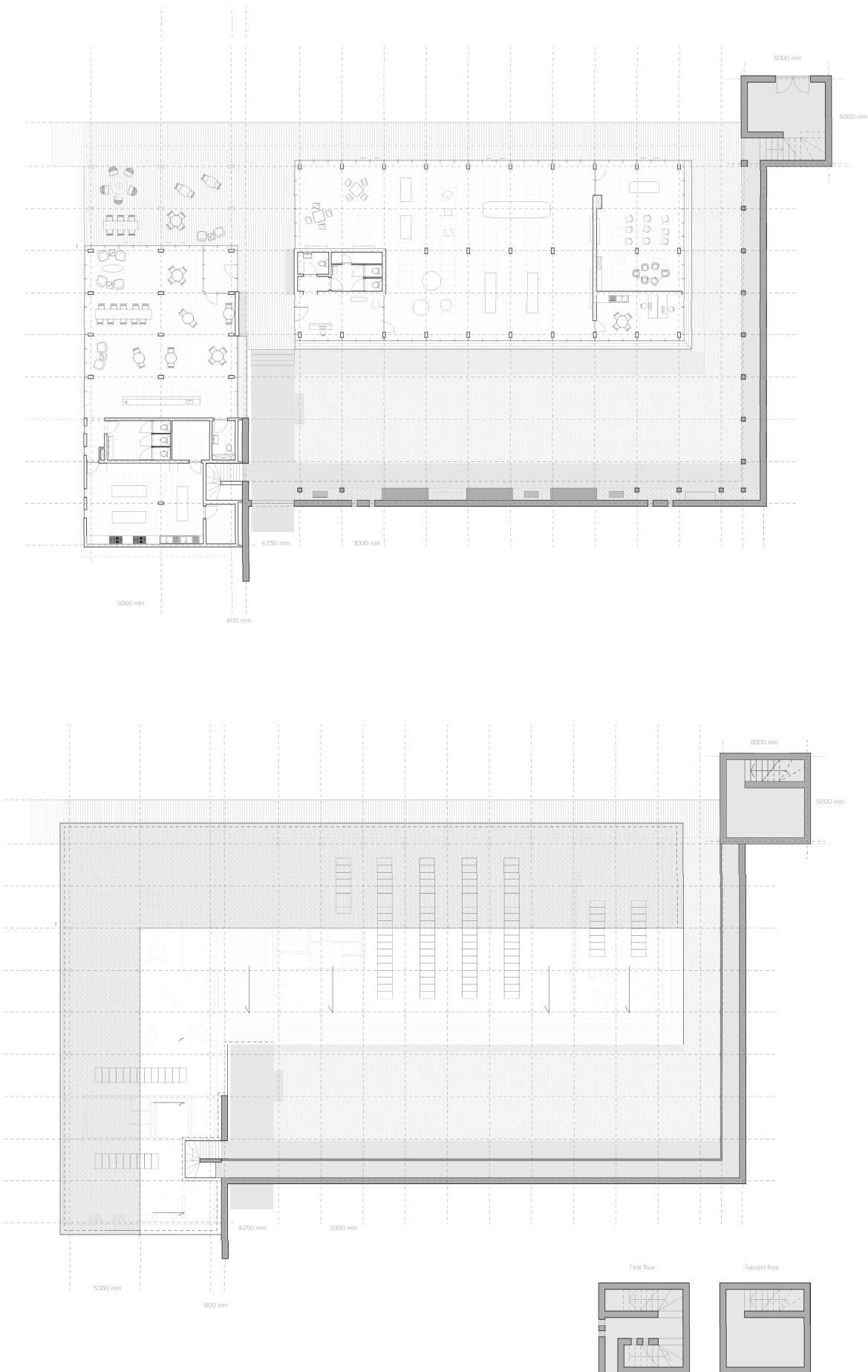




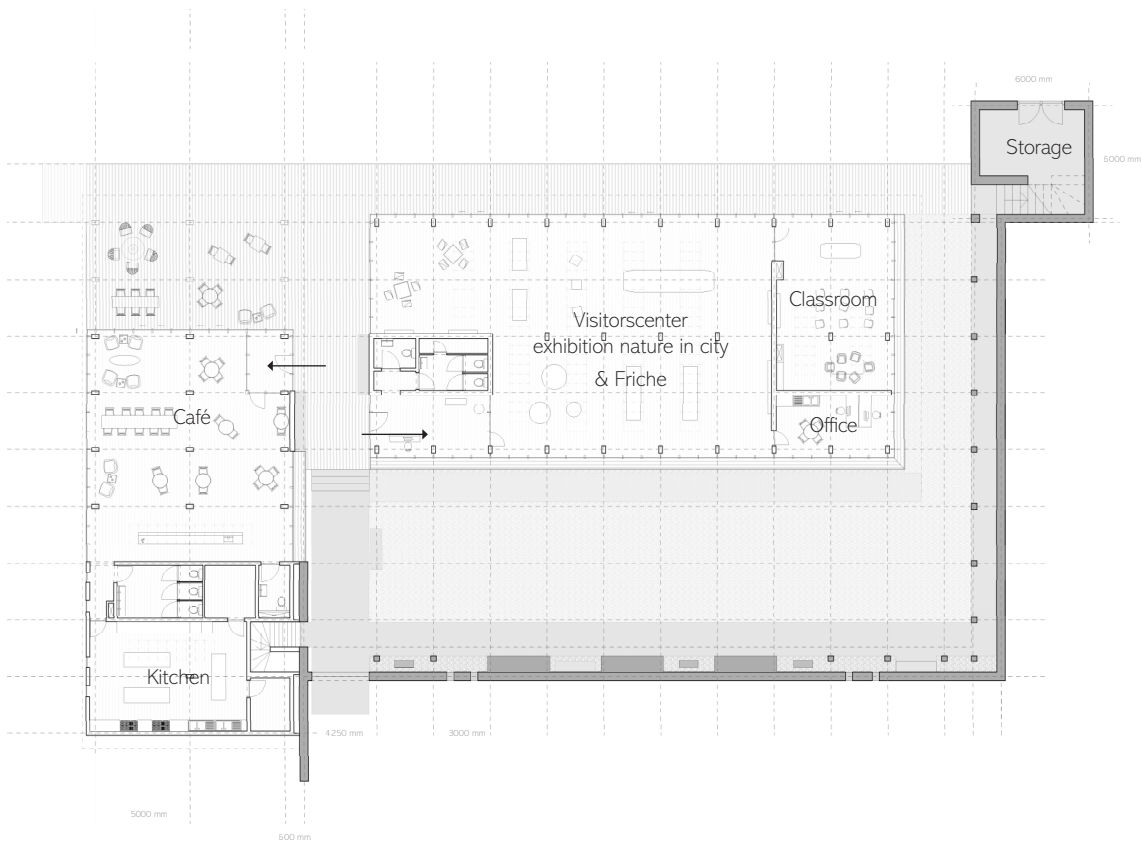
## Section 4 | Final design | Urban



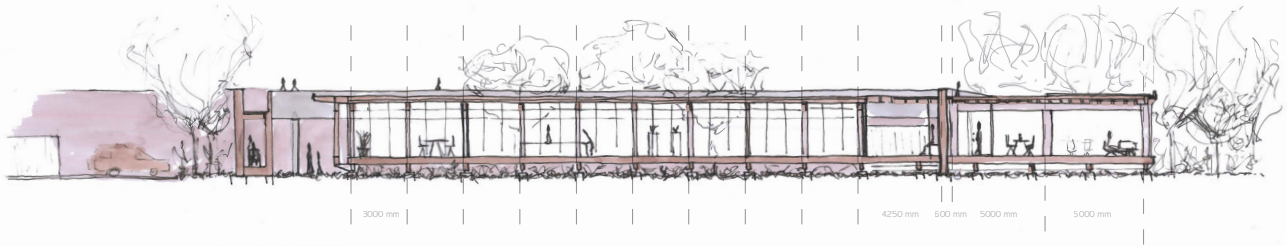
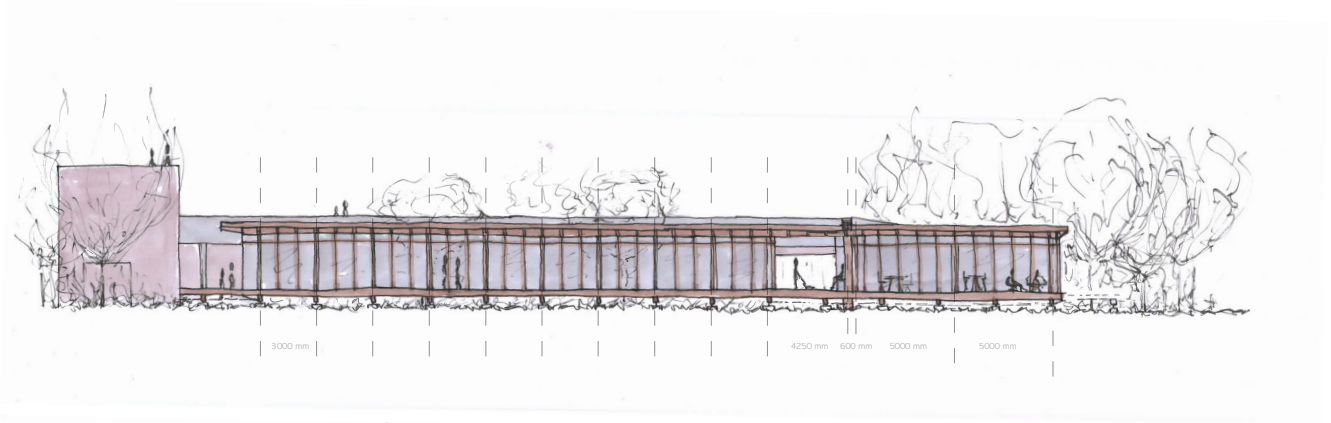
# Section 4 | Final design | Architecture



Section 4 | Final design | Architecture



## Section 4 | Final design | Architecture

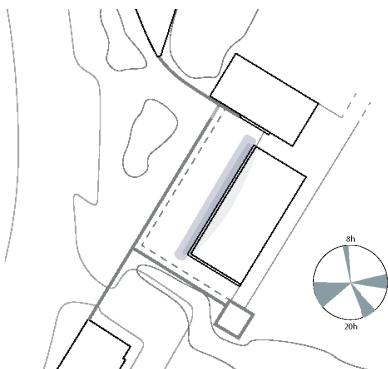




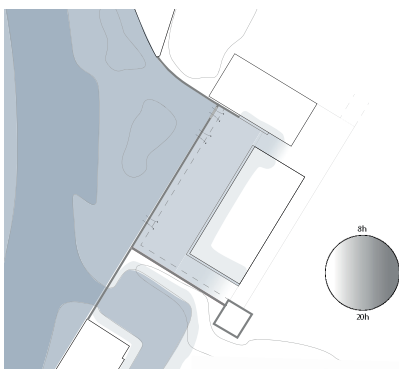
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# Section 4 | Final design | Architecture

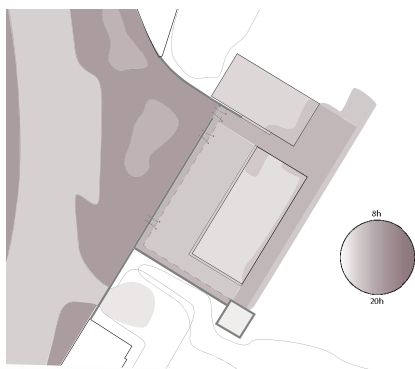
Rain from roof



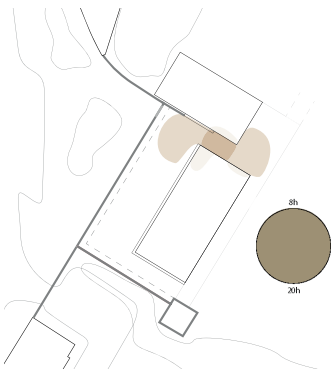
Traffic



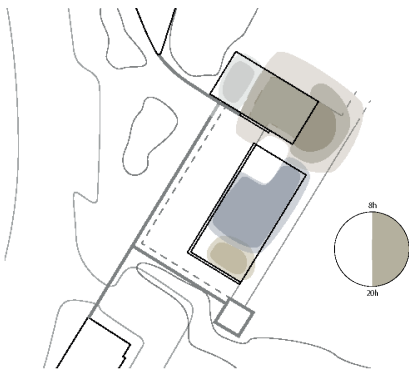
Life



Soundart



Use



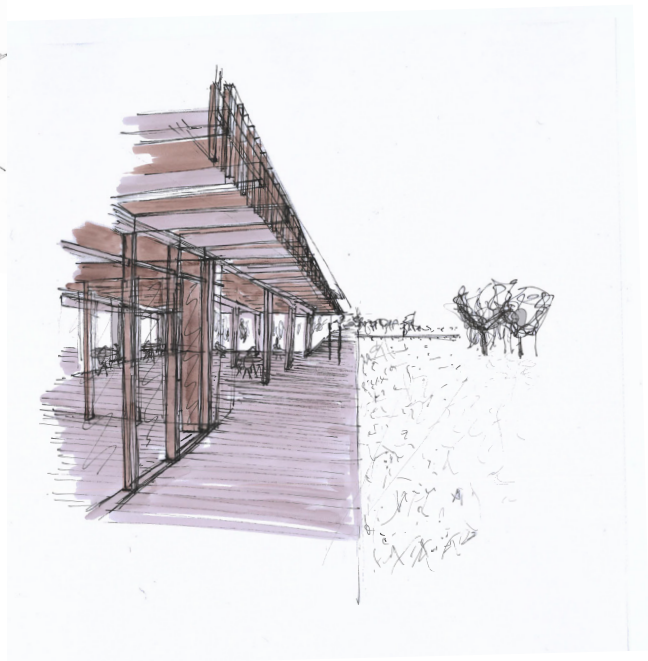
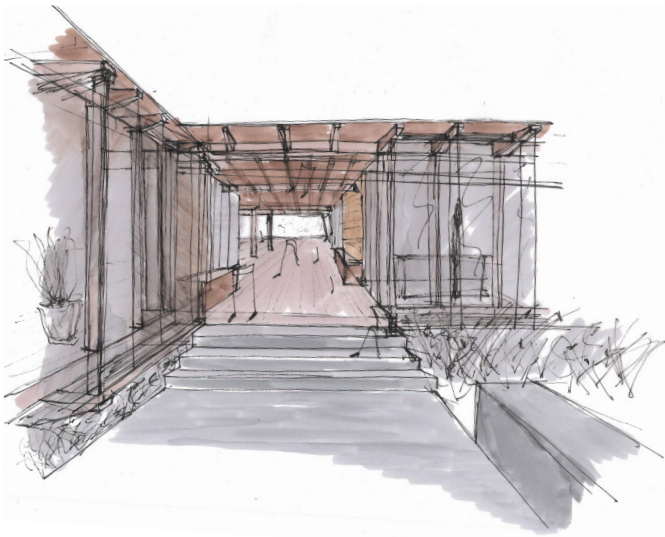
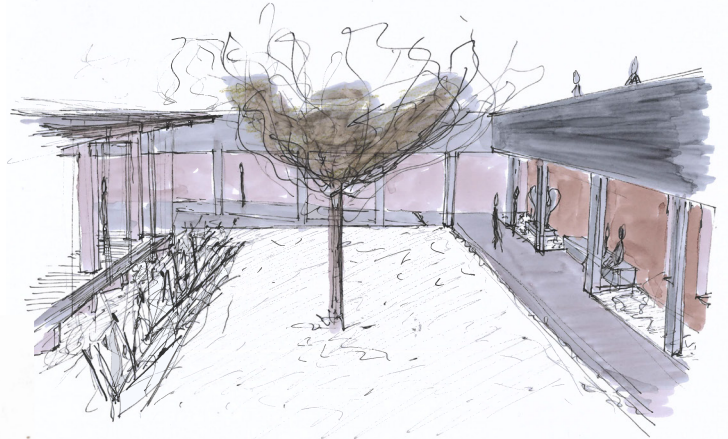
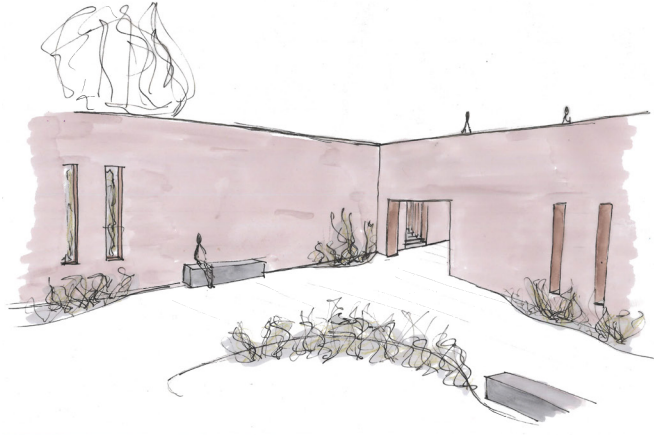
Green



## Section 4 | Final design | Architecture



## Section 4 | Final design | Architecture



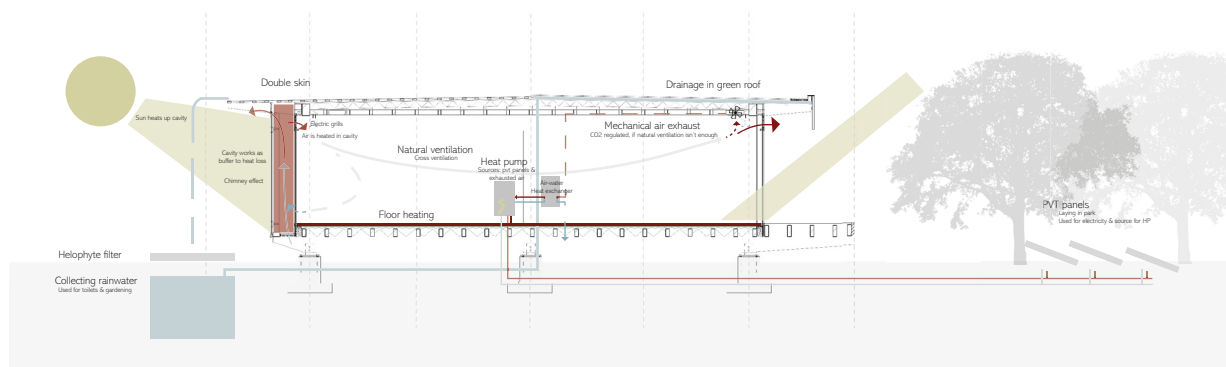


## Section 4 | Final design | Technical building design

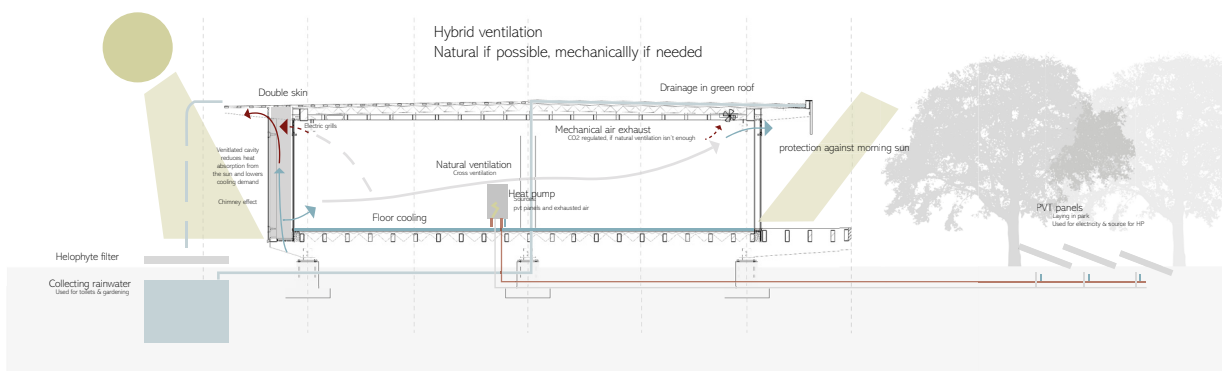


## Section 4 | Final design | Technical building design

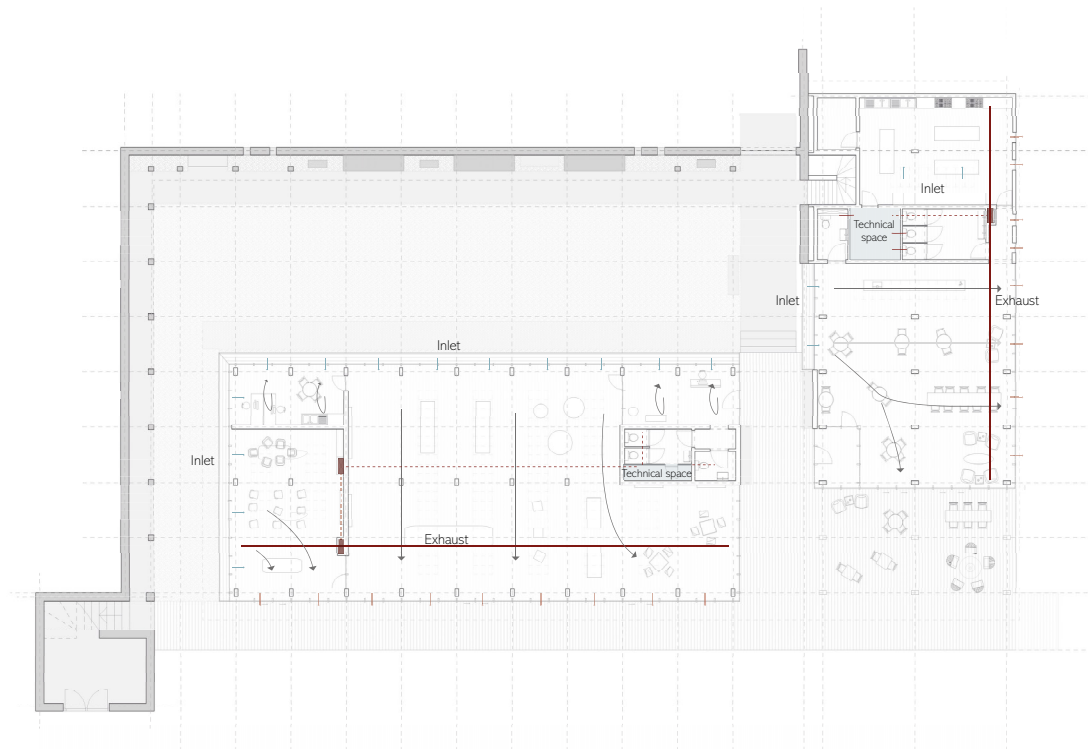
Winter situation



Summer situation

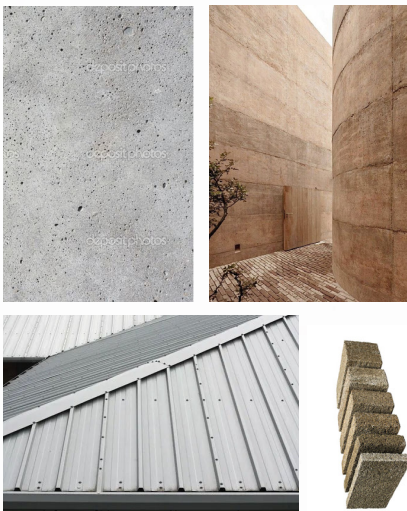


## Section 4 | Final design | Technical building design

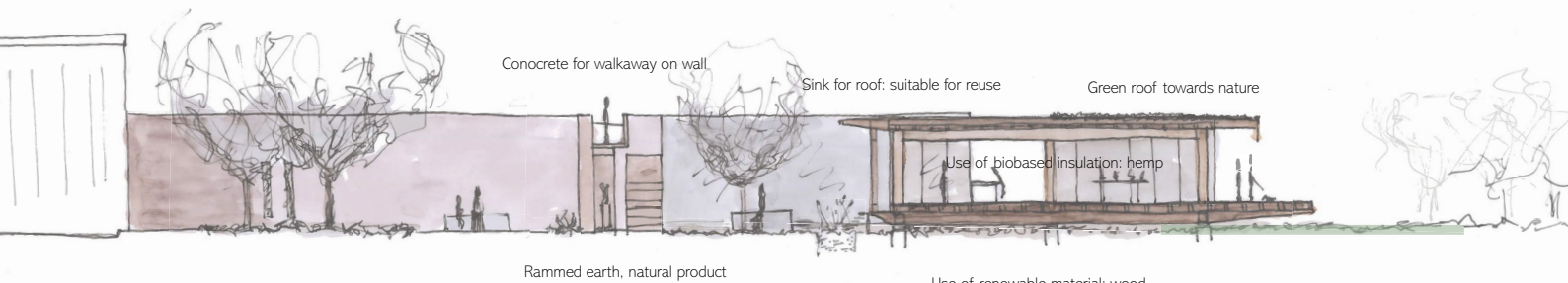


# Section 4 | Final design | Technical building design

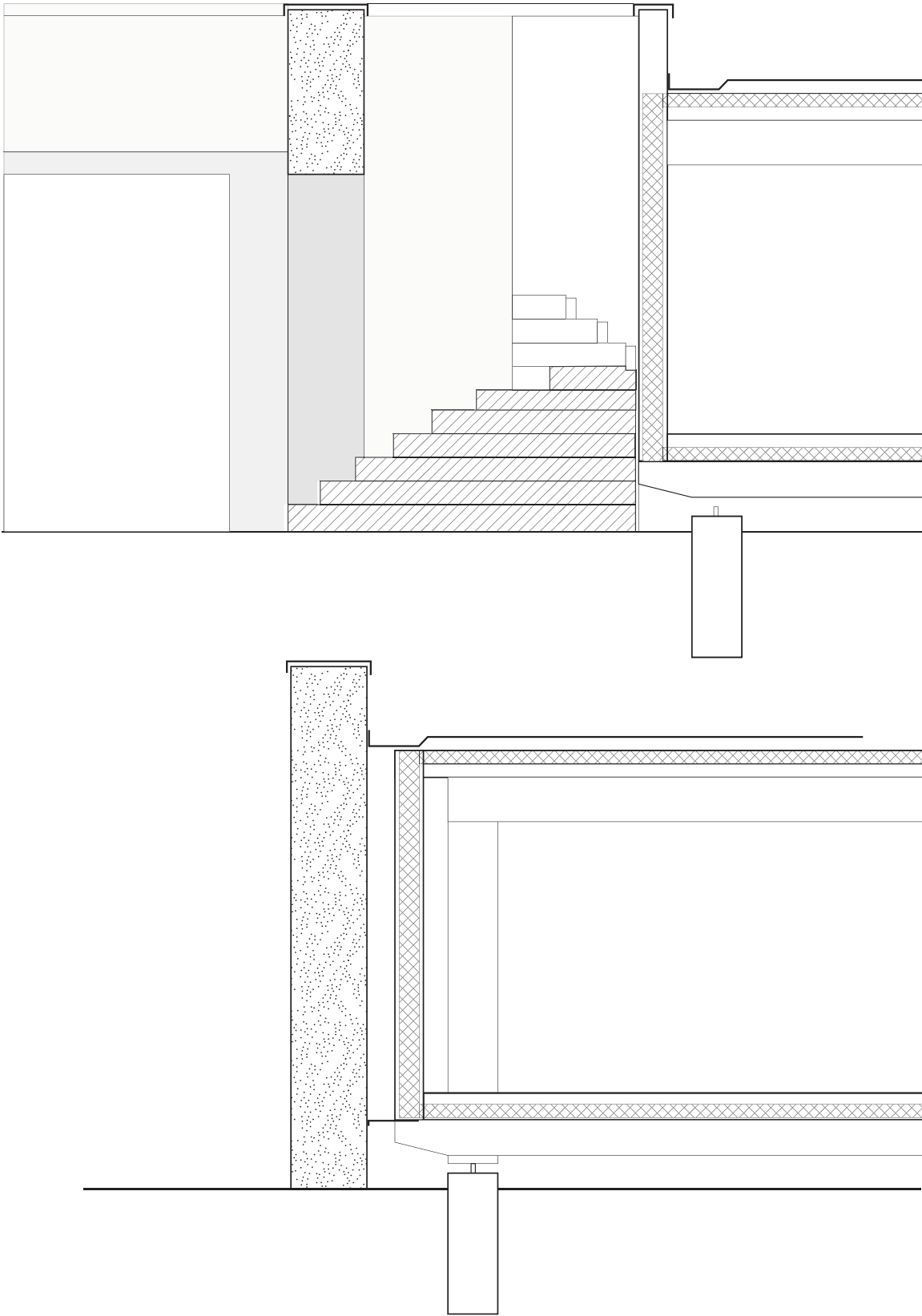
Urban side



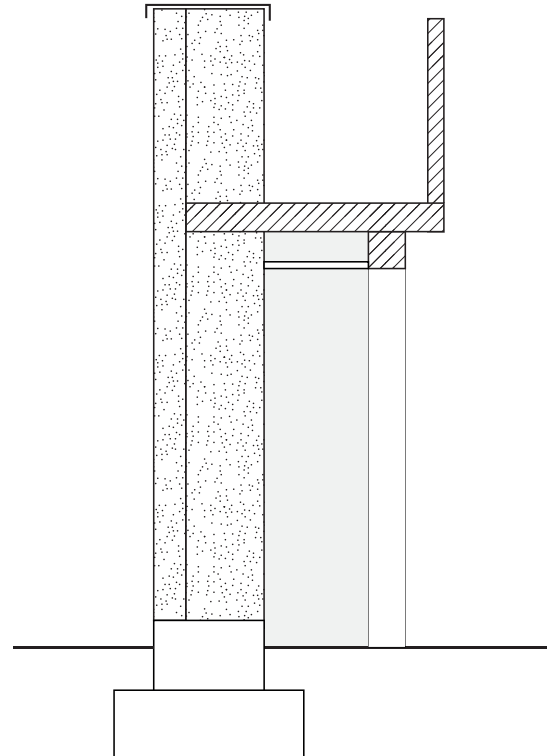
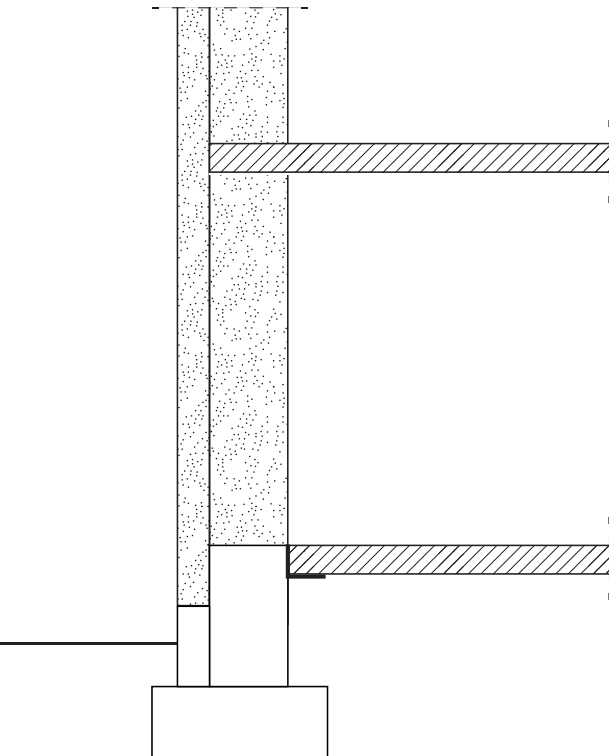
Landscape side



Section 4 | Final design | Technical building design

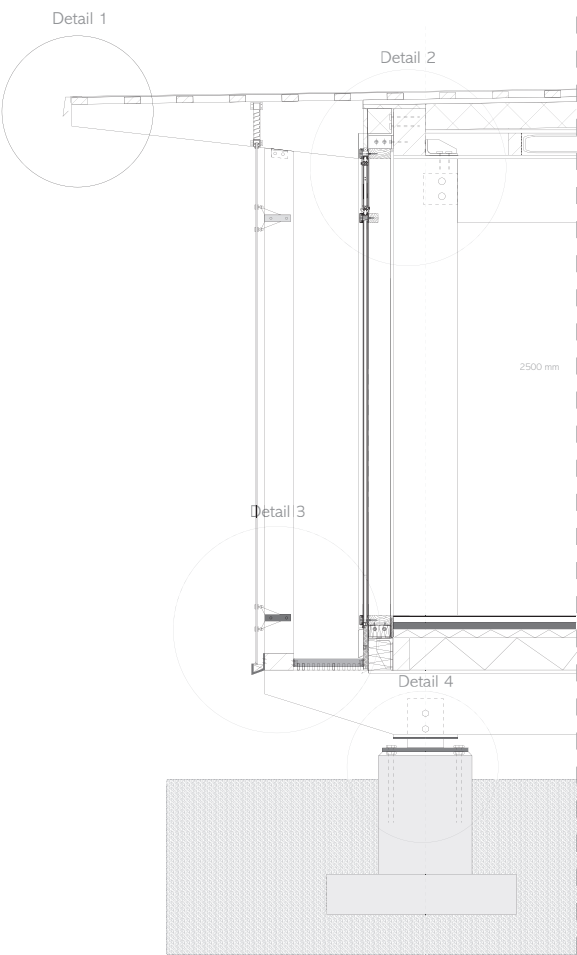
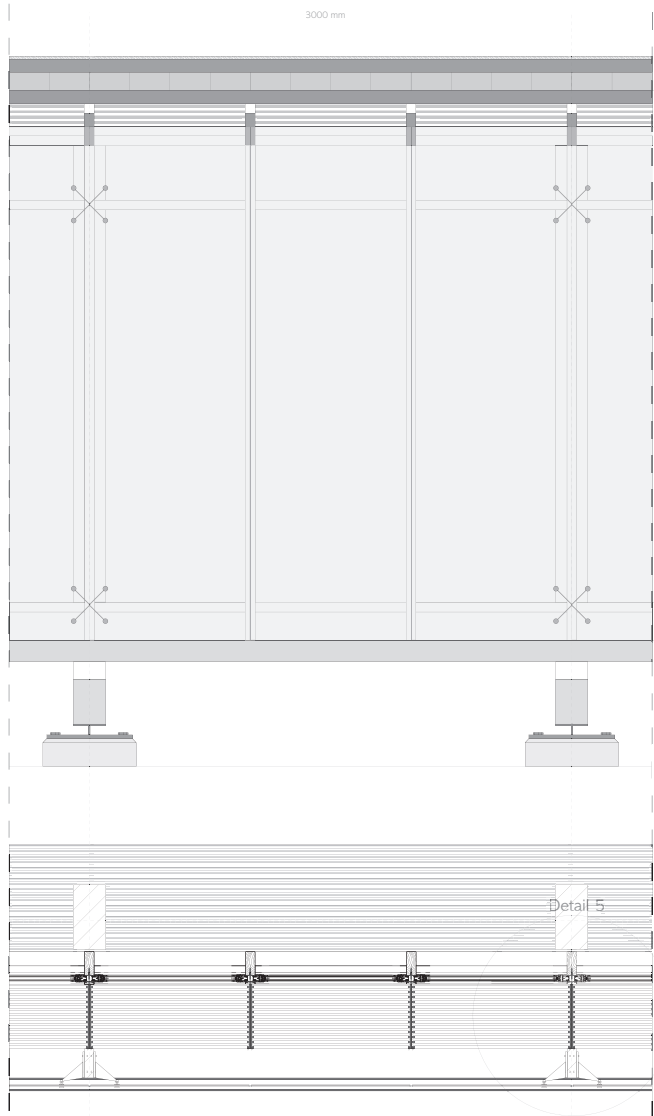


## Section 4 | Final design | Technical building design



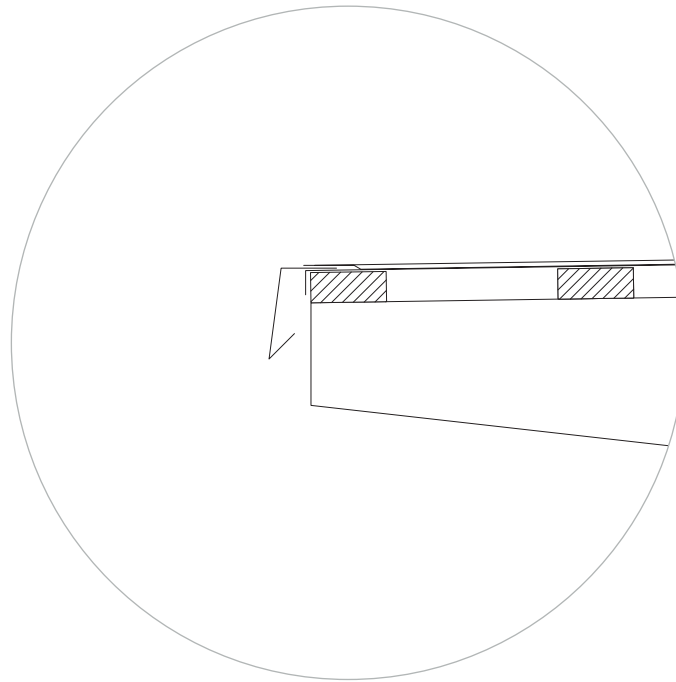
# Section 4 | Final design | Technical building design

Fragment 1:20

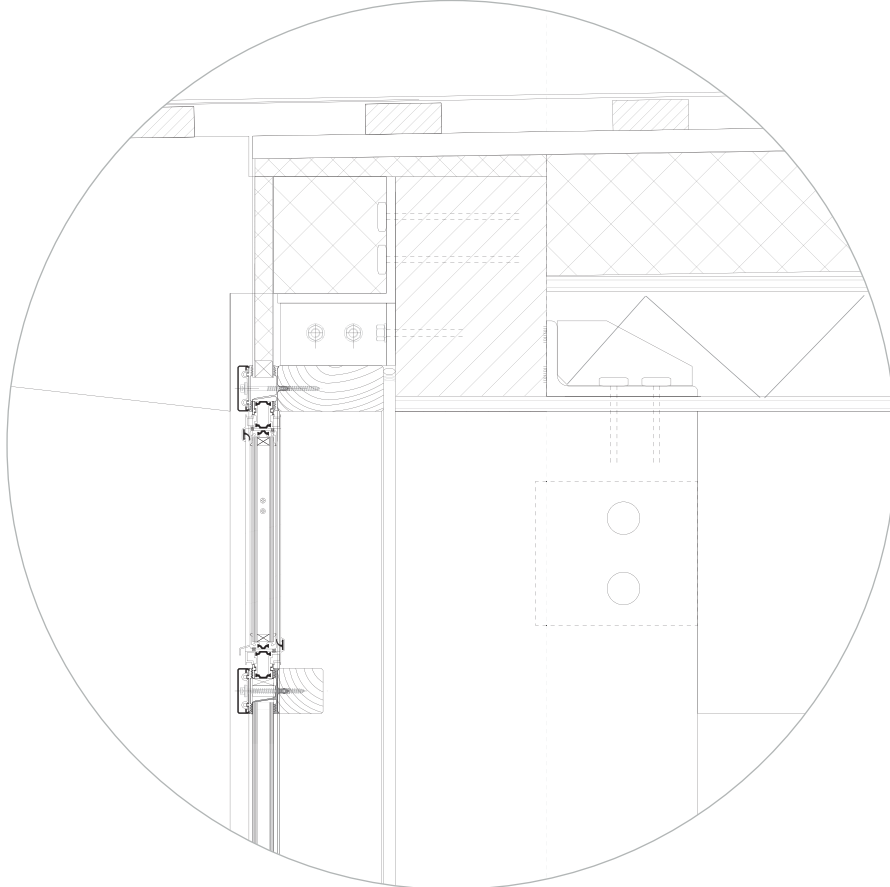


## Section 4 | Final design | Technical building design

Detail 1



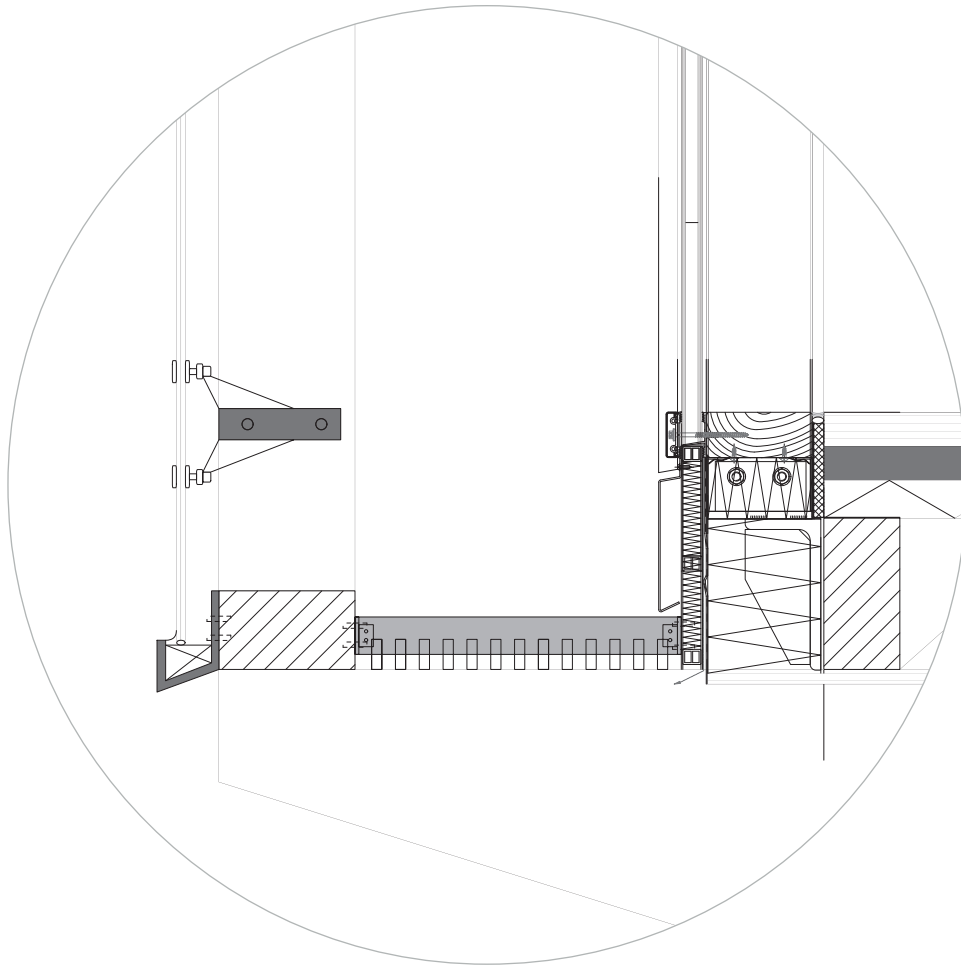
Detail 2



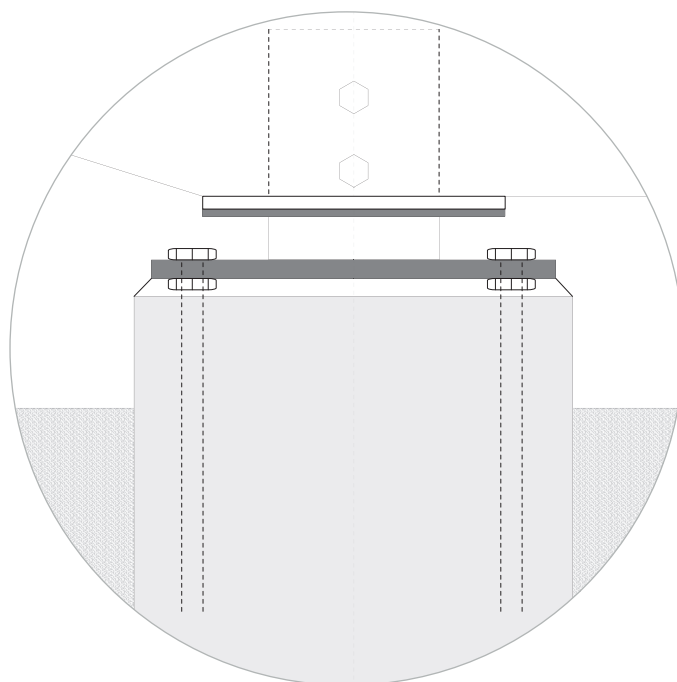


## Section 4 | Final design | Technical building design

Detail 3

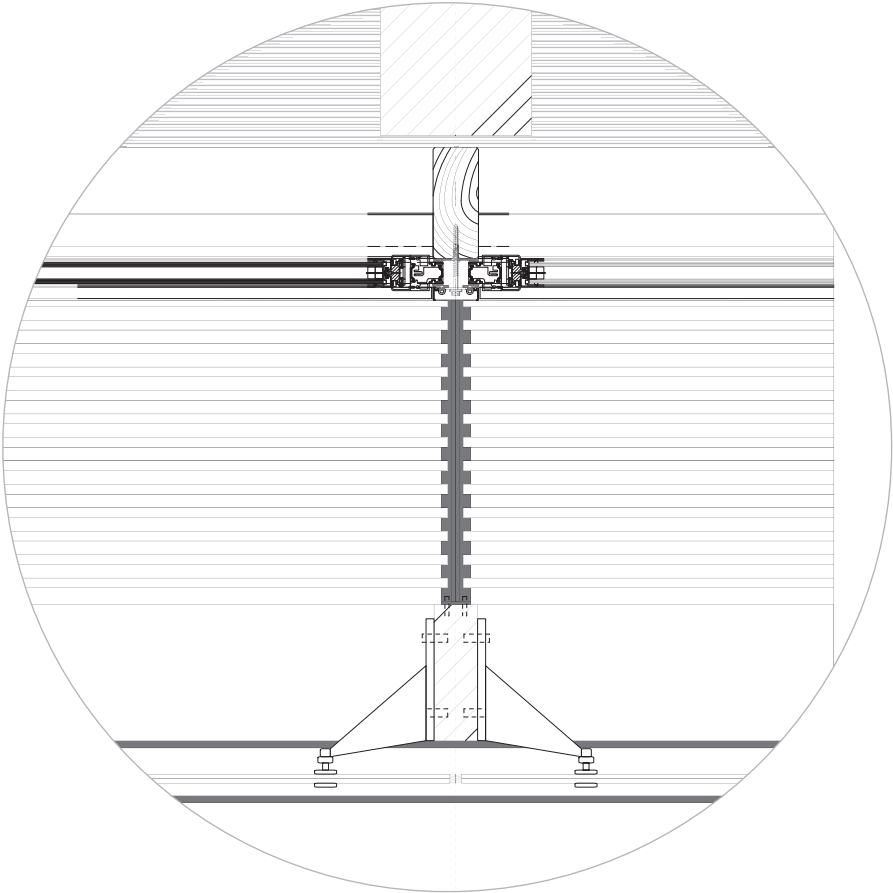


Detail 4

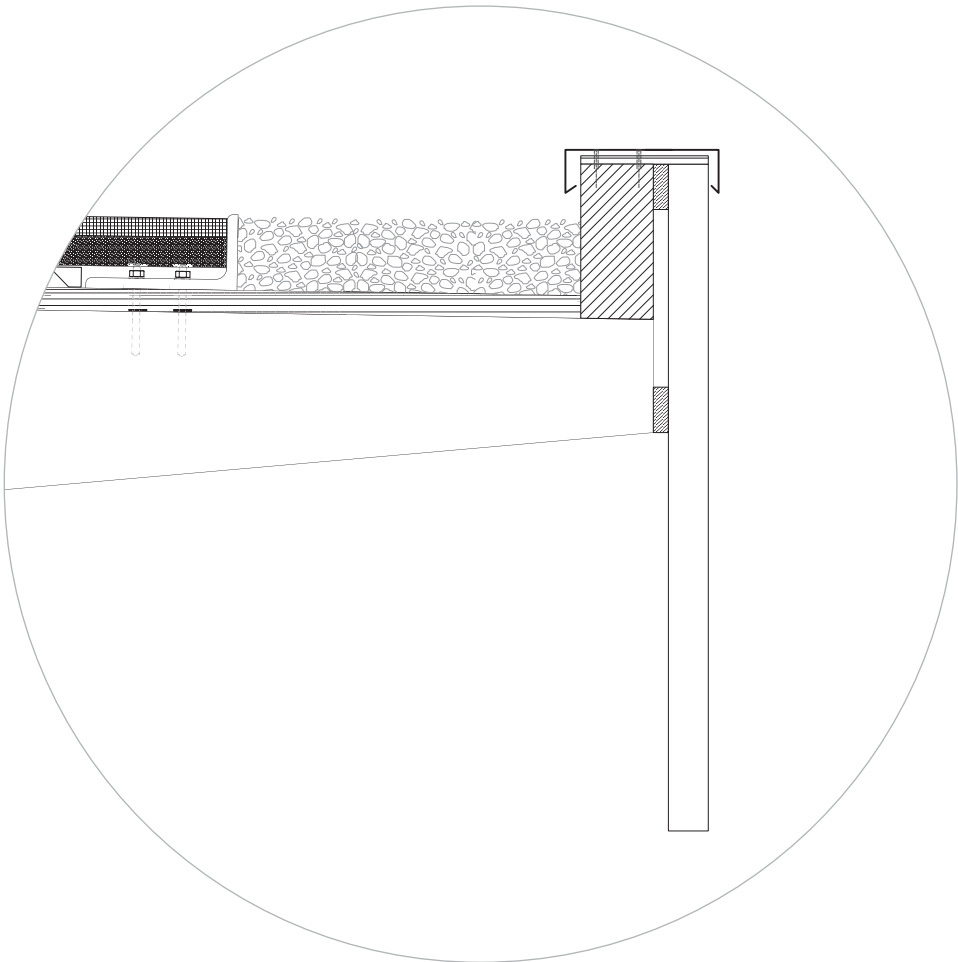


Section 4 | Final design | Technical building design

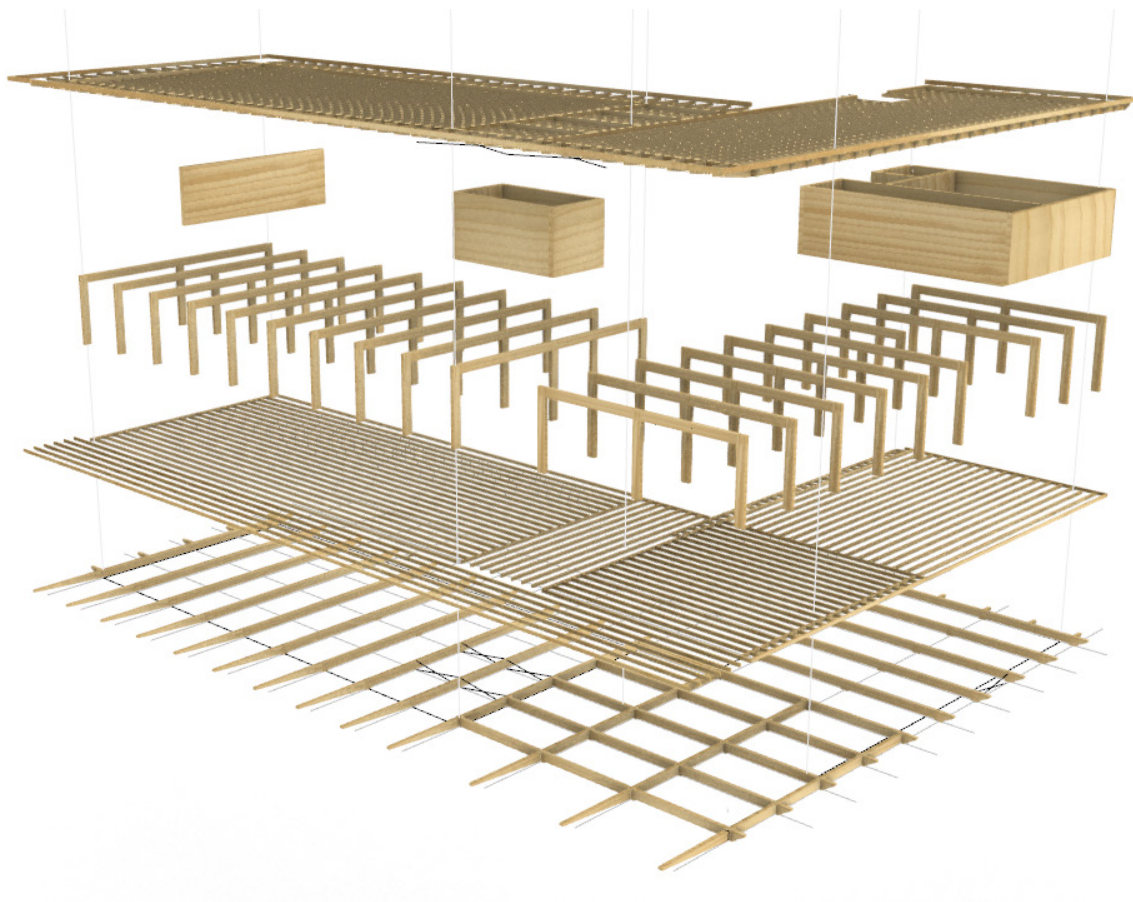
Detail 5



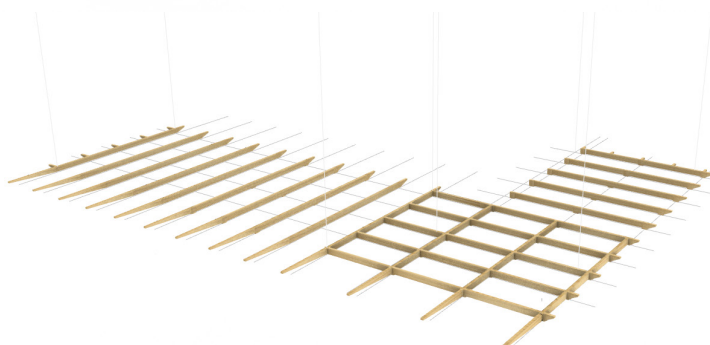
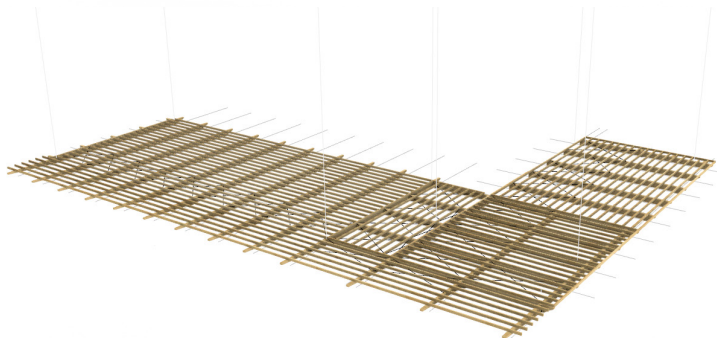
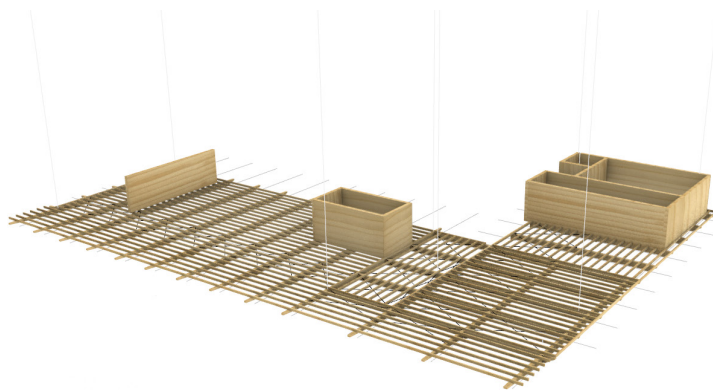
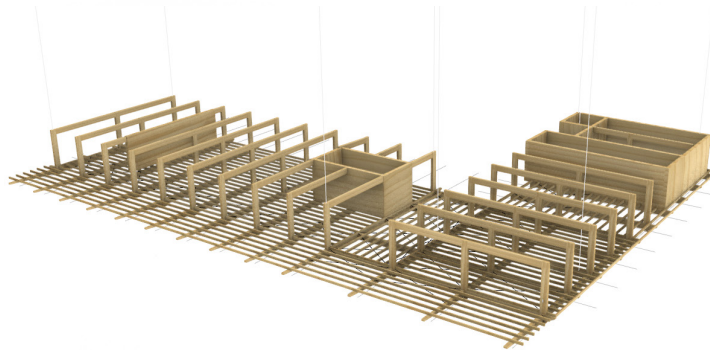
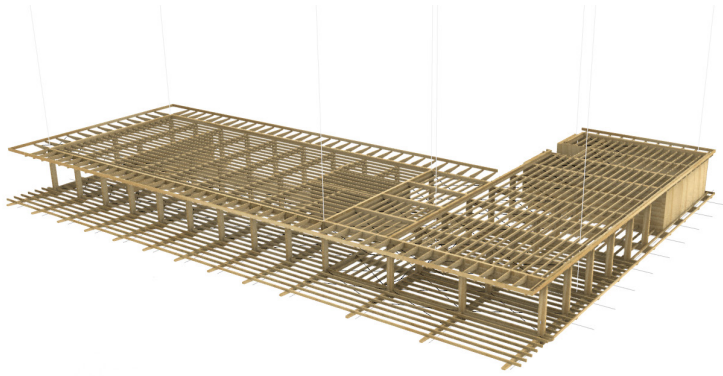
Detail 6 (roof landscape side)



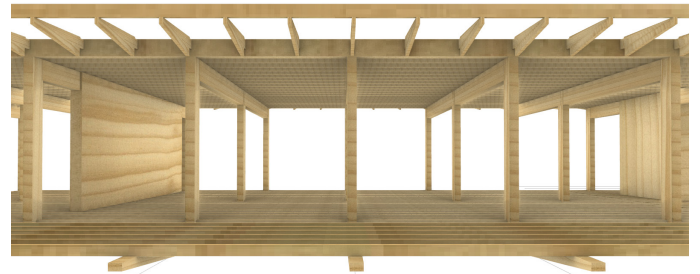
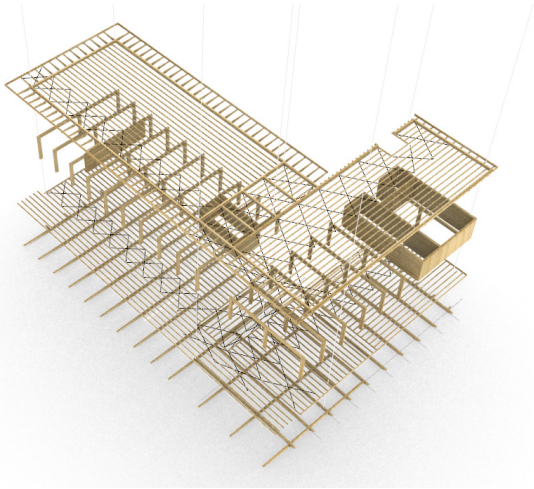
## Section 4 | Final design | Construction



## Section 4 | Final design | Construction



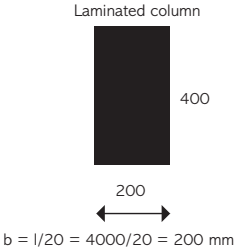
## Section 4 | Final design | Construction



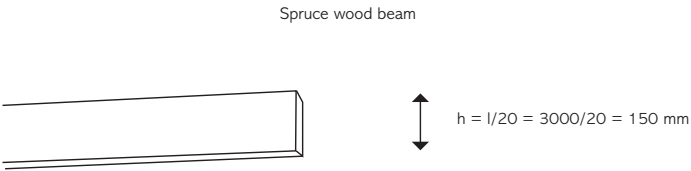


# Section 4 | Final design | Construction

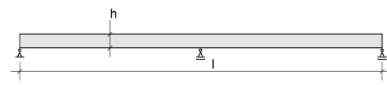
Aantal verdiepingen	Kolom afmeting* [mm]
1	L / 20



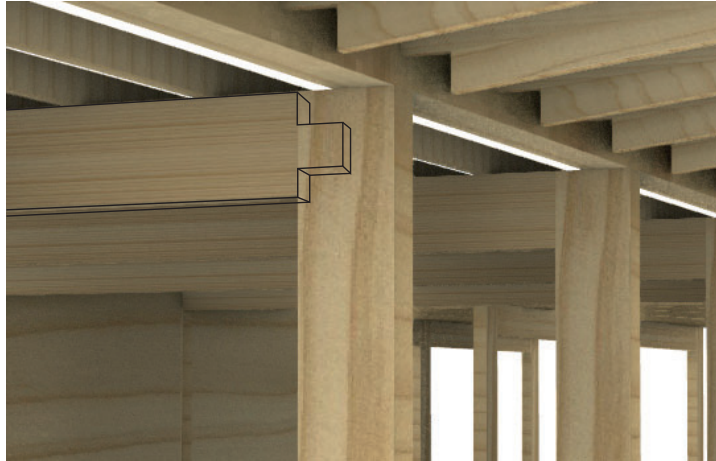
DAKCONSTRUCTIES				$\ell = 5$	10	15
planken en triplexplaten		$\frac{1}{30} - \frac{1}{35} \ell$	platte daken		$< - 1,0 \text{ m}$	
		$\frac{1}{40} - \frac{1}{50} \ell$	hellende daken		$< - 1,5 \text{ m}$	
balken, gezaagd		$\frac{1}{20} - \frac{1}{30} \ell$				



## Section 4 | Final design | Construction



gelamineerd hout  
 $l=6-30\text{m}$   
 $h.o.h.<5\text{m}$      $h=l/34$   
 $h.o.h.=5-8\text{m}$      $h=l/30$



Laminated beam



$$h = l/30 = 12000/30 = 400 \text{ mm}$$



## **Section 5 | Reflectionpaper**

## Section 5 | Reflectionpaper

### The sound of the Friche | Reflection paper

In this reflection paper I will reflect on my graduation process of research and design so far. First, I will explain my graduation process and discuss the method of working, how and why approaches worked or not and in what way the process developed until where I am at now. After that, I will reflect on the valueness of this research.

#### The process

So first, I will discuss my research, which I started in Q1 2023. My research started with the research question: What is the sound of Schaerbeek? This question arose from the observations I made in Schaerbeek and my passion for music, sound. In our research on Schaerbeek in Q1 it became clear that it is a municipality full of diversity in space in culture, where great contrasts were visible (also in sound). Since the design location of the Urban Architecture studio is in Schaerbeek, I wanted to do something with this great diversity and decided, partly because of my passion for music (sound), to focus more on the sounds in Schaerbeek. In addition, because music is a medium that is very close to human beings, I found this an inspirational medium to use for my research.

Soon the scale of my research changed from the municipality of Schaerbeek to Friche Josaphat, where the research question became: What is the sound of *the Friche*? This was because this would be closer related to my design and therefore could bring me more. I listened to sound recordings of the entire Friche and created sound zones that I wanted to analyze through writing music. Before P2 I made a composition of the first zone, the west side of the Friche.

However, at this point, around P2 I ran into a problem in using my research as the basis of my design. My design question was: how can the sound of the Friche be implemented in the design of a building. Since I did my thesis in my previous master year on composition techniques, I thought I would translate the musical pieces into architecture. For the P2, I presented a building that was actually too direct a translation from music to architecture, actually losing the content of the research before it.

What did emerge from my research of P2 was the uniqueness of sound especially of the west side of the Friche, as well as the Friche itself as a special element in the city. These conclusions became the basis for my design principles: respecting nature, creating a buffer zone from city to nature, awareness of sound and nature. Whereas before I tried to make a direct translation of the sound of the Friche to the building, now I approached the design question on a larger scale: how can the sound of the Friche be implemented in the design of *a project*. Indeed, the scale of my design based on sound remained not only part of architecture, but also an entire urban plan and landscape design.

From this transition, everything began to flow. From the idea of respecting nature and being aware of sound and nature came the idea of preserving the west side of the Friche as a nature reserve/parc. This is an important point where my design proposal influenced my research, because it required me to think of how such a nature reserve could be maintained in the city without building. After developing the idea of creating two entrance buildings and a sculpture- and soundgarden, I needed to do more research into the specific sounds of this side of the Friche. I decided to go back to the Friche and do more site specific observations (decibels, birds, site specific sounds) and also did research on design methods of sound (sound art, creating sonic shelter places). Eventually I used this data as a basis for my (landscape) design. Between Q4 and Q5, the final step will be taken, where there will be another composition of how the Friche will sound with my design on it.

The value of the fact that sound connects still leads to the basis of where this research came from: the diversity in Schaerbeek. Sound connects man and nature, the built and unbuilt and people among themselves. As is mentioned in the research: sound connects people and environment; the human and non-human; the object, subject and place.

## Reflection - Valuableness

I value the way of working and using the methods and methodology that I used. I think that writing music may not be the best method for everyone, but for me it worked very well to find out the different layers of the sound at the Friche by working with tonality and harmony. I also did various literature reviews, which was very valuable for me to think more broadly and which taught me other ways of looking at sound. Also, visiting the Friche to make observations could not but be an appropriate method for this research.

Because sound, as mentioned in my research proposal, has so far been underrated within architecture, I see my research as valuable. Yet, my research contributes to the stock of research on ways of working with sound within architecture. Since sounds have a big impact on peoples state, I agree that it is also socially important to pay more attention to sound in public spaces. Designing with sound is challenging, but is at least as important as the visible aspects of architecture.

Where there may be even more potential, but was not possible due to the limited time of my graduation, is building acoustics. My research into sound went a lot into the principle of acceptance and appreciation of all types of sounds and the creation of zones and awareness of sound for the visitor, but not into the pure technical aspects of it. These are also important for the experience of space. Even though my research into sound stops after P5, I think my research results can contribute to a collection of examples of how to work with sound. My concept of creating zones and respecting nature in the city can be a starting point for other architects/researchers to expand on.

Thus, because the conclusions of the research of The sound of the Friche and the incorporation of those conclusions into design principles extend to a wide range of scales: from urban, landscape, building to detail, my graduation project topic contributes to the stock of research of the masterprogramme MSc AUBS. Through the inclusion of sound concepts (creating a gradient from the urban soundscape to nature and an entrance to the sculpture- and soundpark) in the architecture of the building, my project topic is related to the master's track architecture.