Graduation thesis

FROM ISOLATION TO INTEGRATION

Transforming three estates into an urban landscape

Student name: Zhaotun Chen Student number: 4843533 Supervisior team: Eric Luiten, Lidy Meijers

TU Delft
Delft University of Technology

Content

Part 1 Introduction

0 PREAMBLE

0.1. Introduction
0.2 Motivation

1 PRE-RESEARCH OF THE STUDIED FIELD

1.0 Current distribution of the studied estates
1.1 Historical research
1.1.1 The construction of the estates
1.1.2 Urbanization process with the estates function change
1.1.3 Landscape changes when functions changed or city developed
1.2 Mapping of the distribution with features
1.3 Field visit
1.4 Chosing urban area as my site
1.5 Historical research of the chosen estates

2 RESEARCH METHODOLOGY

2.1 Research question
2.2 Research methods
2.3 Theoretical framework
2.3.1 Values of the heritage
2.3.2 Current challenges of the urban heritage
2.3.3 Historic approaches to the urban heritage
2.3.4 Relations between spatial development and heritage
2.4 Design Principles from Case study
2.4.1 Haagse Bos
2.4.2 Sonsbeek

Content

Part 2 Regional context and vision

3 REGIONAL CONTEXT

3.1 Regional landscape context
3.1.1 Soil condition
3.1.2 Geomorphology
3.1.3 Water features
3.1.4 Conclusion map
3.2 Regional urban context
3.2.1 Public transportation accessibility
3.2.2 Cycling network
3.2.3 Landuse pattern
3.2.4 Social and cultural facilities
3.2.5 Open public space
3.2.6 Water management
3.3 Local problems by A12 highway
3.4 Conclusion map
3.5 Problem statement

4 REGIONAL VISION

4.1 Concept on the regional scale
4.2 Concept of the highway

Content

Part 3 Cluster's and estates' context and intervention

5 CLUSTER'S AND ESTATES' CONTEXT

5.1 The current situation of the cluster
5.2 The features of each estate
5.2.1 Bronbeek
5.2.2 Daalhuizen
5.2.3 Larenstein
5.3 Conclusion of cluster analysis
5.3.1 Summary of the estates
5.3.2 Summary of the interfaces
5.4 Problem statement

6 CLUSTER'S AND ESTATES' CONTEXT CONCEPT

6.1 Concept of the cluster
6.2 Overall plan of the cluster
6.2.1. Structure
6.2.2 Masterplan
6.2.3 Sections
6.3 Plan of each estate and inside details
6.3.1 Bronbeek
6.3.2 Daalhuizen
6.3.3 Larenstein
6.4 Summary of the toolbox
6.5 Extra terraced garden
6.6 Landscape tour in the cluster

7 REFLECTION

8.1 On the topic of the Flowscapes studio and to the lab
8.2 On the strong and weak sides of the chosen methodology
8.3 A description of the societal relevance
8.4 A discussion of possible problems that occurred during data collection
8.5 Difficulties to visit the site, digital mentoring and other issues related to the Corona-crisis

0 PREAMBLE

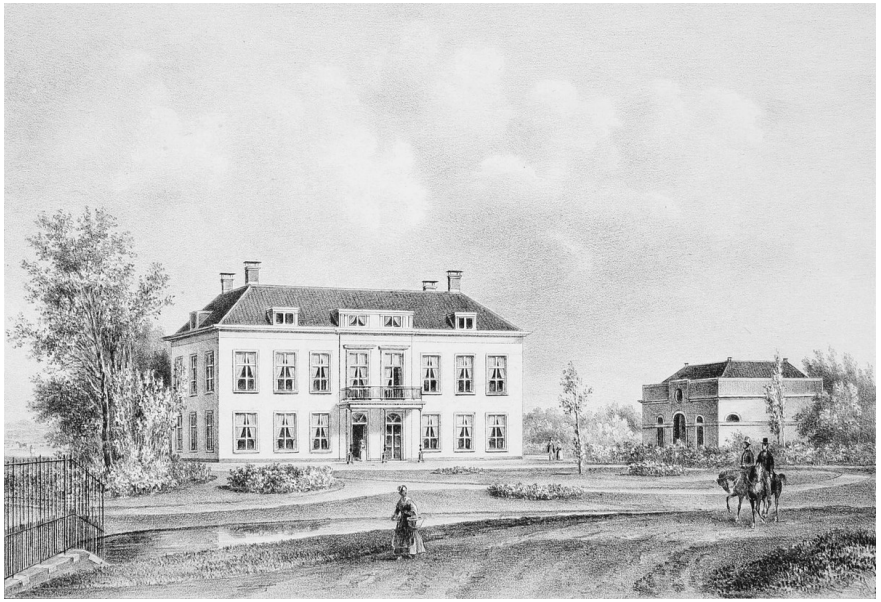
0.1 Introduction

0.2 Motivation

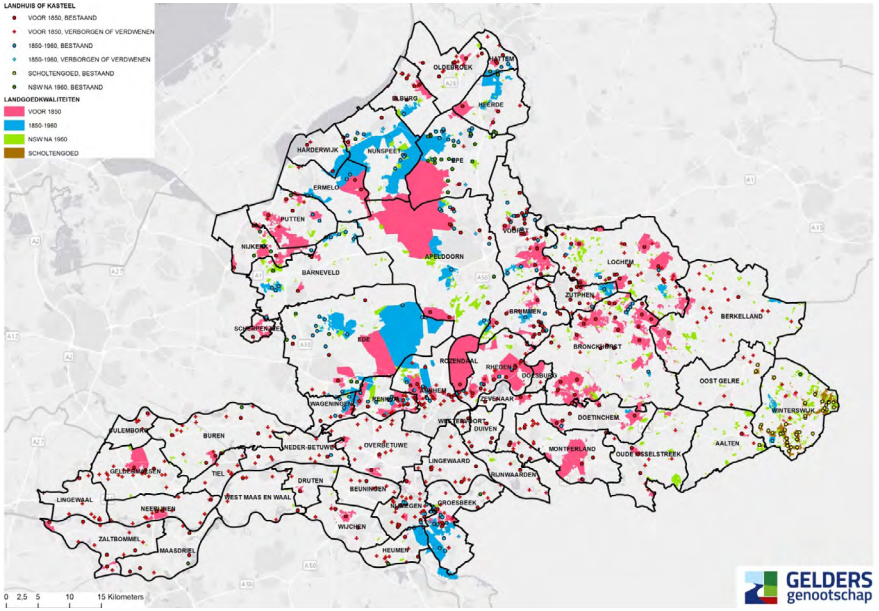
0.1. Introduction

Historically, an estate comprises the houses, outbuildings, supporting farmland, and woods that surround the gardens and grounds of a very large property, such as a country house or mansion(Estateland-Wikipedia). Based on different cultural backgrounds, this item has various focuses. In America, large houses at least on several acres are often referred to as "estates"(Estateland-Wikipedia). In England, it refers a large house or mansion in the countryside(English country house-Wikipedia). In Netherlands, it means: a property fully or partially occupied by forests or other timber stands - including that on which a country estate or other buildings, appropriate to the character of the estate, occur - insofar as the continued existence of that property in its characteristic appearance for the preservation of natural beauty is desirable (Nature Beauty Act).

There are more than 2000 estates reserved in Netherlands, of which 18% are in Gelderland. However, with time going by, the surrounding environment of the estates has changed and new challenges which the estates are faced with has happened, including climate change threat, spatial fragmentation and increasing tourism.



Source:https://nl.wikipedia.org/wiki/Landgoed_Reigersbergen



Source: lecture from Gelders Genootschap

The city I am studying, Arnhem used to be surrounded by the mansions of affluent city dwellers who transformed their riches into magnificent country houses in the countryside.

After the period of city fast expansion, the estates are threaten by the heavy influence of urbanization process which caused territory separation, function isolation etc. Under this condition, transformation of the estates are required to adapt surrounding urban environment.

Therefore, my project is to explore how to integrate the estates in the city. After preliminary analysis, I proposed the acupunctural strategy is to transfrom the estates as landscape infrastructures in the city. Under this proposal, there are three precise sub-strategies could be applied, consisting of reorganizing the spatial layout, renewing the functions/facilities/programs and repairing the interfaces between the estates and surrounding urban context.

Private estate

Source:https://nl.wikipedia.org/wiki/Bronbeek#/media/Bestand:Bronbeek_Arnhem_in_1865.jpg

Military museum + elderly home

Source:https://www.gelderlander.nl/arnhem/eerste-vrouw-in-militair-tehuis-bronbeek~a1a35543/

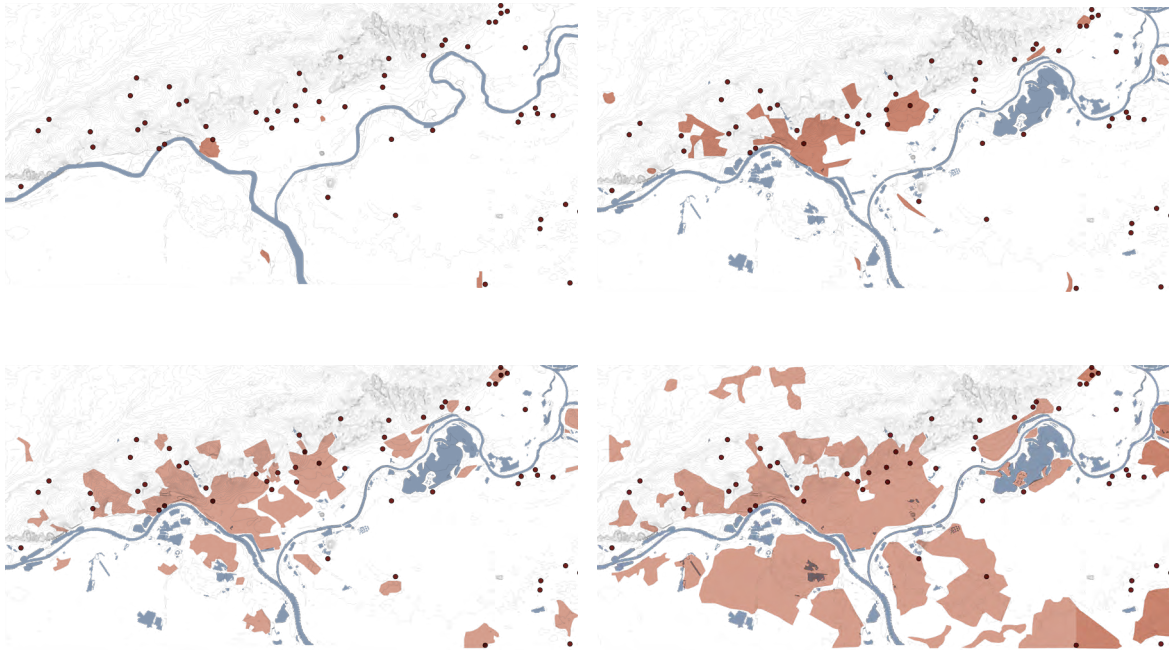
0.2 Motivation

There are several reasons which encouraged me to study in the landscape heritage studio and working on heritage transformation aspect.

First of all, I had a bachelor background of urban planning and design which help me construct my basic understanding of space and more or less aroused me to look at the urban landscape spaces. Therefore, when I heard that our lab would do the research on the challenges between the landscape heritage and urban context and solve the conflicts in between, I suddenly realized that this lab is what I am looking for. On the other hand, I am quite interested in the heritage especially in how to transform or reuse them in order to fit the urban development. I also did some heritage projects during my bachelor, including historical street for tourism, heritage district which is not compatible with urban development etc. In a word, I am very willing to learn landscape heritage in the urban environment on which I can apply both knowledge of urban and landscape and that definitely enrich my experience of heritage.

Secondly, during our mapping workshop, our group were working the urbanization with estates. We analized how the urban process effects the estates especially how the urban settlement embraced the estates step by step and changes of their functions, which formed my fascination and reinforced me to study urban landscape heritage.

Last but not least, research on urban landscape heritage has a significant value no matter in the field of landscape or urbanism especially when the challenges are happening all over the world in the context of urbanization.



How the urban settlement embraced the estates
(group work during the mapping workshop)

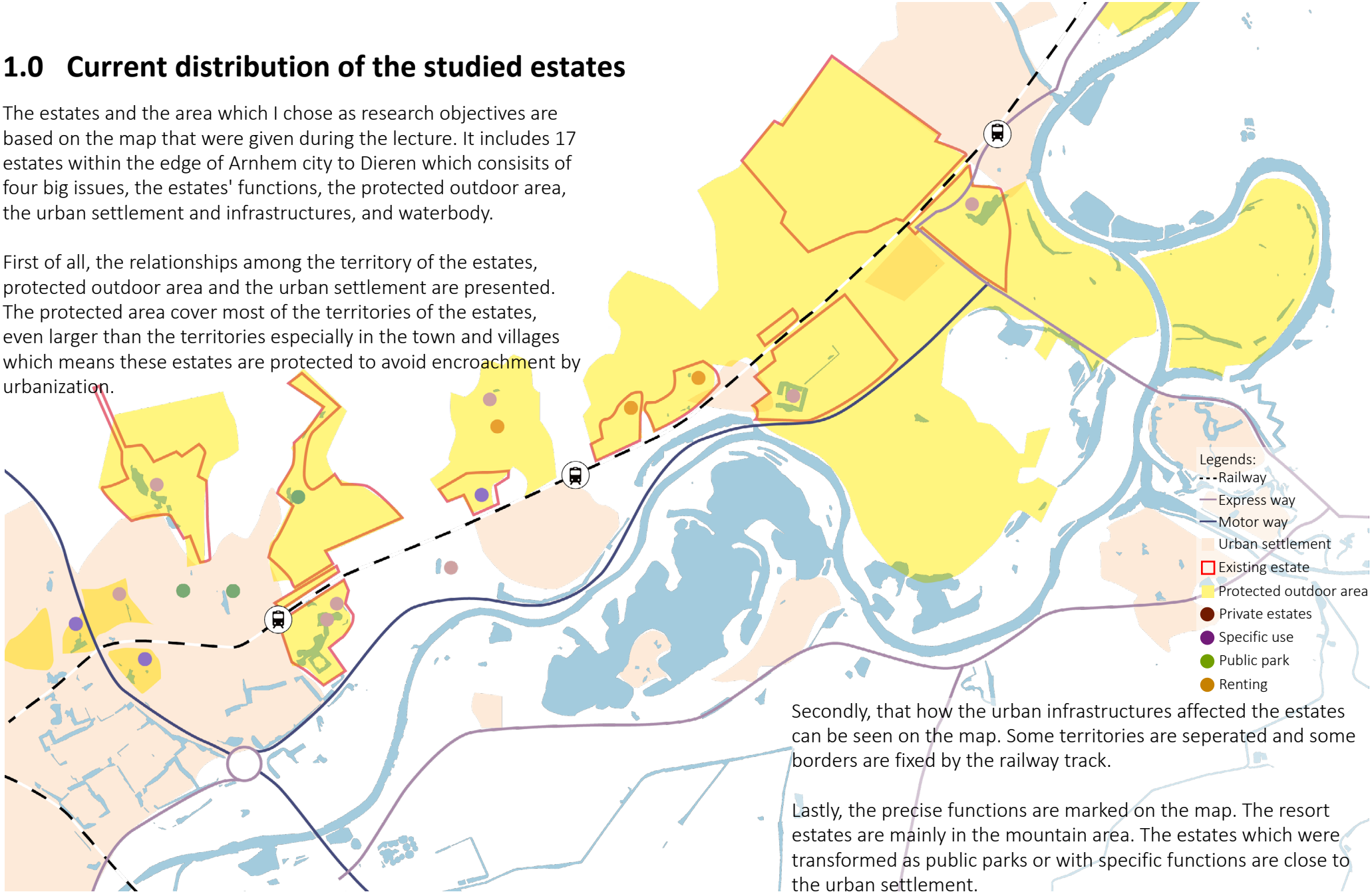
1 PRE-RESEARCH OF THE STUDIED FIELD

1.0 Current distribution of the studied estates
1.1 Historical research
1.2 Mapping of the distribution with features
1.3 Field visit
1.4 Chosing urban area as my site
1.5 Historical research of the chosen estates

1.0 Current distribution of the studied estates

The estates and the area which I chose as research objectives are based on the map that were given during the lecture. It includes 17 estates within the edge of Arnhem city to Dieren which consisits of four big issues, the estates' functions, the protected outdoor area, the urban settlement and infrastructures, and waterbody.

First of all, the relationships among the territory of the estates, protected outdoor area and the urban settlement are presented. The protected area cover most of the territories of the estates, even larger than the territories especially in the town and villages which means these estates are protected to avoid encroachment by urbanization.



Secondly, that how the urban infrastructures affected the estates can be seen on the map. Some territories are seperated and some borders are fixed by the railway track.

Lastly, the precise functions are marked on the map. The resort estates are mainly in the mountain area. The estates which were transformed as public parks or with specific functions are close to the urban settlement.

1.1. Historical research

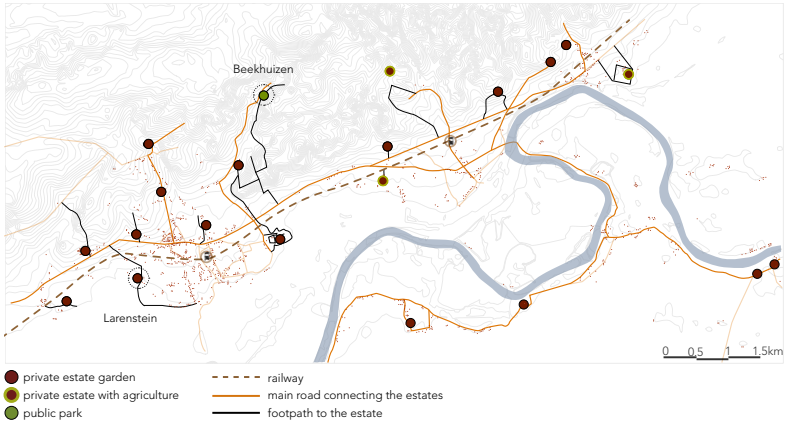
The construction of the estates

The creation of such country estates was in part related to changes that followed from the reformation at the end of the sixteenth century when the capitalism and the rise of the bourgeoisie emergened. These mansions that the bourgeoisie constructed were places for recreation and entertainment, for experimental forestry and for shaping delightful landscapes.

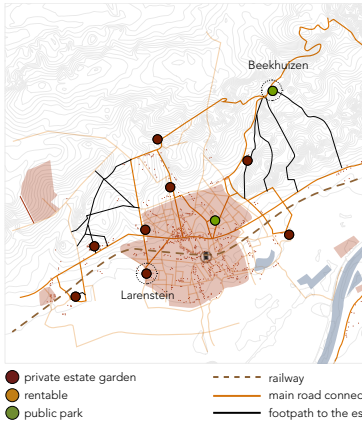
From the mapping on the right, that how the enrivonment affcted the choice of location of the estates can be seen. Some of the estates are located at the ridge of the mountain where the stream might flow through. Some are situated near the river or the other large water bodies like lakes or ponds. It can be concluded that at the very early stage, when the transportation and intake of water were not convenient, close to the water resource was the one of the significant fators to be considered before construction. Also, the accessibility of the estates were not good, mainly by carriage or walking. At the late stage, when trasportation develped, location of the estates seemed more flexible.

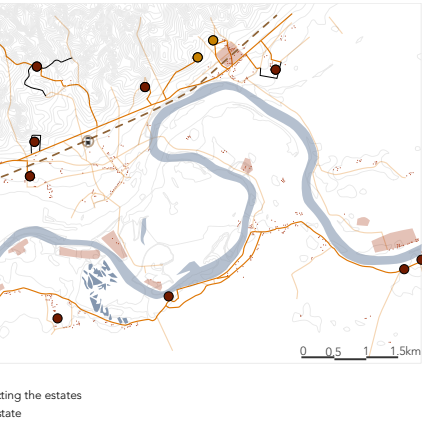
On the other hand, the processs of function transformation is also interesting. At the earliest time, the estates were property of rich with gardens or agricultural land. Later, some were transformed as public park in the city and some could be rentable for holding events or resort. Now, they have various functions especially the estates for resort are connected with other recreation points by different recreational routes.

1882



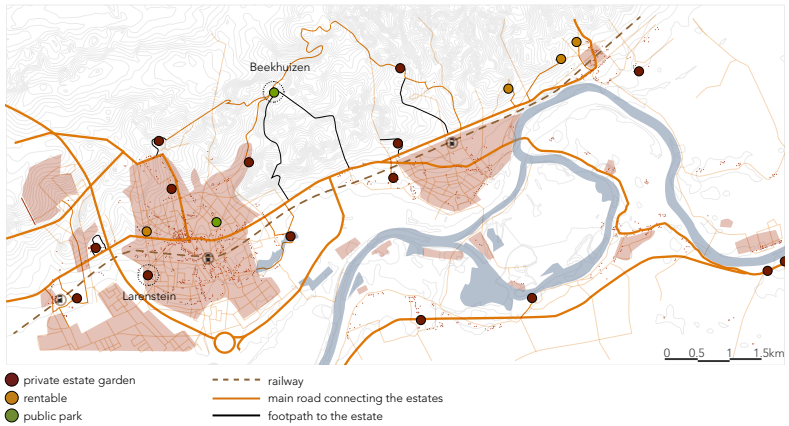
1940





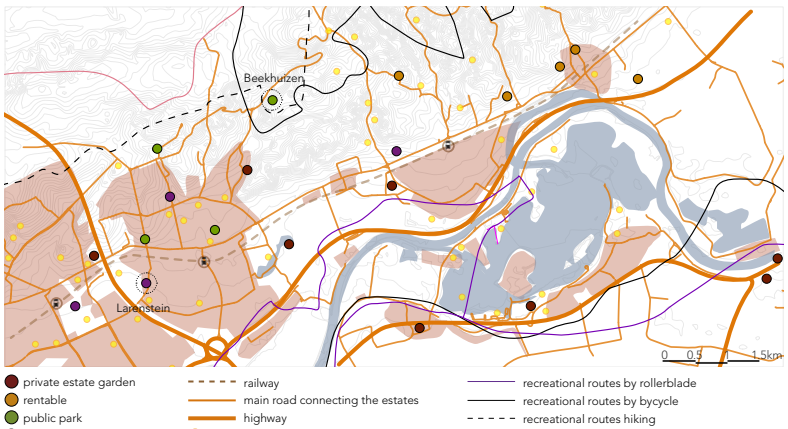
ting the estates
tate

1976



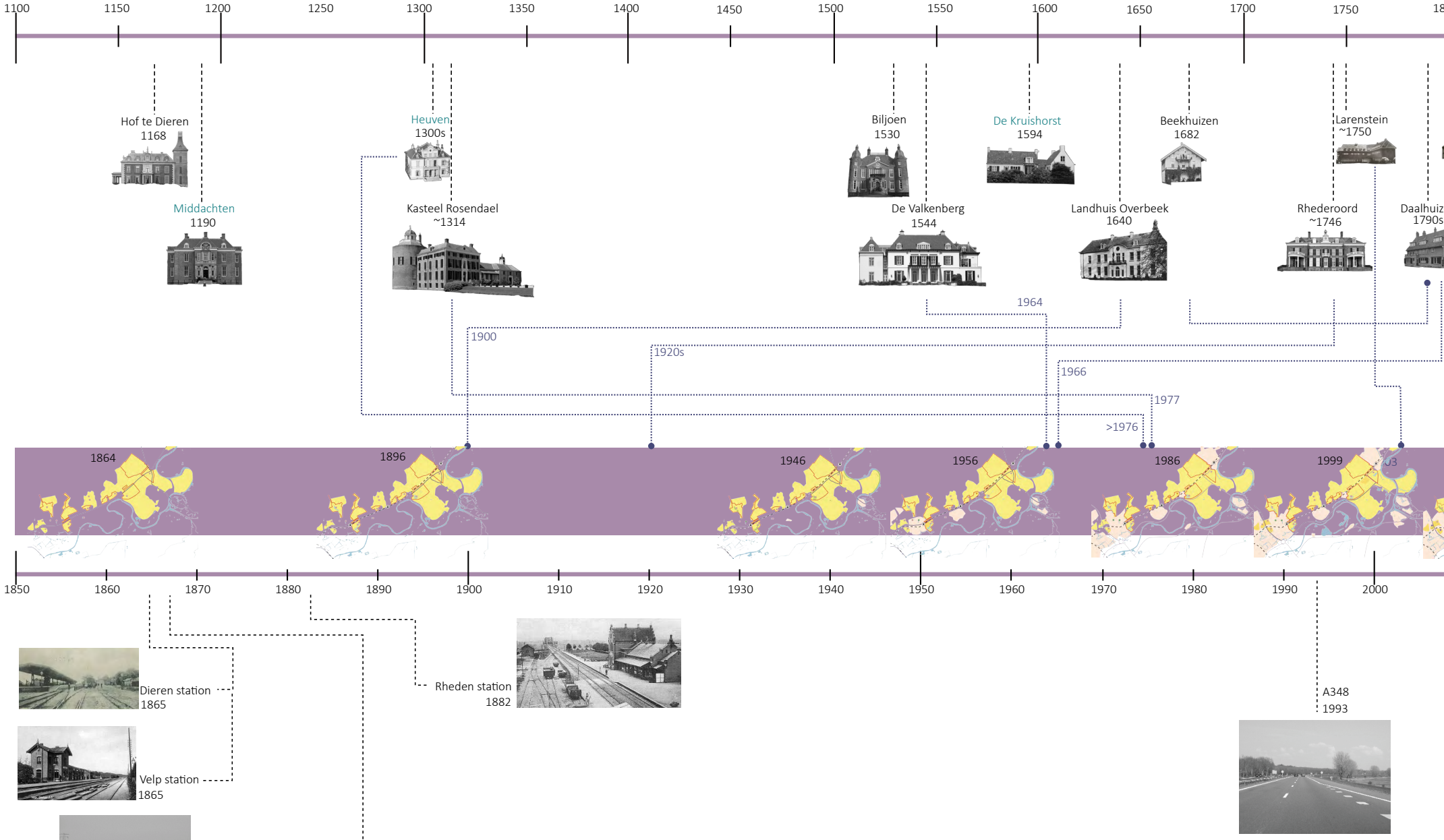
private estate garden
rentable
public park
railway
main road connecting the estates
footpath to the estate

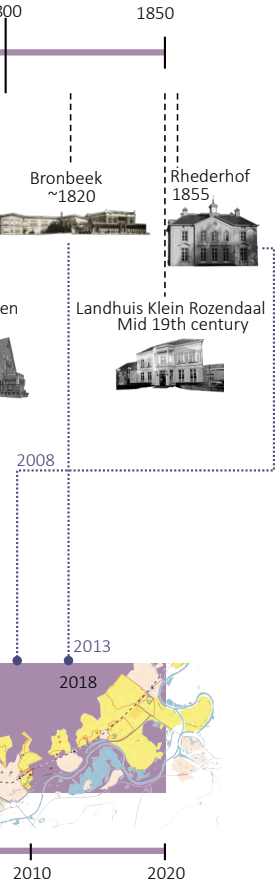
2018



private estate garden
rentable
public park
specific function
railway
main road connecting the estates
highway
recreational points
recreational routes by rollerblade
recreational routes by bycycle
recreational routes hiking
recreational routes horse riding

How the accessibility and function changed of the estates
(group work during the mapping workshop)


1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
1600
1650
1700
1750
Hof te Dieren
1168
Middachten
1190
Heuven
1300s
Kasteel Rosendael
~1314
Biljoen
1530
De Valkenberg
1544
De Kruishorst
1594
Beekhuizen
1682
Landhuis Overbeek
1640
Larenstein
~1750
Rhederoord
~1746
Daalhuiz
1790s
1964
1900
1920s
1966
1977
>1976
1864
1896
1946
1956
1986
1999
03
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
Dieren station
1865
Velp station
1865
Arnhem–Nijmegen railway
1868
Rheden station
1882
A348
1993



Urbanization process with the estates function change

The creation time and functional transformation time of the estates, the urbanization process and urban infrastructure constructure time are shown in the timeline diagram on the left. It can be seen that the researched estates in Arhem-Dieren area were constructed during 1500-1850. During 1860-1890, before urbanization process in Netherlands, several important railway stations and railroad were built during the early second industrial revolution. After the second industial revolution, fast urbanization process began. Till to 2000, during the past few dacades, function of the estates were changed a lot. On one hand, it happened after 1940 to post-war urban reconstruction because some estates could not meet the demands of the city so that they were changed. On the other hand, because of some estates destroyed heavily, there were some new conservation acts and policies, aimed to protect the left over heritage.

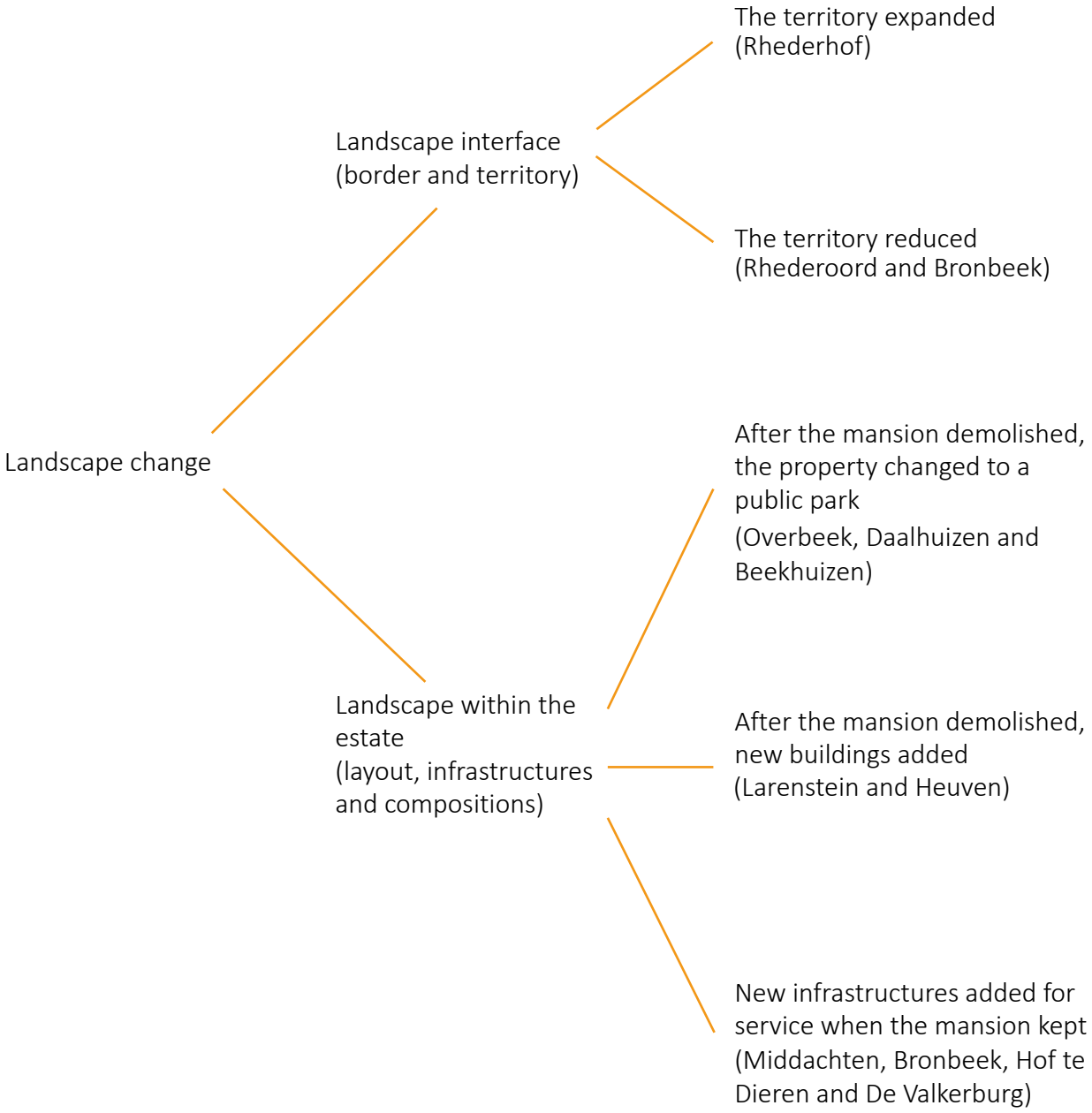
1.1. Historical research

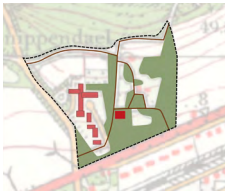
Landscape changes when functions changed or city developed

When the estates' functions changed or the city developed, both of them had influence on the landscape of the estates. Looking back to the historical development both of the estates and urbanization process in this area, the influence on the landscapes of the estates can be categorized into two aspects. One is how they affected landscape interface, including the estates' border and territory. The other one is landscape within the estates, like layout, infrastructures and compositions. Based on this category, that how the effect worked and performed is elaborated by five series drawings on the right.

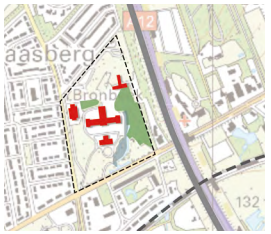
Landscape interface more or less is defined by urbanization process. As it has been already mentioned in the previous section, when the city expanded, the settlement occupied the land which was sold by the owner. Therefore, the territory decreased and the border was shaped. When the new urban infrastructures was built, they also occupied or went through the territory which also led to the decrease, for instance Bronbeek. In addition, landscape interface also can be changed due to the functions change or new infrastructures added for more space, for example Rhederhof.

As for landscape within the estate, it has three types. First of all, after the main composition, old mansion was demolished, the property of the estate might be changed, for instance to the public park, in this area including Overbeek, Daalhuizen and Beekhuizen. Or completely new building was built up after the mansion demolished like Larenstein. If the mansion was conserved, new infrastructures might be added for serving like Bronbeek.



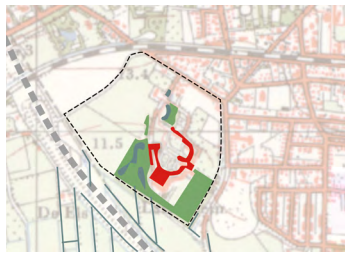


Rhederhof
Its territory was expanded when the function changed as an elderly home because of more space needed

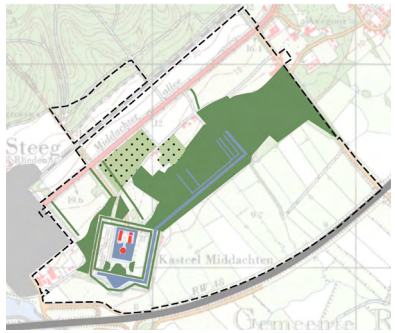
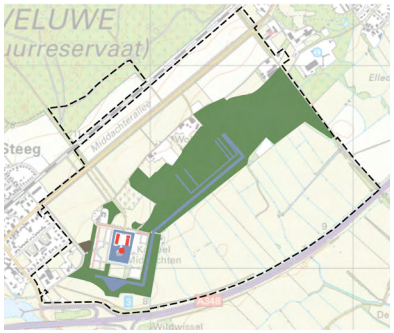


Bronbeek
It territory obviously was decreased due to the construction of the highway.

Overbeek
Its territory decreased sharply because of the urbanization settlement and now it serves as a public park. All the elements in the previous estate have gone except the gateway.



Larenstein
The mansion was demolished in the World War Two and after that, the new building was built for education.

Middachten
During the past few centuries, its layout has hardly changed. Now it works as resort so some new infrastructures were added, like the parking lot as brown points show.

Legends:
- Territory
- Mansion
- Watercourse
- Forest
- Meadow

1.2 Mapping of the distribution with features

After analyzing the historical development of the estates and its surrounding urban context, let's go back to 2020. It can be seen from the map on the right that from west to east, from Arnhem centre to Dieren, the settlement becomes few and scattered. And the mapping also indicates the distribution of the estates currently in this studied area, moreover, some features of the estates are displayed, including function, maintainence, openness and ownership.

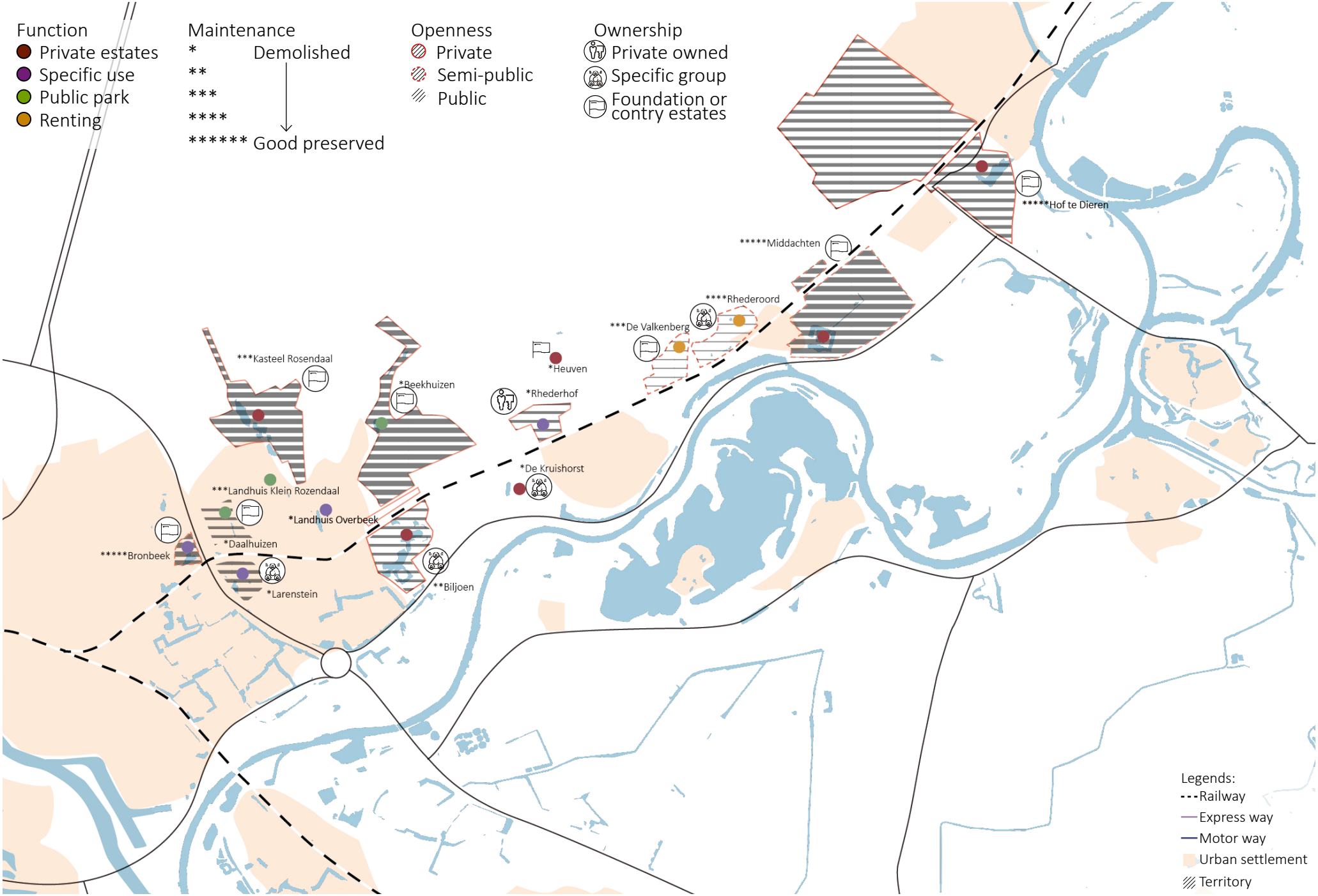
First of all, the type of function is classified as four, renting (resort), public park, specific use like school, elderly home etc, and still private for living. By mapping the features with the estates, it can be concluded that most estates for renting are still located at the foot of the mountain, far from the city. Private living estate are the same. The estates in the city are transformed for specific use or public park as they are close to the crowd.

Secondly, after visiting each estate, I also evaluated their maintenance condition from one star (*) to five stars (*****). One star is that the previoud mansion was demolished and almost everything has gone. People hard to recognize that it was an estate before. Five stars is opposite that almost everything is kept. The regularity also can be seen in the mapping that from the centre to the outskirt, maintenance becomes poor which somehow was due to city expansion.

In addition, the openness also is classified into private, semi-public and public. Private means people cannot visit them free without permission and the estates are protected by fence. Semi-public means people can visit them in some time and enjoy the outdoor space freely. Public means people can visit them very flexible. Somehow the openness is also related with the location of the estates, more close to the city centre, more open.

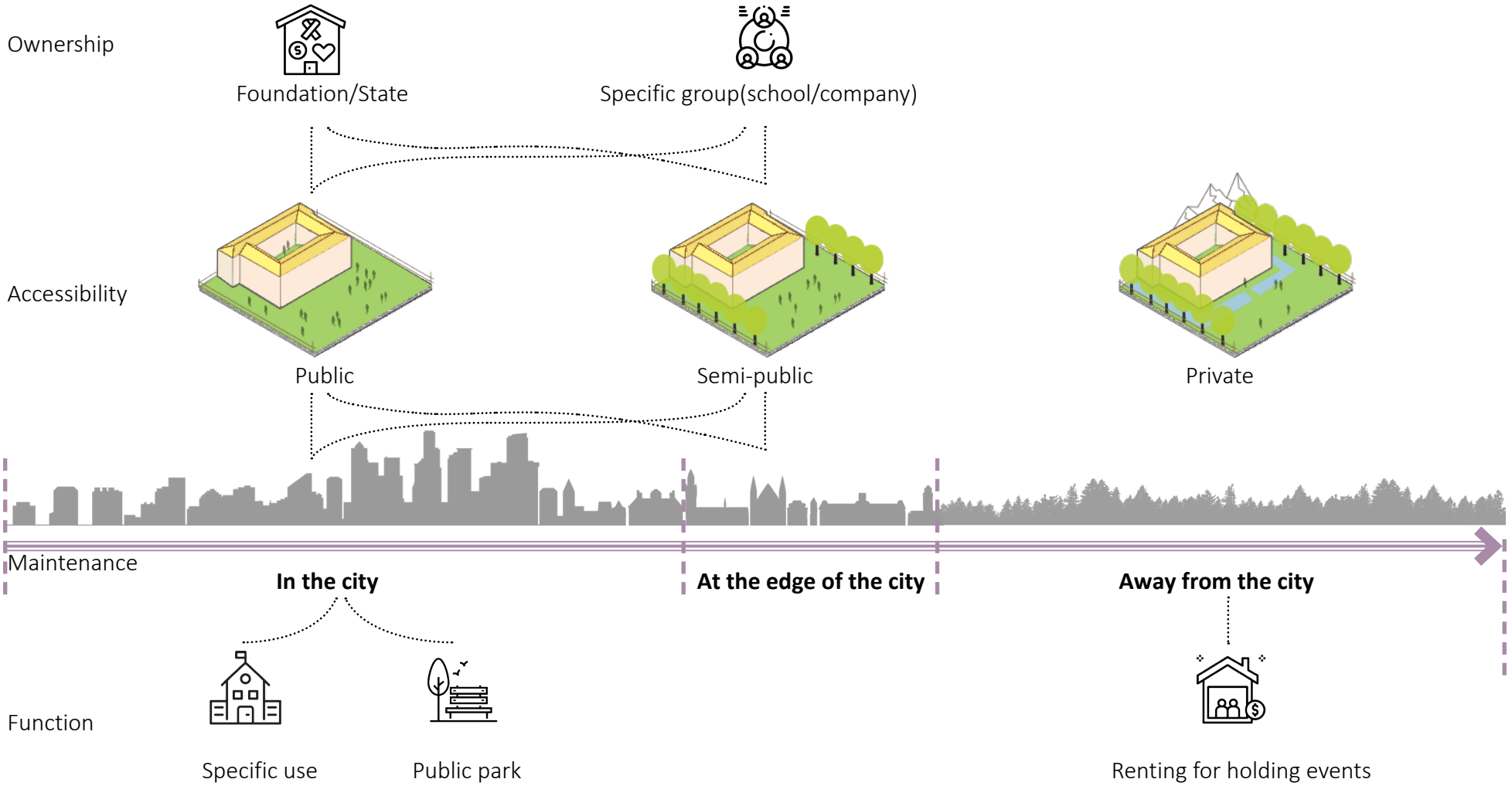
Last aspect is ownership. Generally, the private estates are owned privately. The estates for specific use in the city are owned to the specific group, for instance, school is owned by school itself. The estates as resorts far from the city are managed by the foundation or the contry estates. In a word, the ownership is highly relevant to the function and the location.

Based on the features and their locations, the estates are categorized into three types, ***the estates in the city, the estates at the edge of the city, the estates far away from the city***. And the relationship in between are explained in the diagram on the next page. The estates in the city are mainly for specific use or public park which are public or semi-public and owned to the foundation or the specific groups. The estates far from the city are resort for holding events which are private. The maintenance condition is gradually lower from the city to the outskirt.


Function
Private estates
Specific use
Public park
Renting
Maintenance
* Demolished
**
***
****
****** Good preserved
Openness
Private
Semi-public
Public
Ownership
Private owned
Specific group
Foundation or contry estates
*****Hof te Dieren
*****Middachten
****Rhederoord
***De Valkenberg
*Heuven
*Rhederhof
*De Kruishorst
***Kasteel Rosendaal
*Beekhuizen
***Landhuis Klein Rozendaal
*Landhuis Overbeek
*Daalhuizen
*****Bronbeek
*Larenstein
**Biljoen
Legends:
Railway
Express way
Motor way
Urban settlement
Territory

1.2 Mapping of the distribution with features

Conclusion diagram



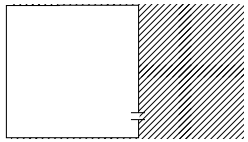
The way from the estates to urban settlement

Except research and classification of the estates' functional and social features, I also looked at their landscape features. As the previous features are highly relevant with the relative locations with the city, I studied the landscape features also starting with the relationship with the city, that is how the estates get touched with urban settlement.

The way from the estates to urban settlement also are categorized, into two types. The first one is from the estates directly into urban context because the estates are embrassed by the urban environment, like Larenstein, Daalhuizen, Bronbeek and Overbeek. Therefore this type mainly is located in the city.

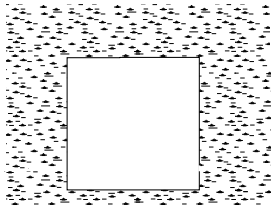
The second type is indirectly, which means there is the medium between the estates and urban settlement. The most common medium is natural elements as transitional. For instance Beekhuizen, it is a part of Veluwe and surrounded by dense forest. The only way from it to the city is to go through the forest. And also the classical estates which are located at the edge of the city or far away from the city, like Hof te Dieren, Middachten, tree lines are the main transitional space as a strong guiding.

1. Direct from estate to urban settlement

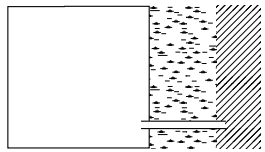


2. Indirect from estate to urban settlement

surrounded by trees



guided by tree line



Legends:
Urban environment
Gradient
Entrance

1.3 Field visit

In the city

Public

Park

Daalhuizen

School

Larenstein

Semi-public

Museum and elderly home

Bronbeek

Park

Overbeek

Museum

At the edge of the city

Semi-public

Resort

De Valkenberg

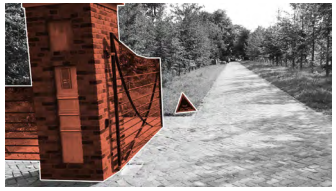
Rhederoof

Rhederoord

Away from the city

Private

Renting for events



Hof te Dieren

Middachten

After the categorizing the estates within my studied area into three types, I visited the typical ones which are accessible in these three categories and highlighted the landscape features which impressed me most.

The estates in the city that I visited included two types in terms of openness, public and semi-public. As they are in the city, most of them are accessible all day and have a nice view open to the public. On the other hand, the functionalities of buildings within the estates are more related to public use, for instance, park, school and museum, especially Larenstein and Bronbeek they are working for the citizen. The landscape features of the estates in the city that impressed me a lot except the mansions are the open views faced with the city. For instance, Daalhuizen and Overbeek, they have a nice open field which create a welcoming atmosphere for the citizen. It seems that all of them have a strong connections with the urban context and high accessibility.

The estates at the edge of the city are semi-public and used as resort. When I visited there, I felt that the estates are under low efficiency as they are open in holidays. Among the estates that I visited, I found that the environment around them are highly maintained by human in order to keep the original landscape atmosphere. The mansions are also in good condition.

The estates far from the city are private and owned by the owners. They are only strictly open for reservation or renting. Except the grand mansions, these estates also have thousands of hectares of farmland, grassland or forest. When I visited them, I could even imagine and feel the glorious age of these estates in the old time.

1.4 Chosing urban area as my site

It has alrealy shown that there are different types of estates based on their relative location with the city in my studied area. And definitely, all of the types have them own characteristics and fascinations. As far as I am concerned, I would like to chose the estates in the city, **Bronbeek, Daalhuizen and Larenstein** as my design location. The reason why I chose them are elaborated as follows.

First of all, there are various types of openness of the estates in the city, private, semi-private, semi-public and public. Each level of openness is highly concerning to the landscape features, for instance, public estate always has a visual connection with its surroundings and creates a welcoming atmosphere. The complexity of different openness levels motivates me to explore more relations between it and landscape.

Secondly, the functionality of the estates in the city is numerous. As is known to all landscape architects, form follows function. During past centuries, the function has been changed a lot, which means at the same time the form of the estates also are different from the original ones. When I am looking at the transformation process of the estates, that how forms and functions changed also encourages me to study from landscape aspect. On the other hand, currently, functions of the estates are various in the city, which also urges me to compare how landscape elements form space under different functions.

Last but not least, five-year study of urban planning and design in my bachelor stimulates me to consider from the urban aspect.

After basic introdution of my studies field, let us move to my chosen site, **Bronbeek, Daalhuizen and Larenstein**, and look at the specific situation here.

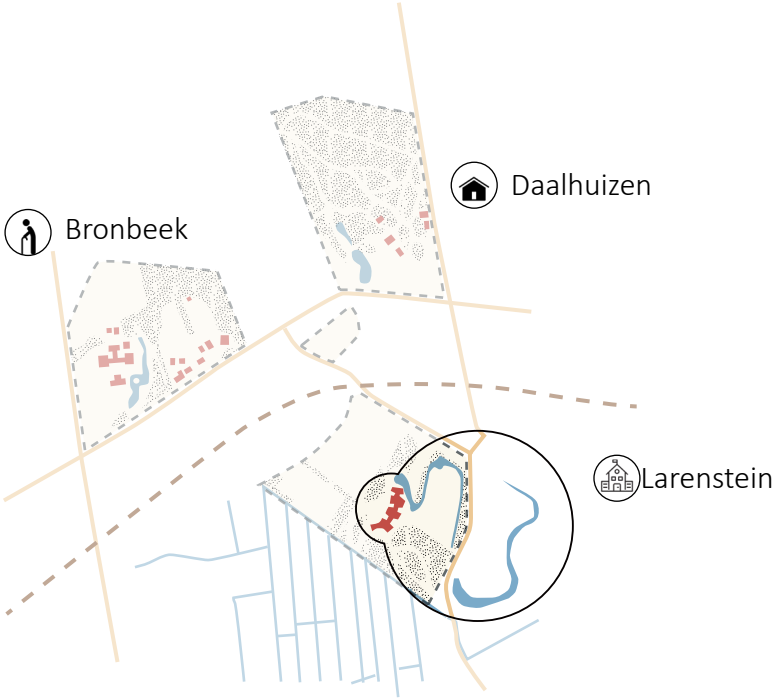
Before professional analysis of the site, I would like to introduce the general information of three estates. They are located at the junction of Velp and Arnhem, along A12 highway and surrounded by the urban context, mostly the residential houses. All of them have a long history from very early age. And currently, after transformation process, they are not private estates any more. Bronbeek is a museum and elderly people home for the old soilders. Daalhuizen consists of two part, a large private forest and a tiny open public park. Larenstein has been changed as a school for a long time and there is no heritage any more. More comprehensive analysis will be illustrated later.

1.5 Historical research of the chosen estates

1905

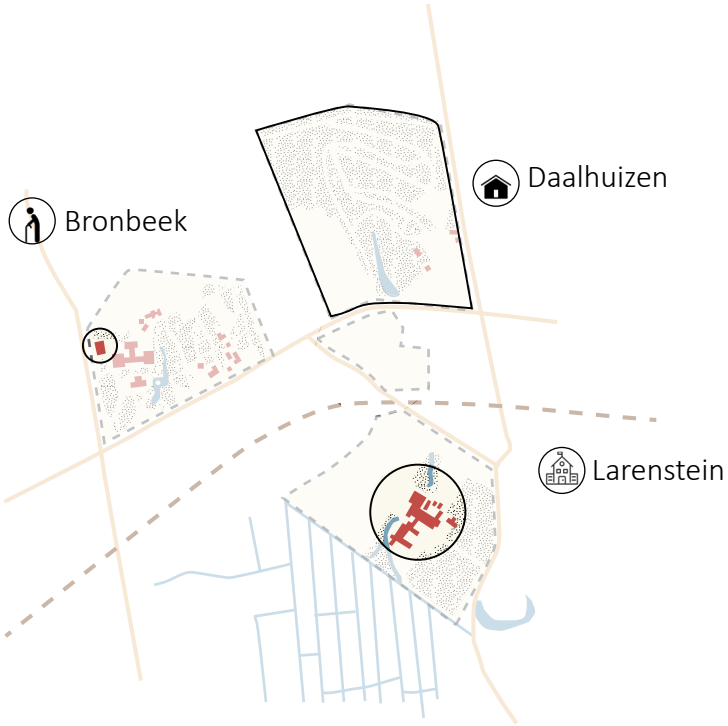
Although the estates were constructed at a very early time, the resource and map at that time is hard to find. Therefore, I choose the starting point from 1905 that is relatively primitive and first time of adaptive reuse happend.

1906



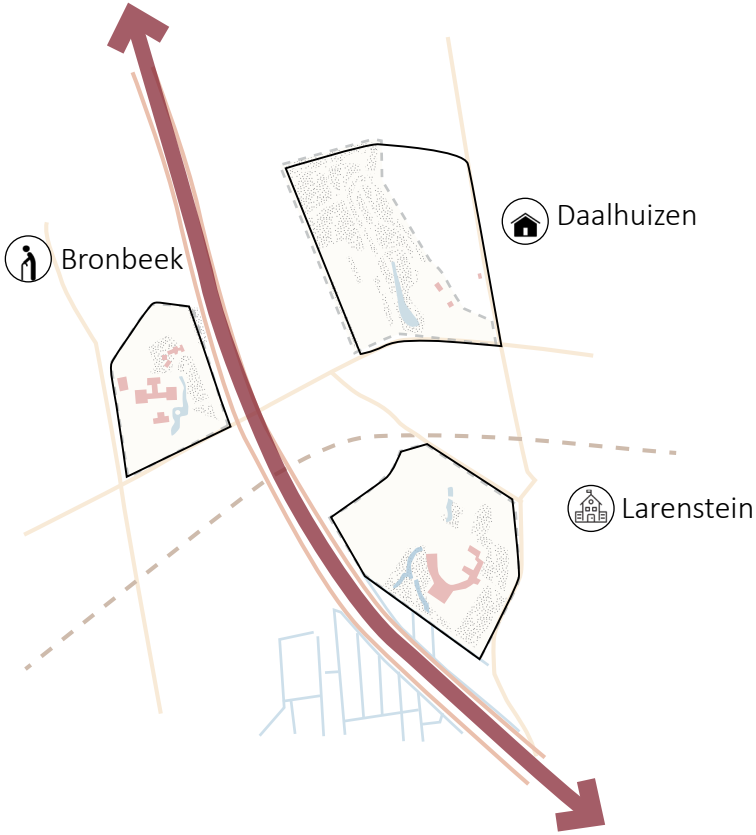
By comparing two drawings in 1905 and 1906, for the landscape elements, we could see that, **the water course in Larenstein changed** and **previous historic building was demolished with a new one replacing**.

1947



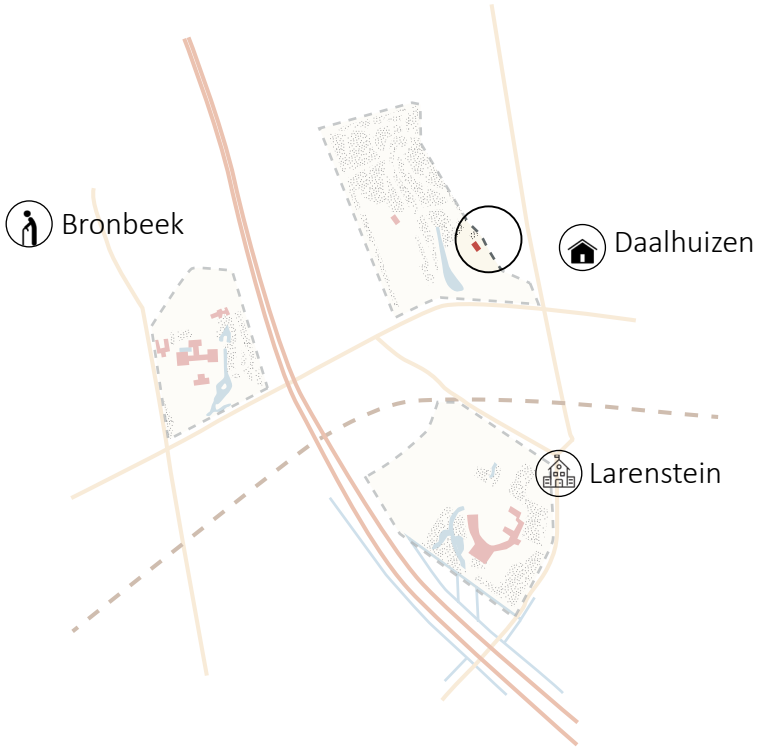
During the development of Bronbeek museum, **new facilities were constructed** like an Indonesian restaurant in 1947. As for Larenstein, the similar change happened in 1947, **water course changed and another new mansion replaced** the old one when it was destrcucted.

1958



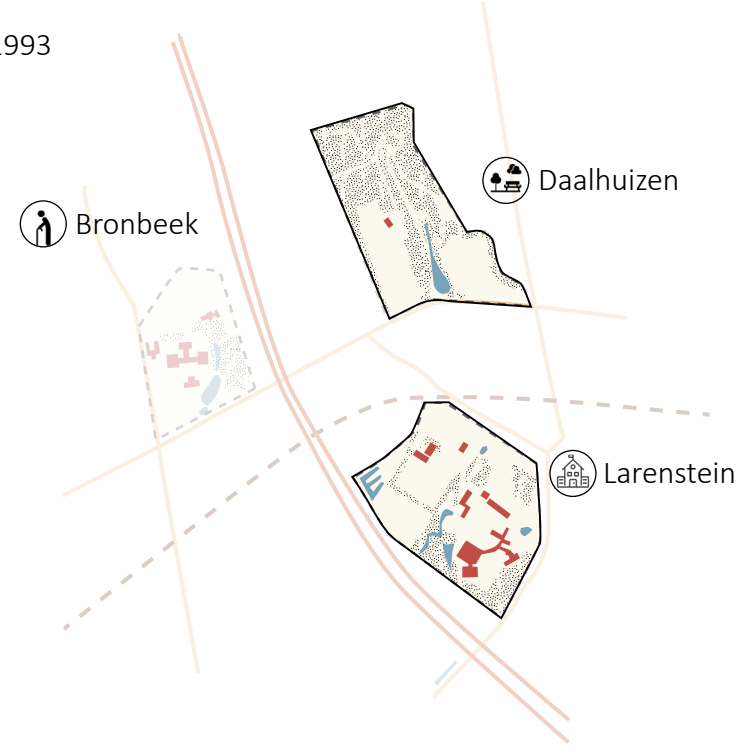
1958 is a unforgettable year for the cluster as **A12 highway were constructed**, which obviously seperated the area. The main effect on the estates can be observed that the **territory and border of Larenstein and Bronbeek decreased**. T**he north part of Daalhuizen was sold out** and **territory reduced** due to construction of residetial house in 1955. **Another new building took place of the demolished one**.

1966



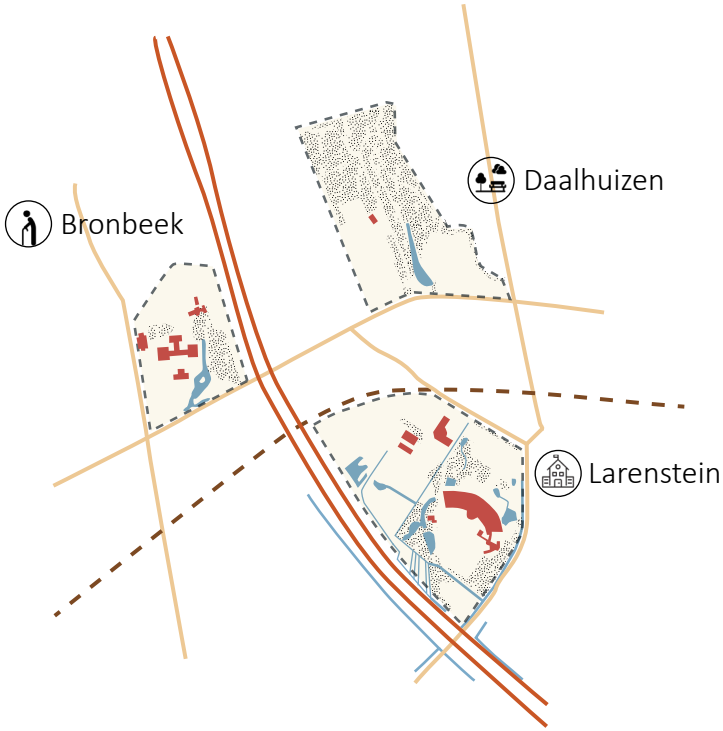
The main change in 1966 in the cluster happened in Daalhuizen, that is, the **historical mansion and coach were demolished**.

1993



In 1993, Daalhuizen no longer belonged to the private. It was governed **by the municipality as a city park** and part was open to the public. Larenstein officially functioned as agricultural school, owned by Larenstein it self and redesigned by Vlug.

2018



After a series of change during the past decades, the drawing above represents how the cluster looks like now.

After this set of time-drawing of the cluster, we could see how the urban infrastructures affected the cluster. When it constructed, surrounding land would be expropriated. Then the territory and the border of the estates would be reshaped. Therefore, **the ways that urban infrastructures affect the estates include reducing the territory and redefing the border.**

	Bronbeek	Daalhuizen	Larenstein
Estate	Kept	Demolished	Demolished
Water course	Kept	Kept	Demolished
Path layout	Kept	Kept	Demolished
Distribution of trees	Kept	Kept	Demolished
New building	Added	No	Added

By summarizing the change of landscape components in each estate, we could see how much degree of them changed.
-In Bronbeek, almost every landscape components are preserved and some new facilities are added.
-In Daalhuizen, except the heritage buildings in Daalhuizeh, other are kept.
-In Larenstein, everything has gone.
Based on the chart above, the preservation level could be evaluated on the right.

Level of "preservation"

Bronbeek	*****
Daalhuizen	***
Larenstein	*

2 RESEARCH METHODOLOGY

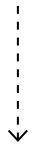
2.1 Research question
2.2 Research methods
2.3 Theoretical framework
2.4 Design Principles from Case study

2.1 Research questions and design goals

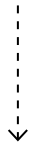
RESEARCH QUESTIONS

The estates

1. What is estate? What is heritage? Why are they important?
   What kind of views of landscape architects' of heritage?
   What role can landscape architects' be with heritage?
2. How the estates developed?
   How the inside landscape components and functions changed?
3. How do the estates look like now? What the current features (function, values, owner, landscape components, users)?
   What are the specific problems of the estates and each one?



How to improve the estates?

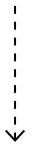


DESIGN GOALS

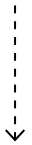
Improve the quanlity/facilities/functions of the estate to satisfy the public

The relations

1. How did urban grey infrastructures affect the estates in the history and how about now?
2. What are the relations of the estates and urban context?
   How do the estates fit in the urban context or not?



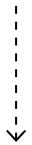
How to enhance the relations?



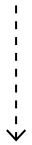
Seek/Strengthen the links between the estates with the surrounding urban context

The regional city

1. How did the fragmented space form?
   Did they affect by urban grey infrastructures?
2. How to solve the problems caused by the highway?

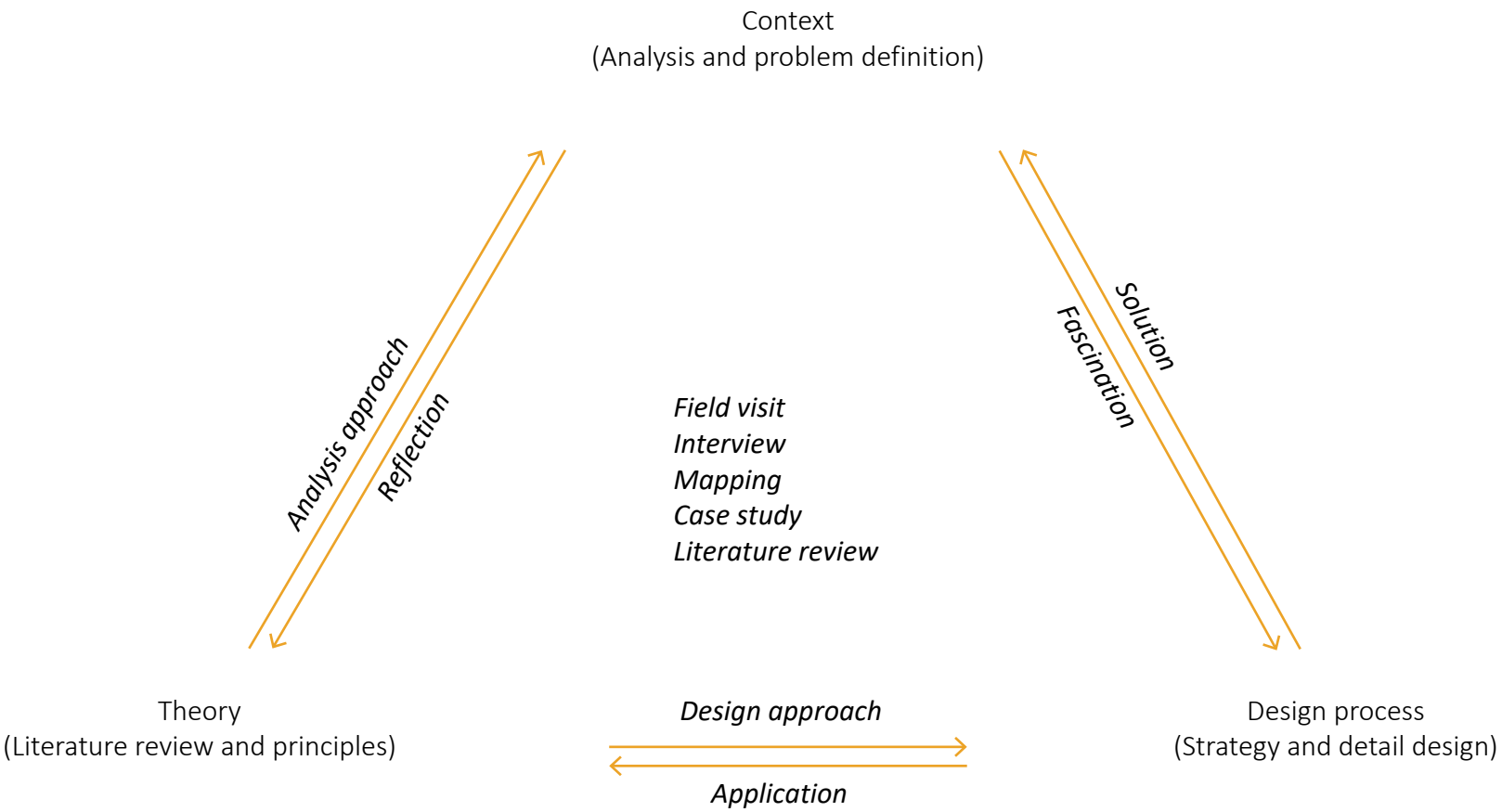


How to repair the fragmented space?



Connect the fragmented space which was separated by the highway and other urban infrastrctures

2.2 Research methods



In my graduation project, the whole process could be divided into three steps.

First one is context, which means realizing and understanding the circumstances of the site. By analyzing context of the site, problems could be defined. Second step is theory, by which historical, economic, ecological and social situation could be understood. In addition, some research and design principles could be summarized from literature reviews especially from other similar cases and its historical development. The last but not least step is design process, which is the most important and realizable step in the whole prcoss. In this part, the strategies that can be applied specifically in the site will be proposed and more detailed ideas could be discussed.

The relationships of these three steps are presented on the left. Theory is one of analysis approaches to understanding the context of the site. In turn, analyzing the current situation reflects the background information which is summarized by literature review. For me, realizing the current context is also one of the fascinations which encouraged me to explore the site as a landscape architect. The strategies and detailed design process are the solutions, aimed to solve the specific problems in the site. As for the relations between theory and design process, the design principles are the universal approaches that can be applied in design process. Therefore, design process is the site specific application of these principles.

In the whole process, various research methods are utilized, including but not limited to field visit, interview, mapping, case study and literature review, which is elaborated as followed.

Field visit was mainly underway in the first step, context. And the importance of field visit for me includes three layers. The first basic layer is to help me choose the estates that I wanted to study further. As mentioned before, I studied more than ten estates in this region and after field visit all studied estates, I chose three as priority. The second layer is to be as one of the methods to understand the site. When visited the site at the second time, I looked at each estate and every aspect that I could consider in order to read the site comprehensively. The third layer is to help me focus on some aspects rather than all. Therefore, when I had my third field visit, I paid more attention to the problematic points that I noticed.

Interview is also one of the normal research methods which intersects with field visit sometimes. As a previous urban planner, I am used to and pleased to give ear to user's feeling. Therefore, I interviewed some users, including tourists and elderly people in Bronbeek, residents in Daalhuizen, students and tourists in Larenstein.

Mapping is the basic research methods for landscape architects. The context of the site could be visualized by mapping. It is applied from the beginning to the end in my project especially in analysis part.

Case study is one of the effective way to summarize the design principles from others. The major case study in my thesis is Haagse Bos and Sonsbeek which have lots of similarities with my site.

Literature review also is used a lot which give me the theoretical background of the site. It also gives us clues and inspirations sometimes.

2.3 Theoretical framework

Values of the heritage

Commemorative values	Present day values
Age value	Use value
Historical value	Art value a. Newness value b. Relative aesthetical value
Intentional commemorative value	

In additon to the previous importance of the heritage, precious values of heritage also worth discussion.

There are some values illustrated in 'Design from heritage', which actually was proposed by Alois Riegl in 'the Modern Cult of the Monument' in 1903. These values were divided as commemorative values and present day values. And the content of each value are presented in the chart above.

Commemorative values, it is about the historical aspect, including age value, historical value and intentional commemorative value. The emphasis of age value is to remind us of the passage of time, the natural process of death because the monuments have survived. When think about age value, we often situate ourselves in time and place amid an ever-changing environment. Historical value is to emphaze the significance of the monument for understanding the recorded human past because of the enduring administrative, legal or evidential information they contain, like the Vatican. Its emphasis is on documentary value (Alois, 1903). Intentional commemorative value aims to preserve a moment in the consciousness of later generations, like Vietnam Veterans Memorial and Egyptian pyramids. It requires landscape architects to exploit, transform and present .

Present day values consists of use value and art value, which stress the current significance in the modern times. Use value refers to the tangible features of a commodity (a tradeable object) which can satisfy some human requirement, want or need, or which serves a useful purpose (Wikipedia). Under this definition, it request landscape architects to figure out effective measures to reuse the monuments.

Art values have two sub-items, newness value and relative aesthetical value. Newness value somehow is opposite of age value and is identified with art in the eyes of the masses, while relative art value can only be appreciated by the aesthetically educated modern person (ERA).

Current challenges of the urban heritage: The impact of urban sprawl on the heritage areas

Under the condition of fast urbanization process, the urban heritage is faced with huge challenges. There are several typical issues due to city development which have impact on the urban heritage. As far as I'm concerned, the main reason is population growth, which leads to other issues. As population grow fast, more land is developed or redeveloped as urban area, which means that some agricultural and recreational land which could protect heritage is engulfed. On the other hand, fast urbanization process leads to some pollutions like chemical pollution, which definitely affect heritage. In addition, some heritages are famous as tourist attration. Rapid population growth also insinuates that the these heritage bear more pressure from mass tourism.

As urban development, there is a obvious contradiction that it is hard to keep the balance between heritage protection and urban developement. Generally speaking, the balance has two manifestations. One is as mentioned before, that urbanization process requests more land for residential housing and business. When more land is engulfed, more threats are hiding behind the heritage. The other one is disunity of form between modernity and antiquity. Too often heritage destruction is carried out in the name of modernity and progress.

The last but not least phenomenon present nowadays is the contradiction between the local community and developers. Local people are left out of discussions about the future of their places and their wishes are often against.

Source: Urban Heritage Conservation and Rapid Urbanization: Insights from Surat, India

Historic approaches to the urban heritage

Early approaches to urban heritage conservation and development

The early French work:
-Focused on glorious, beautiful iconic and monumental buildings
-Divorced from their widen urban context

19th century:
-Detached from their surroundings and disconnected from local communities
-Understood as single monumental buildings

Source: https://www.pikist.com/free-photo-stqzj

Urban heritage conversation in Europe could be traced back to the mid-nineteenth century (Siravo, 2011). It emerged in response to the destruction of ancient and medieval buildings in the French Revolution and other European revolutions and insurrections and to the wider scale destruction of whole historic quarters in modernisation campaigns that aimed to open them up to new economic activities and transport systems as well as improving standards of hygiene (Bandarin and Van Oers, 2012).

Many of French work in this period was involved protection of glorious, beautiful iconic and monumental buildings which were divorced from their urban context. In addition, local people were complete excluded from the process of conservation or destruction.

At the end of nineteenth century, this phenomenon became more sereve. The monument was understood as a singe building which was totally detached form its surroundings and disconnected from local communities.

After world war two

-Connection between heritage, development and sustainability
-Heritage should be identified, protected and transmitted to future generations

-In UK, planning permission was required for land development.
-Local authorities was given the power of redevelopmend and controlling outdoor advertising, preserving woodland, buildings of architectural or historic interest.

-In US, the protection focus was on natural rather than cultural heritage.

-In France, urban heritage planning protected broad areas of historic, aesthetic, architectual or scientific interest, rather than simply focusing on individual monuments.

The conditions created by World War II - death and displacement of peoples, unsettling of colonial empires, destruction of cities and national economies - led to a variety of responses affecting urban and heritage management principles and practice (William, 2015). And in order to recover economy and society, the *Town and Country Planning Act 1947* in the United Kingdom was established to define the management of land, development and conservation. Some rules are presented on the left which has been influential in other parts of the world especially in former British colonies.

Although America was planning to develop infrastructures and renew the inner cities, it also took measures to protect its heritage. And under the pressure of public, the *National Historic Preservation Act 1966* came out.

In France, the planning regulations, the *loi Malraux* came in 1962, which led to a general thought in the whole world, that is protection of broad areas of historic, aesthetic, architectual or scientific interest.

Into 21st century

-Less attention to cultural heritage after GFC

Budapest Declaration:
-call for balance between conservation, sustainability and development

Vienna Memorandum:
-Integration of new urban development within the existing historic urban landscape

the Florence Declaration on Heritage and Landscape as Human Values :
-IAll the relative numbers should be committed to linking the heritage conservation and sustainable development and ensuring that heritage conservation contributes to sustainable development.

At the beginning of 21st centurt, economic growth was the main goal for the government in Europe, Asia and North America after Global Financial Crisis during 2007 to 2008. In this period, cultural heritage was not regarded as a priority unless it was a national building. Under this condition, heriatge proctetion was at risk. Therefore, the World Heritage Convention reached an agreement in many declarations and meetings like Budapest Declaration and Vienna Memorandum, to calls for the balance between the development and heritage protection. After that some positive events occured, for instance, Recommendation of the subjective of conservation of the historica urban landscape was drawn up.

Source: A Conservation Approach of Multi-layered Cultural Landscape Areas: The Case Study of Pergamon Red Hall and its Environment

Relations between spatial development and heritage

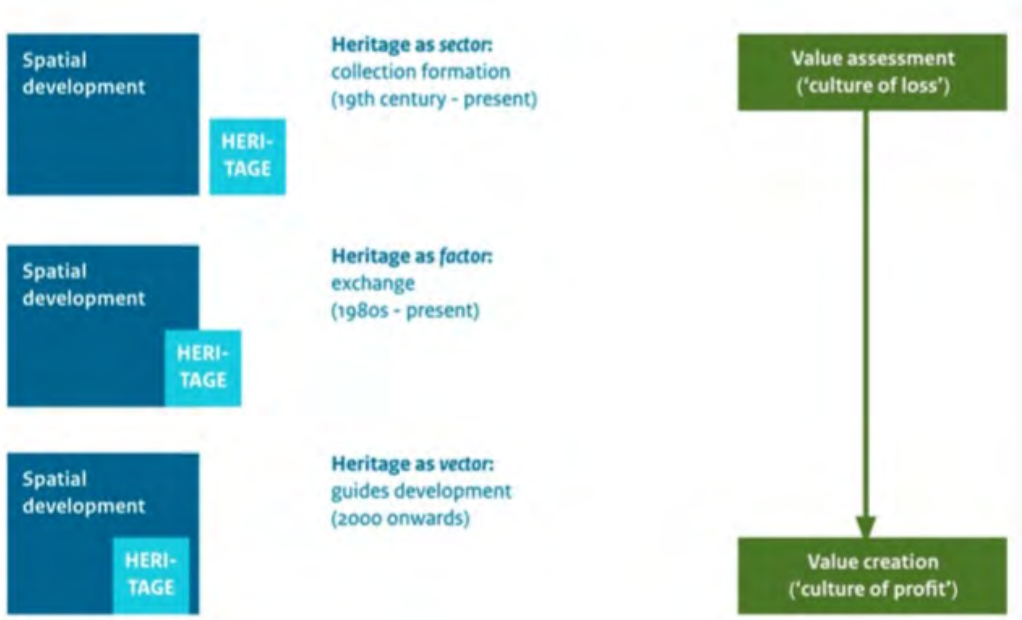
After realizing the basic approaches to heritage conservation, as we are landscape architects, that how heritage links with spatial design should valued.

The relations between spatial development in Netherlands are dynamic. Basically, it went through these three periods, heritage out of spatial development, heritage connecting with spatial development and heritage integrating with spatial development, as the diagram shows on the right.

The first stage is called 'heritage as sector' since 19th century till now. The approach is to collect and conserve the heritage and the main feature is the contrast between past and present and is driven by expertise. Spatial design is equivalent to restoration and reconstruction, for instance Kinderdijk.

The second stage is 'heritage as factor' from 1980s to present. It emphazes on useful collection and selection and also pays attention to the site context. It is driven by market and stakeholders due to desire to create new living conditions. Spatial design is re-interpretation in this period.

The last is 'herigate as vector' which happened in 2000 onwards. It more collects meaningful heritage and creates biographies of cultural landscape. It is launched by the community. Spatial design is focused on story-telling.



Source: Heritage as sector, factor and vector: conceptualizing the shifting relationship between heritage management and spatial planning

2.4 Design Principles from Case study Haagse Bos

Source: http://www.marceltettero.nl/home/DenHaag/Jeroen.html

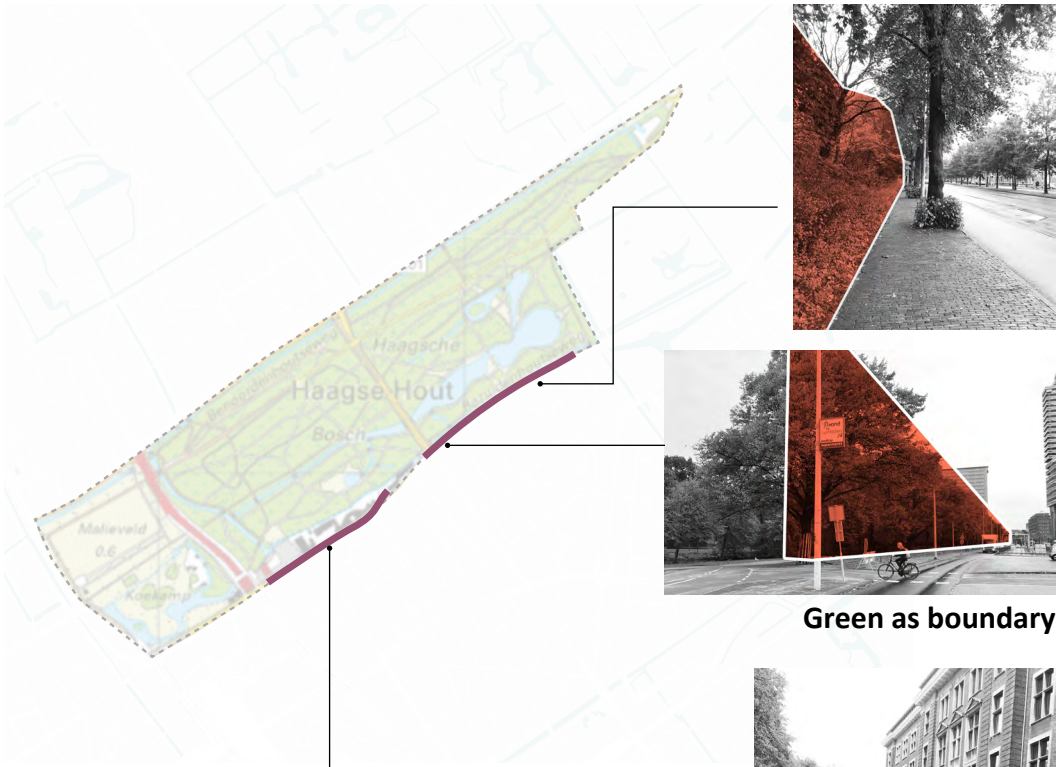
Introduction of Haagse Bos

Haagse bos is city park with large area of forest in Den Haag, reaching from the old city centre in the south-west to the border of Wassenaar in the north-east (Wiki). It is also one of the oldest remaining forests of the country (Wiki).

It was a part of the large forest which was stretched from 's-Gravenzande to Alkmaar. Then it reduced to make room for fortress construction and surrounding villages in 13 century. During the Eighty Years' War, it was decreased quickly to make space for the near residents. During the French Occupation, the ponds in the forest were made.

The main reason that I chose Haagse Bos is that, it also is located in the city center and was shrunk under the pressure of urban development at the early stage. There are two strong points that I could borrow. The first one is how it dealt with the urban context and the second one is the child-friendly landscape facilities in the forest. Although there are two vehicle roads crossing the park, the interaction was not designed well when I visited.

Haagse Bos



Green as boundary

Transitional space as interface

How it tackled with urban context

The main approaches interfaces between urban context consists of two method. One is green as boundary. The other one is transitional space as interface.

As Haagse Bos is an ancient forest, the trees and other plants are pretty precious and worth age values. In order to protect the old trees from urban invasion and keep the forestry atmosphere inside, the greenery is crutial functioning as a soft boundary. On the other hand, the greenery shapes a strong impression and identity of Haage Bos, which is definitely different from its urban surroundings.

The second strategy is to make full use of landscape components as transitional space inbetween. As the photo shows on the right, there are some residential houses close to the park. How to ensure the people walking inside would not be disturbed by near buildings? A strip of grassland and a ditch is a good option.

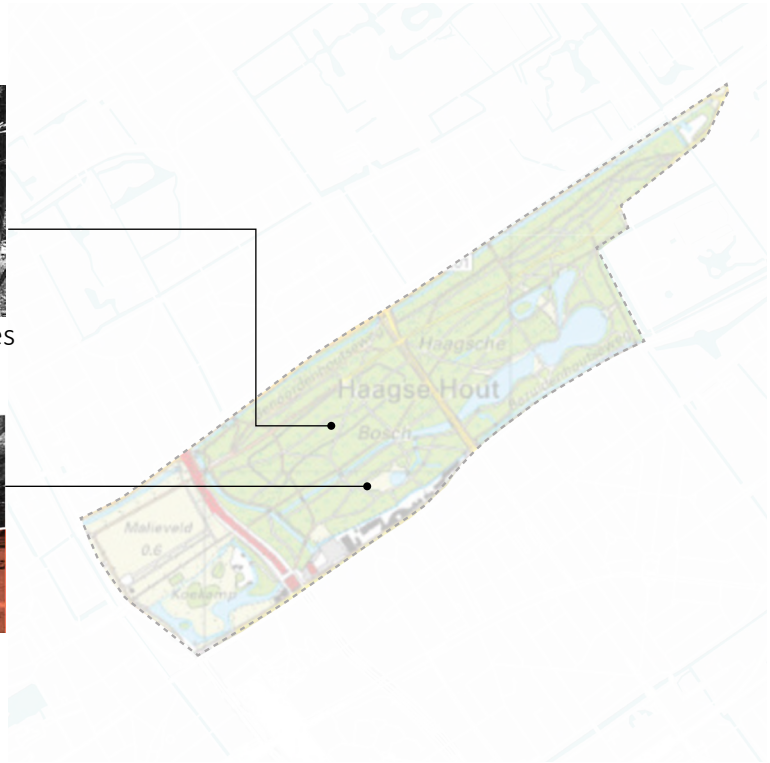
Haagse Bos

How it developed the landscape facilities in the forest

As it is known to all that Haagse Bos is embraced by the urban neighbourhood, it is essential to consider about the needs of the street as mentioned in 'Adaptive reuse strategies for heritage buildings'. Therefore in the centre of forest, there are some landscape facilities for children, like exploration ground and play ground.

Outdoor exploration activities

Playground



Sonsbeek

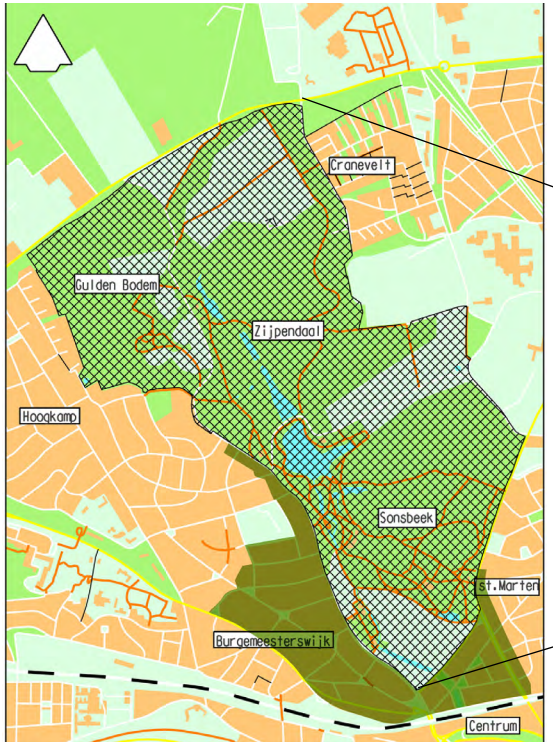
Introduction of Sonsbeek

I would like to explain at first that in my view, Sonsbeek means a series of parks, including Sonsbeek, Zijpendaal and Gulden Bodem. In the following text, 'Sonsbeek' refers not only single one.

Sonsbeek is the most beautiful urban parks that I visited in the Netherlands. As for landscape location, it is at the end of the green structure from National Park de Hoge Veluwe to Ijssel River. For the urban location, it most is at the centre of Arhnem. The whole area is protected cityscape (Wiki).

The whole system consists of three parks, containing a large area of trees and plants, ponds, fountains and two waterfalls. And, there is a motor way through the park.

As it is quite similar to my site, silimar location in the city, surrounding with urban neighbourhood and infrastructures, different estates in one whole system etc, I chose it as my reference. I really learned quite a lot from this case.

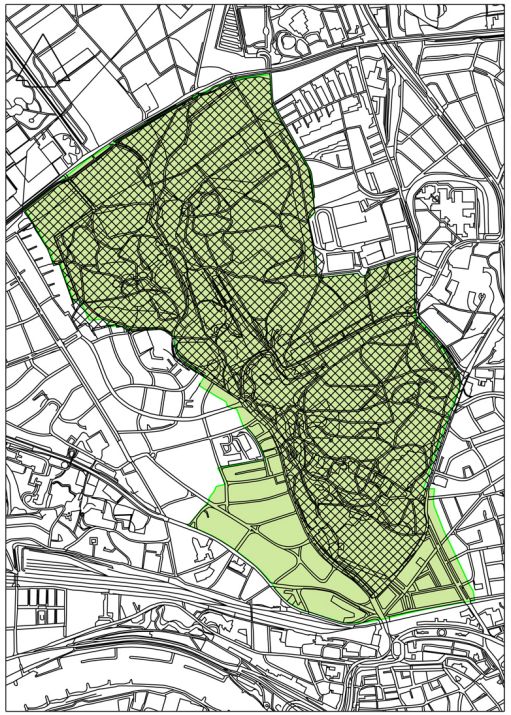


Sonsbeek

How it faced with urban environment

Protected greenery

As described in the introduction, Sonsbeek is protected cityscape so that its designated protected area is larger than its territory. This approach is quite same as the estates in my studied area which represented on page 11. Protected outdoor space is important to prevent urban development into the estates which funtions as buffer zone.



Legends:

Protected cityscape

Territory of Sonsbeek

Entrances responding to the urban fabric
Except the citizens, it also attracts many tourists. For the people who come at the first time, it is better to respond its entrance to the urban fabric so that it can be found more easily.

Programs and facilities as transitional interface
Unlike Haagse Bos, the transitional space inbetween Sonsbeek are some programs and facilities which also attracts more people visiting. The Dutch Water Museum has been located on the edge of the park since 2004 .

Lawn as welcoming space with urban context
The open meadow is also another sort of transitional space. It creates a welcoming atmosphere even for the pedestrians. On the other hand, it also shape the visual connection from inside park to outside urban context.

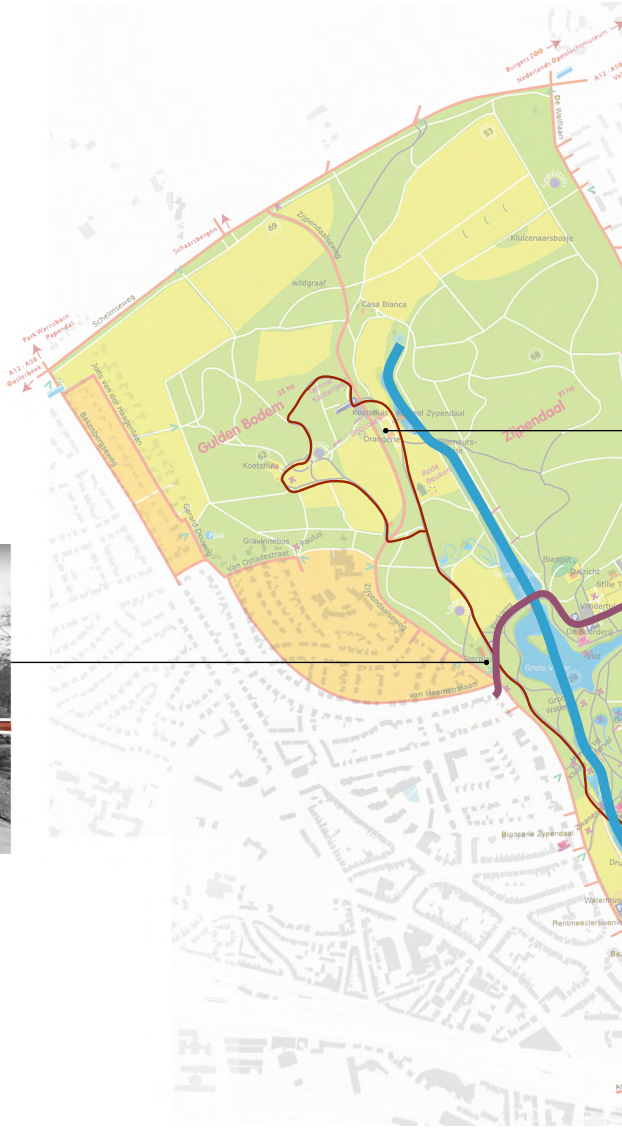
Sonsbeek

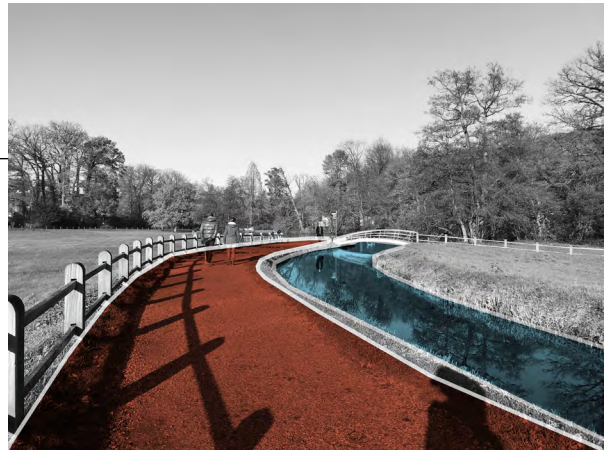
How it decrease the effect by urban infrastructure

Winding motorway with relief

Most area close to the urban neighbourhood is flat while into the forest, the hill is striking. That is one of the most eye-catching and unique characteristics of Sonseek, which is distinct from city park or estates.

At the intersection of motorway and the park, relief plays a key role. The motor way follow the relief from the hill to the ground. It is because of the relief, the motorway is winding and only could be seen when close to it.





How three estates connected

Meandering path and water course

The three mansions in Sonsbeek are owned to different estates and not belonged to one system at first. After design, they are closely linked with each other by meandering path and water course. These two landscape elements also guide tourists to visit them in different atmosphere, for instance Sonsbeek villa on the open hill while Huis Zypendaal on the water.

Sonsbeek

How to reuse the heritage building

House Zypendaal
The house was restored and the upper floors now is the headquarters of the Stichting Het Geldersch Landschap and the Friends of the Geldersche Kasteelen Foundation. The main floor is furnished as a museum with objects from the original contents and open several months during summer.

House Sonsbeek
Since 1986 the mansion had a more museum function and there were regular exhibitions. Sonsbeek Art & Design was located there from 1994 to 2004. Afterwards a brasserie, restaurant and wine bar. In 2017, a grand café and various rooms have been established (Wiki).

By summarizing the historical use transformation of two mansion, it can be concluded that the heritage buildings could be reused as museum and other service building, like restaurant, cafe in the public open park.

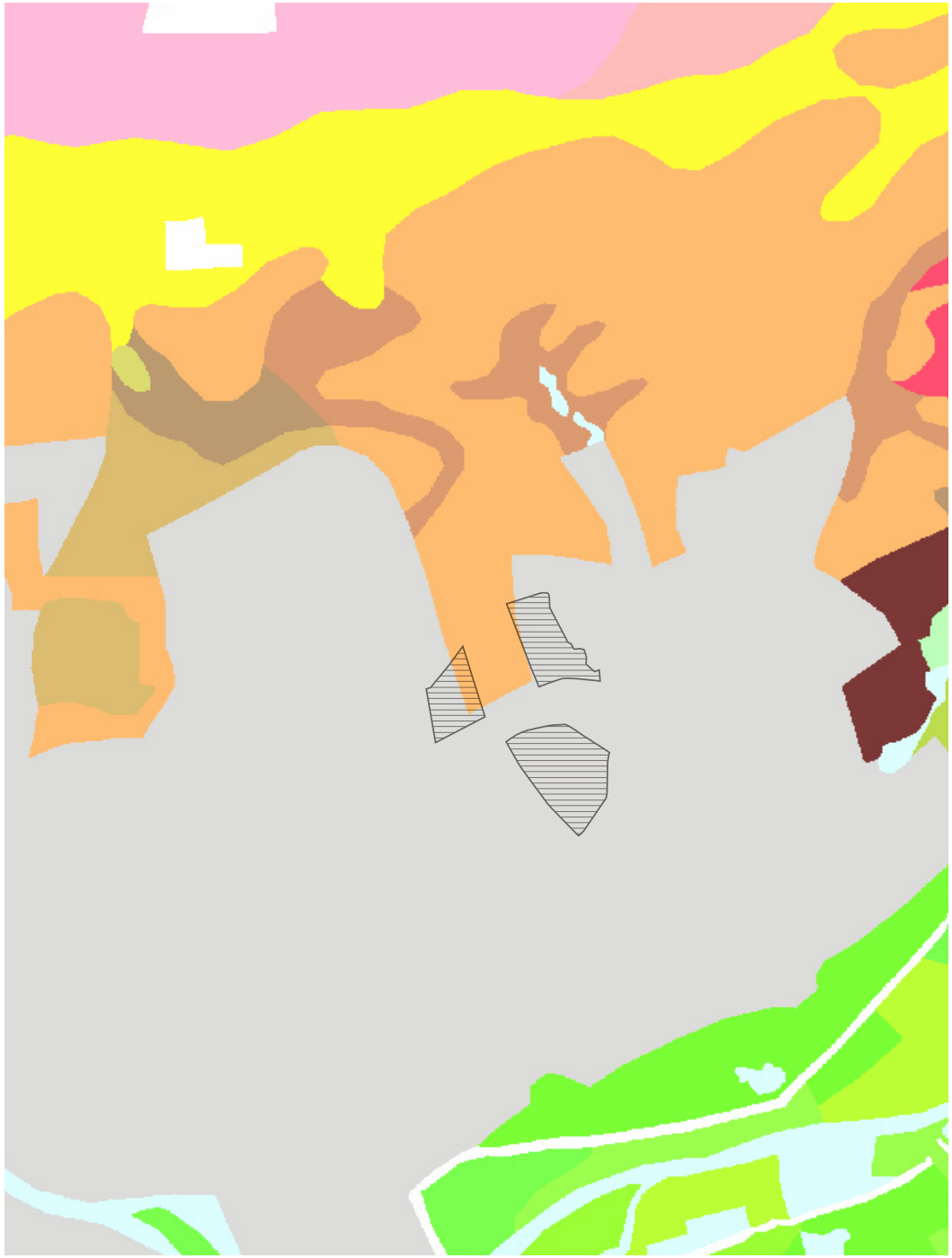
3 REGIONAL CONTEXT

3.1 Regional landscape context
3.2 Regional urban context
3.3 Local problems by A12 highway
3.4 Conclusion map
3.5 Problem statement

3.1 Regional landscape context

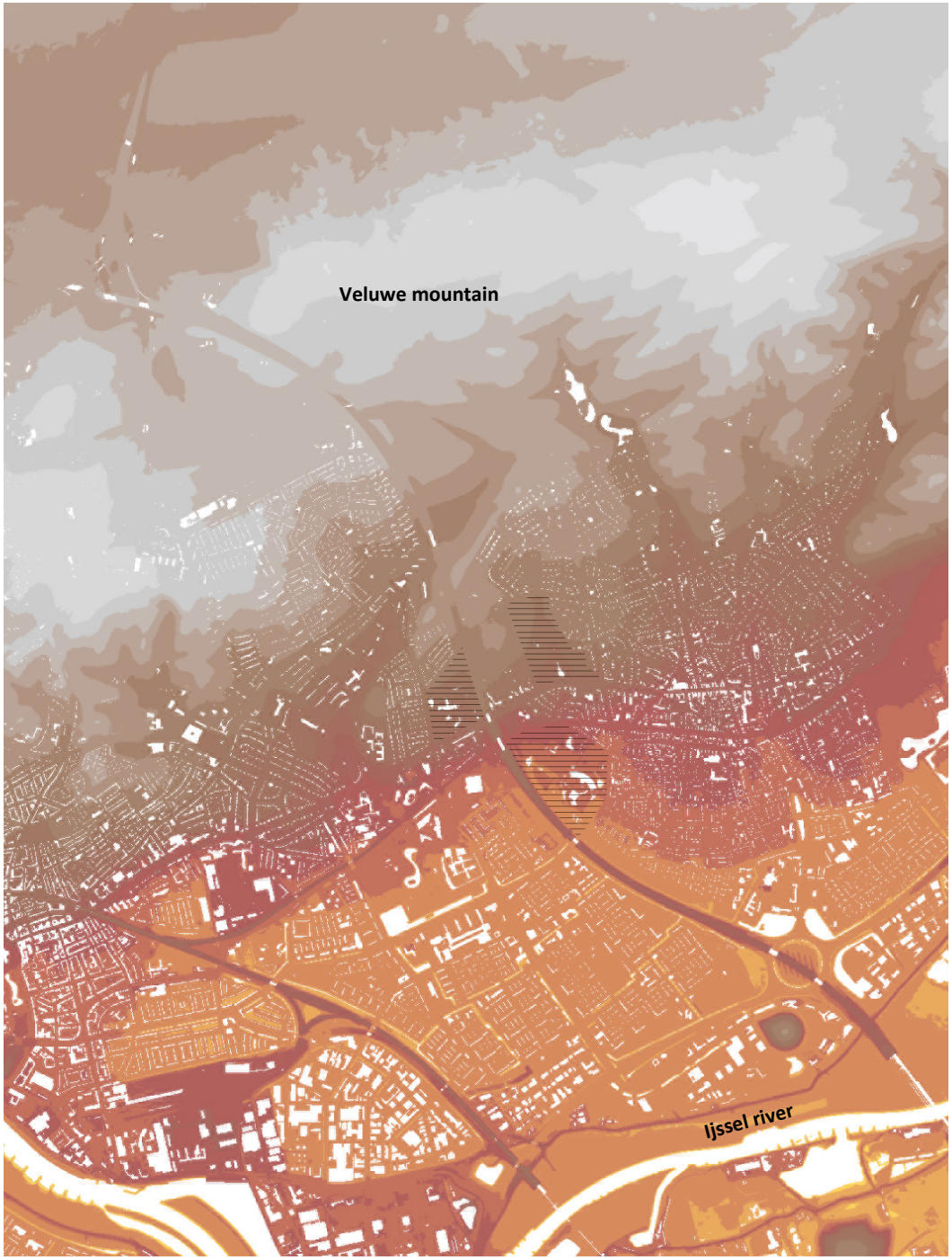
Soil condition

As three estates are located in the urban building-up area, the available literature of existing soil condition is limited. But it still can be deduced from the map on the left that the natural top soil should be **coarse sand**, which means it is beneficial for water infiltration.



Legends:

- Territory
- Holtpodzol soil: coarse sand
- Loopodzol soil: fine loamy sand
- Loopodzol soil: coarse sand
- Floodplains with rust starting deeper than 80 cm: sandy loam in situ
- Buildings
- Hair podzol soils: coarse sand
- Hair podzol soils: limestone and weak loamy fine sand
- Calcareous polder vague soils: heavy sandy clay and light clay, profile gradient 5
- Drifting sand soils
- Water
- Loopodzol soils: low-loam and slightly loamy fine sand
- High brown enkeerd soils: loamy fine sand
- Lime-free polder vague soils: sandy clay and light clay, profile gradient 2
- Beekeerd soils: silty fine sand
- Calcareous polder vague soils: sandy clay, profile gradient 2



Geomorphology

Actually, the estates are very close to the high mountain. They are located between Veluwe national park and Ijssel river. Therefore, the elevation in the whole site is from high to low from north to south and difference is around **30 meters** as the frame shows in the legends. Also, from the map, it can be seen that **the ground in Larenstein is almost flat** because it is near the floodplain. But in Bronbeek and Daalhuizen, as they are at the foot of the mountain, the difference is a little bit more obvious. The height difference in the site could be an advantage used for creating changeable landscape layers.

Legends:

- Territory
- 8.001-9
- 9.001-10
- 10.001-12 — Difference in Larenstein
- 12.001-14 — Difference in Larenstein
- 14.001-16
- 16.001-18
- 18.001-20
- 20.001-25
- 25.001-30
- 30.001-40
- 40.001-50 — Difference in Bronbeek
- 50.001-60 — Difference in Daalhuizen
- 60.001-70
- 70.001-80
- 80.001-90
- 90.001-100
- 100.001-110
- 110.001-120

Water features

As they are close to high mountain, part of areas in Bronbeek could be affected by the valleys in Veluwe national park, as shown in the blue in the north. Combined with the elevation map before, it can be concluded that water course in the whole region is f**rom the high mountain in the north to the low river in the south**. Therefore, the water course in Bronbeek is also from the central fountain flowing to the north neighbourhood.

The fountain in Bronbeek now and before

Legends:

- Territory
- Upstream areas of influence
- Water course
- Ground water contaminants

of water course

Conclusion map

After overlaying the elevation map and the water feature map, some conclusions come out.

First of all, as mentioned before, the overall water flow direction is from north to south.

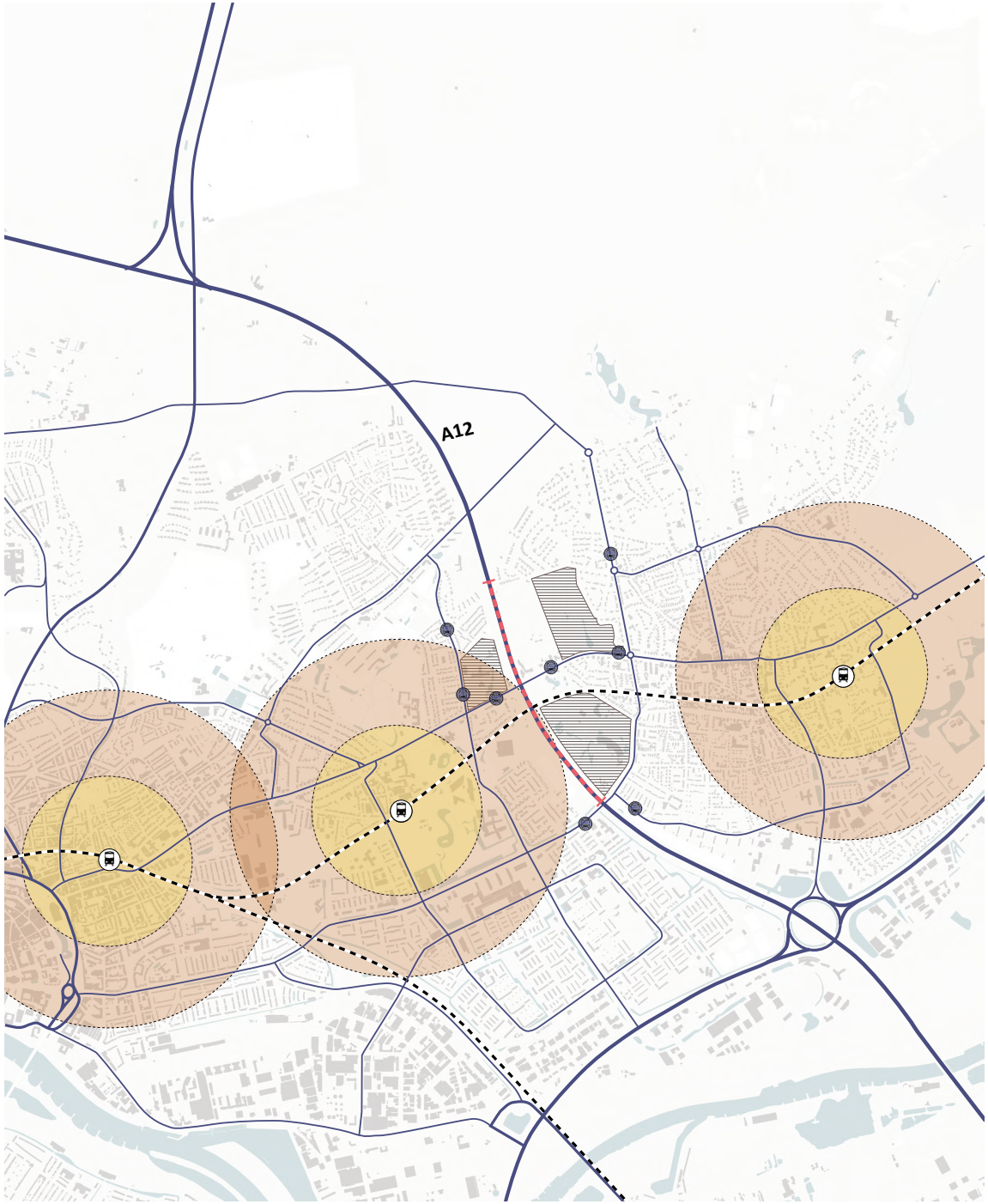
Secondly, it also can be inferred that the part of Bronbeek that affected by the upstream in the rainy season has the potential of water storage because its top sand soil can filtrate water and hold water in the loam layer.

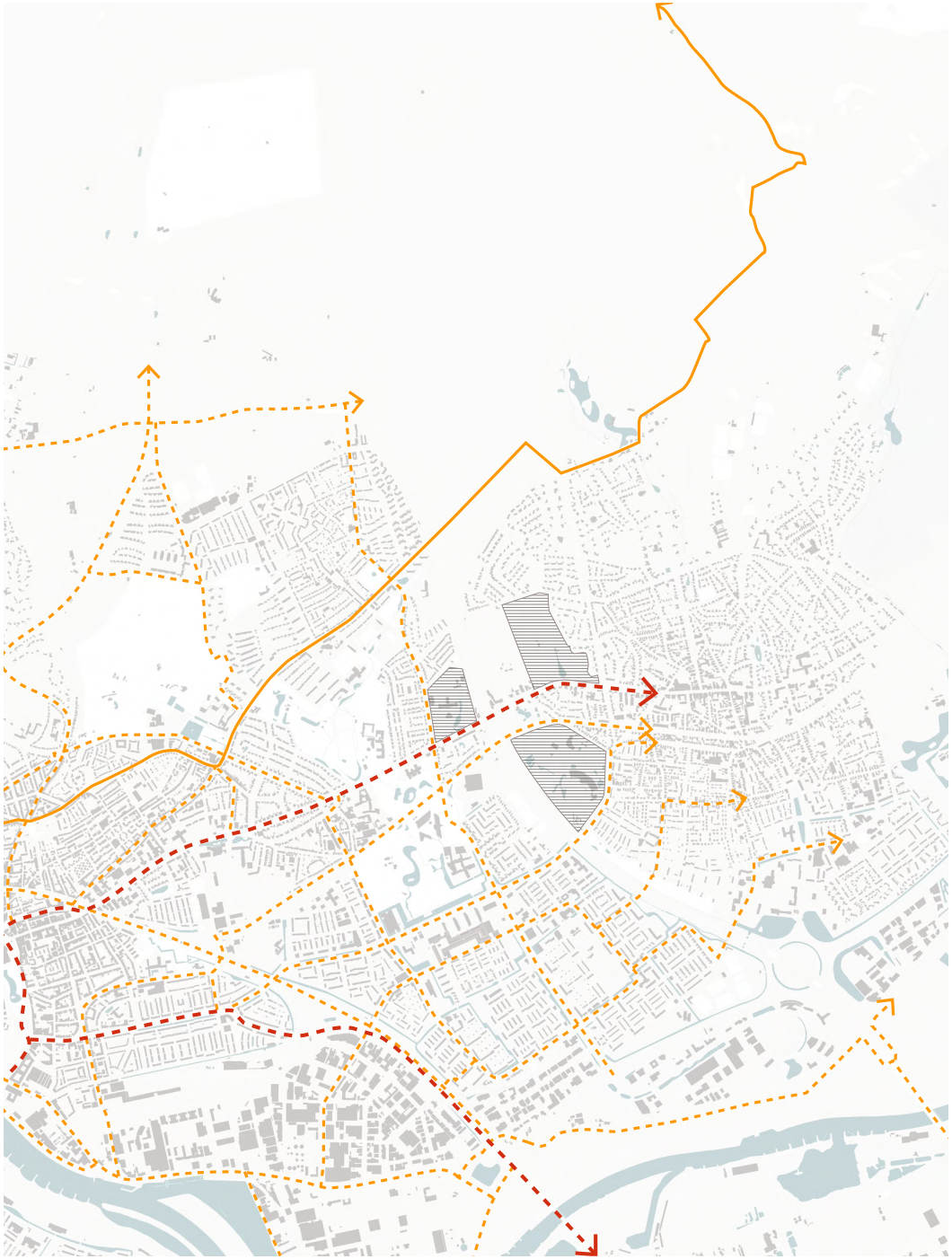
3.2 Regional urban context

After analyzing the landscape conditions, in this section, the large-scale urban context will be elaborated because the estates are in the city and highly related with its surrounding environments. The regional urban background is analyzed from **public transportation accessibility, cycling network, landuse pattern, social and cultural facilities, open public space and water management.**

Public transportation accessibility

As three estates are open to the public especially Bronbeek and Daalhuizen that are often visited by many tourists, it is essential to research how the tourists and citizens get there. The map on the right clearly indicates the public transportation stations near the site, including bus stops and train stations. It can be seen that tourists could easily get access there. On the other hand, there are strong barriers between the estates, A12 highway and a railway track.





Cycling network

As cycling is a very normal transportation and takes large proportation in Netherlands, it was analyzed here independently. There are already many well-developed cycling paths in this regional. And in the future, it will be planned more and become a mature cycling network, which definitely is convenient for the tourists and citizens. This network highly improve the accessibility to the estates.

On the other hand, as mentioned before, Gelderland is famous for its countless estates and castles. There is a recreational route on the north side of the site to link Geldersche castles together, which provides tourists a quick path from Arnhem city centre to the estates.

Legends:

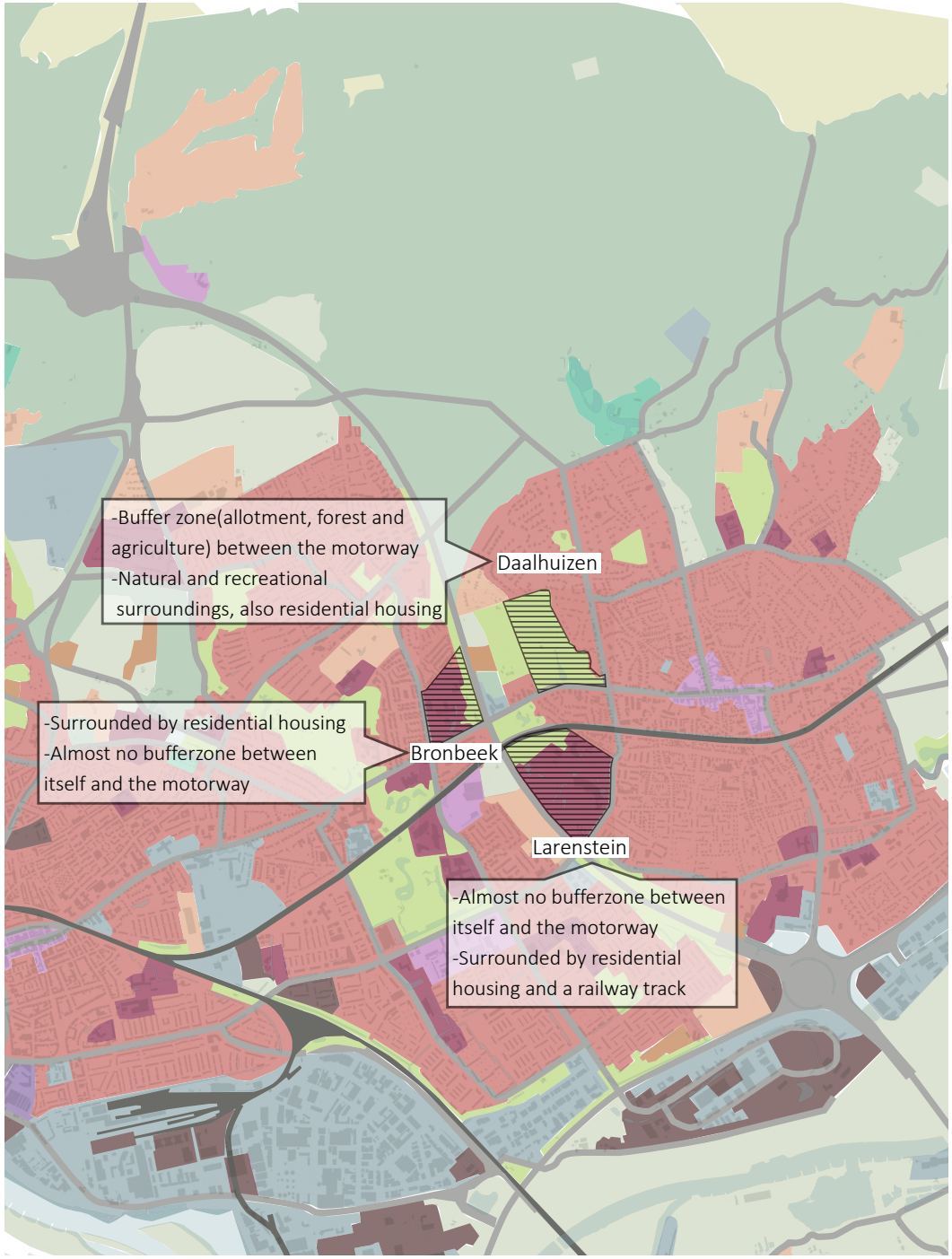
- Territory
- Planing main regional network
- Planing main urban network
- Recreational Geldersche Castle Route

Landuse pattern

As it is quite hard to investigate accurate data of current users in each estate, analyzing current surrounding landuse pattern is one of the ways to realize the current and potential users. In addtion, it could be estimated that what the estates could provide to the surrouding area by landuse pattern map.

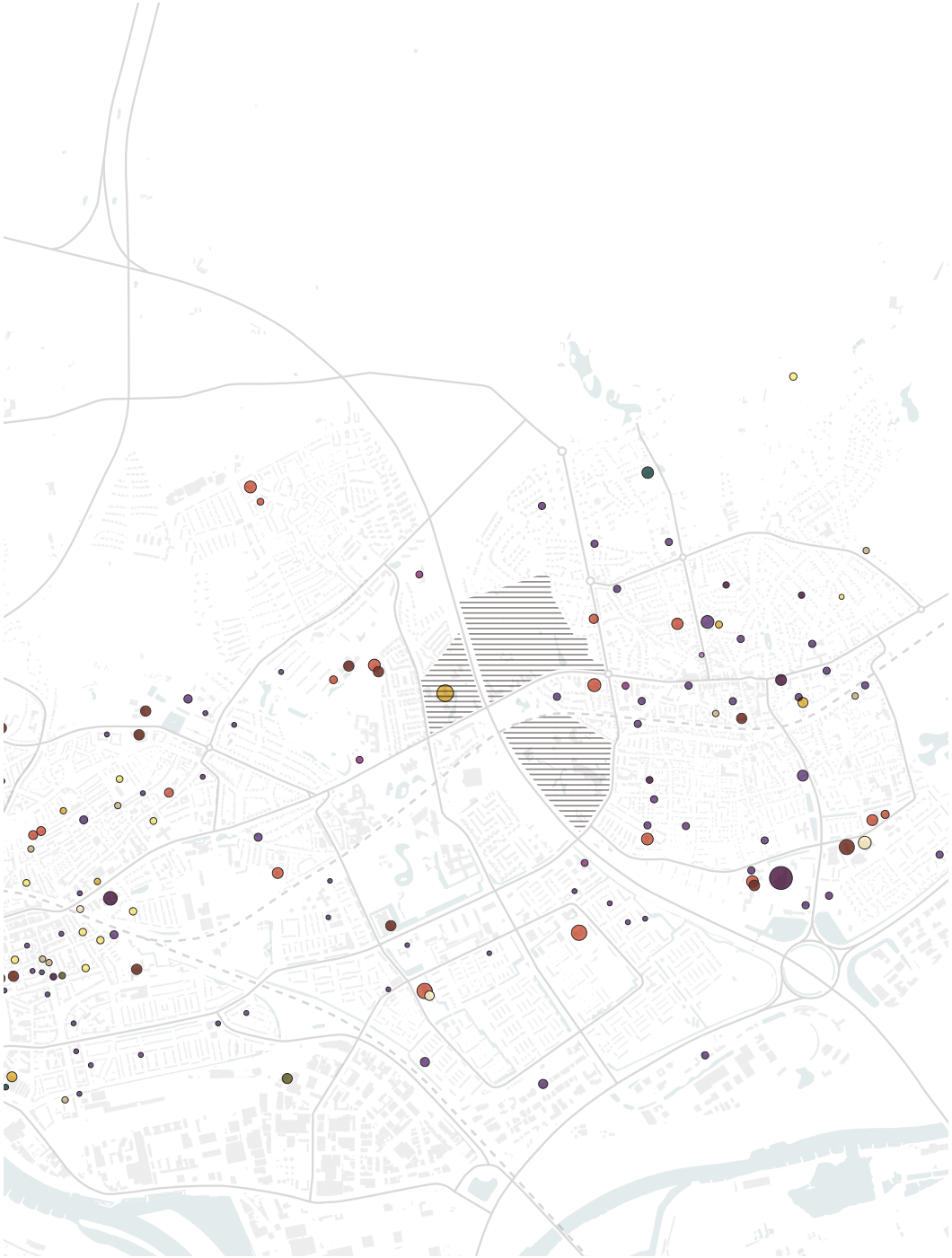
The most direct impression of this map is that the site is separated into pieces of fragmented space due to highway, railway track and other urban infrastructures.

Secondly, the estates are enclosed by residential houses, which requires us to consider the demands of the residents.



Legends:

- Territory
- Urban settlement
- Allotment
- Forest
- Road
- Raiilway
- Built-up retail and hospitality
- Built-up public facility
- Agriculture or other agriculture use
- Semi-built, building site
- Social and culture facility
- Recreation sports field
- Recreational park
- Company site
- Day recreational area
- Dry natural terrain



Social and cultural facilities

Because each estate has its own function as social or cultural facility, Bronbeek as musuem and nursing home, Larenstein as school, it is important for us to understand the distribution of others. By doing that, we could realize what kind of facilities are missing in the region and infer what functions or facilities the estates could provide.

By mapping the social and cultural facilities in this region, we noticed that there is an obvious unbalanced distribution of the facilities in the neighbourhood scale, which are mainly grouped in the Arnhem center and partly in Velp. It means that less facilities are prepared for the local neighbours, which actually asks for more.

Legends:

Territory

Social facilities:

- Health care
- Nursing home
- Physiotherapy
- Hospital
- Homeless shelter
- Workshop

Cultural facilities:

- Primary school
- High school
- Library
- Theater and cinema
- Gallery
- Cultural centre
- Exhibition

Open public space

As Daalhuizen is an open public park, it is necessary to look at how it related with other public parks in this region, including recreational sports field, recreational park and forest. The map on the right indicates the distribution of them. It seems that the green spaces are arranged along A12 and the other main road.

Moreover, I also tried to evaluate these green spaces. The parks covered by yellow circles are in high quality and all of them are in Arnhem. Therefore, as far as the neighbourhood-scale's concerned, the high-quality green open spaces are not enough accessible for the neighbours in this area.

Legends:

Territory

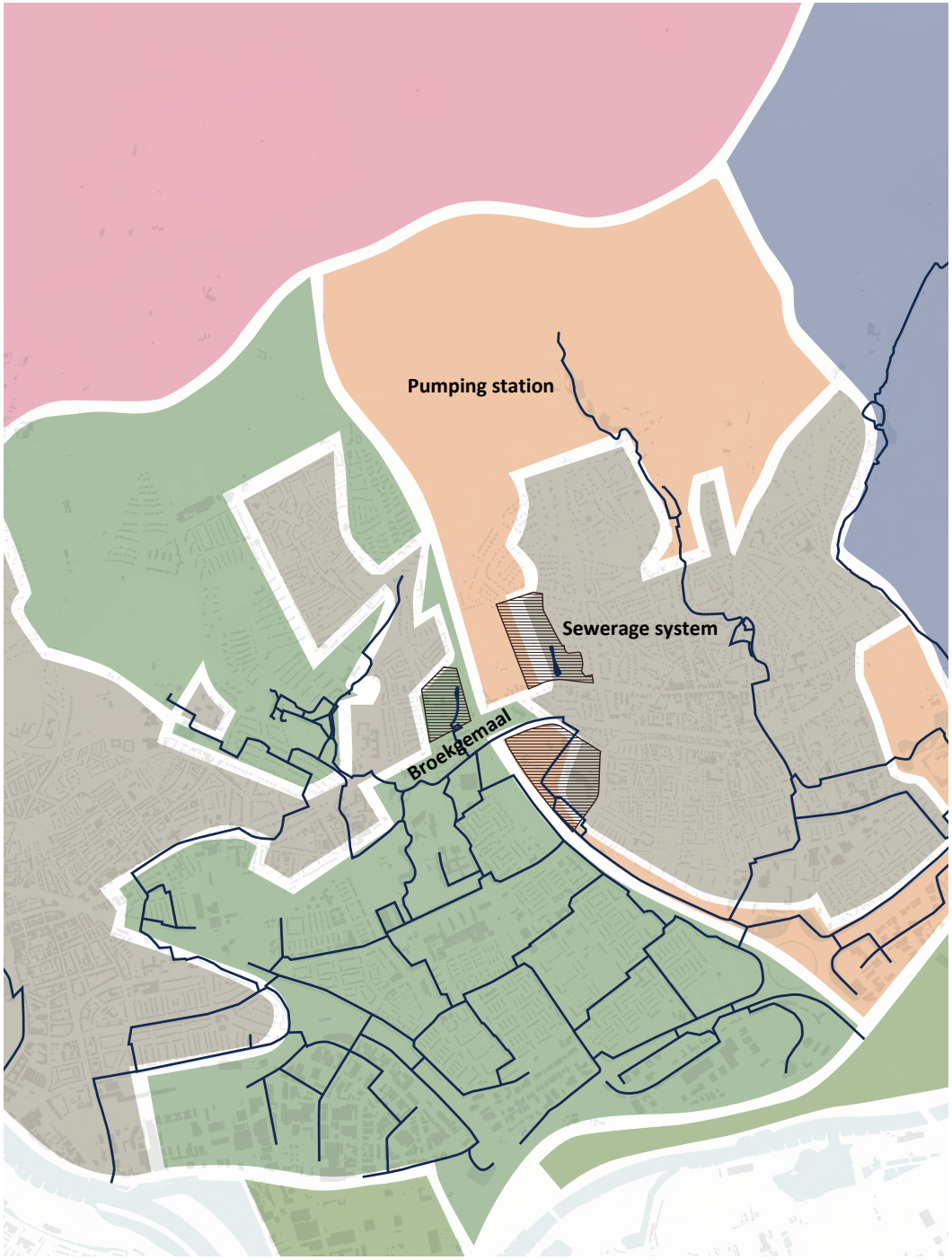
10min walking from the high-quality park

Day recreational area

Recreation sports field

Recreational park

Forest



Water management

As these three estates belong to different municipalities and elevation is quite complex here, the existing water management approaches are not the same.

Water in Bronbeek is drained via Broekgemaal as there is a complete surface water system in this area and the elevation is beneficial for water drainage to Ijssel. Situation in Daalhuizen and Larenstein is more complicated, part of area by pumping station while part by sewerage system.

It can be seen that the surface water system in this area is kind of broken and discontinuous, for instance, the water body in Daalhuizen is seperated from other surface water system. But it has the potential to connect with others as the second option, in order to manage the extreme water situation in the future.

Legends:

- Territory
- Pumping station
- Discharging on the NEDER-RHINE above the weir at Oriel
- Water course
- Sewerage system
- Discharge sluice
- Via the Broekgemaal
- via two drainage sluices via the outer polder south of velp

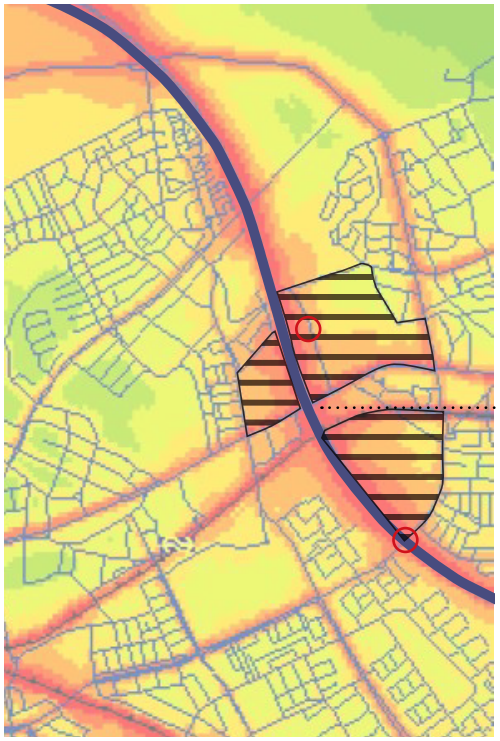
3.3 Local problems of A12 highway

In this chapter, local problems caused by highway will be elaborated.

First of all, as mentioned in the landuse pattern mapping, the highway and other grey urban infrastructures split into pieces of fragmented land. Also the ecosystems between Veluwe national park and Ijssel river is broken by the highway.

Secondly, as the noise map shownon the left, A12 highway increases noise pollution obviously. Of course, we could also imagine air pollution.

In addition, there are also some useless negative spaces underneath the highway which are dark and unsafe.



The noise pollution map

Underneath dark negative space

3.4 Conclusion map (SWOT)

Conclusion map

STRENGTH

·Close to the Castle route

As the site is very close to the Geldersche Castle Route, more cyclists who are interested in the castle heritages along this route would visit the estates.

·Convenient public transportation

The estates are surrounded by several bus stations and not far from the train stations. This high accessibility provides tourists convenience.

WEAKNESS

·Negative effects from highway

As elaborated before, the highway leads to many problems in this area, for instance, air pollution, noise pollution, urban heat island effect and negative space underneath.

·Fragmented space

Affected by the urban infrastructures, landuse pattern here is broken up, which causes spatial discontinuity.

OPPORTUNITY

·Between two eco-systems

Due to the special location of the site (between Veluwe mountain, the mountain ecosystem and Ijssel River, the river ecosystem), it could connect two ecosystem as a belt.

·Different water managements

It has a large potential to link the different water managements so as to respond the extreme water levels in the future.

·Lack of social and cultural facility

As the social and cultural facilities in the neighbourhood are not enough, the site has a large potential to provide.

THREAT

·Competition with other high-quality open spaces

As there are several high-quality open spaces where the red circles indicates, the main threat would be competition with others.

3.5 Problem statement

Based on the regional landscape and urban context analysis, the problem statement on regional scale are as followed

THE REGION

1. Highway separates the area

2. Fragmented urban space

3. Lack of public facilities and high-qualitied green space

For regional scale, it includes three aspects. First of all, the highway separates the area and also causes other environmental issues which definitely bad for the neighbourhood. Secondly, the highway and other grey urban infrastructures leads to fragmented space especially between the estates. Thirdly, there are not enough public facilities and high-quality green open spaces for the neighbourhood in this area.

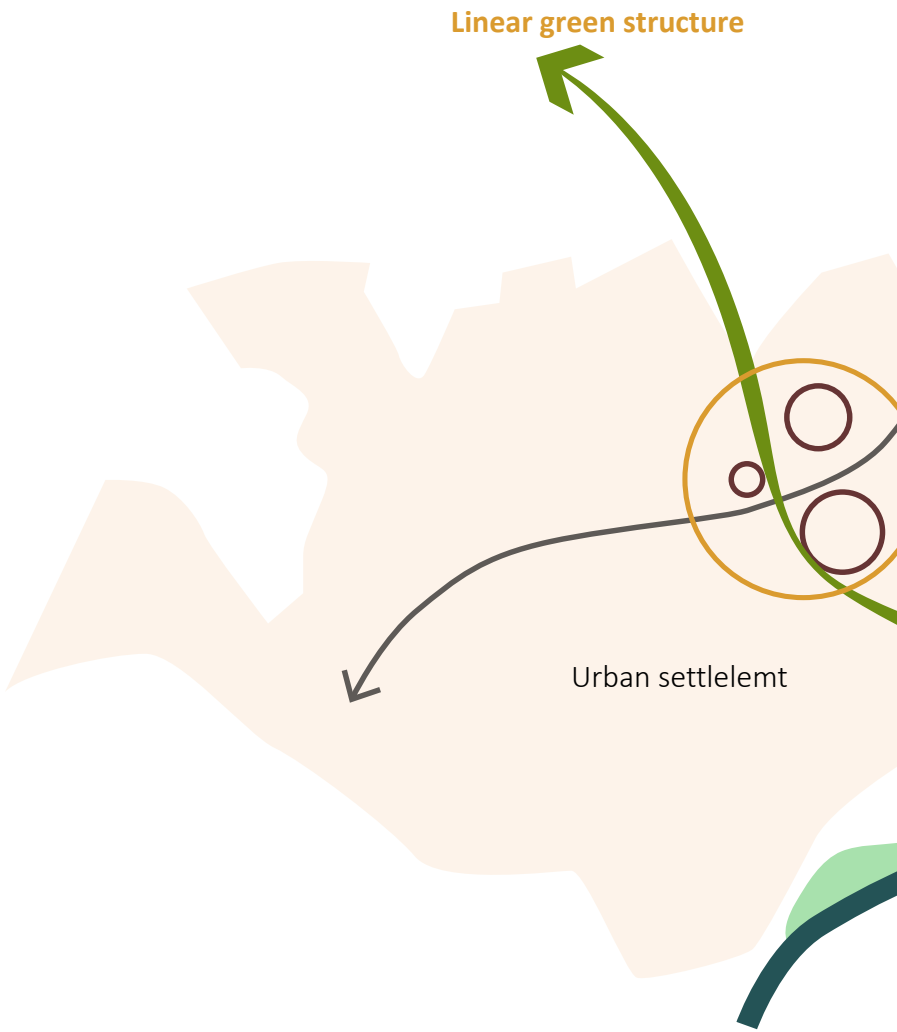
4 REGIONAL VISION

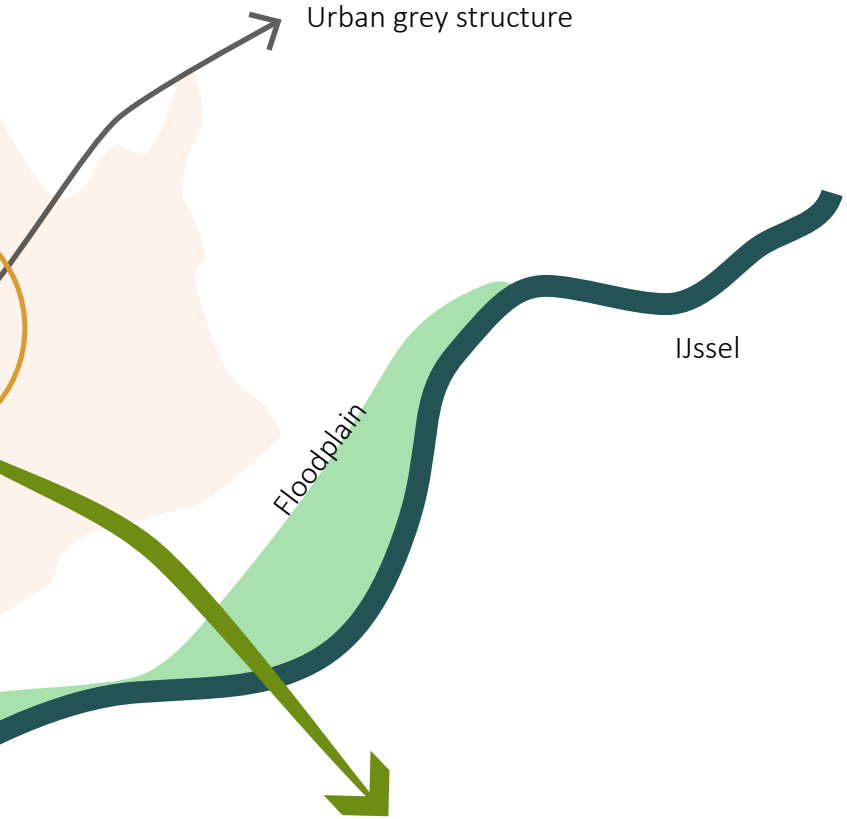
4.1 Concept on the regional scale
4.2 Concept of the highway

4.1 Concept on the regional scale

The concept on the regional scale respond to the regional analysis, an overall structure of this area. As the area is between Veluwe mountain and Issel river and there are some green spaces along the highway, the idea is to **convert the highway as a linear green structure**, linking tthree ecosystems, mountain, river and flooding plain tightly.

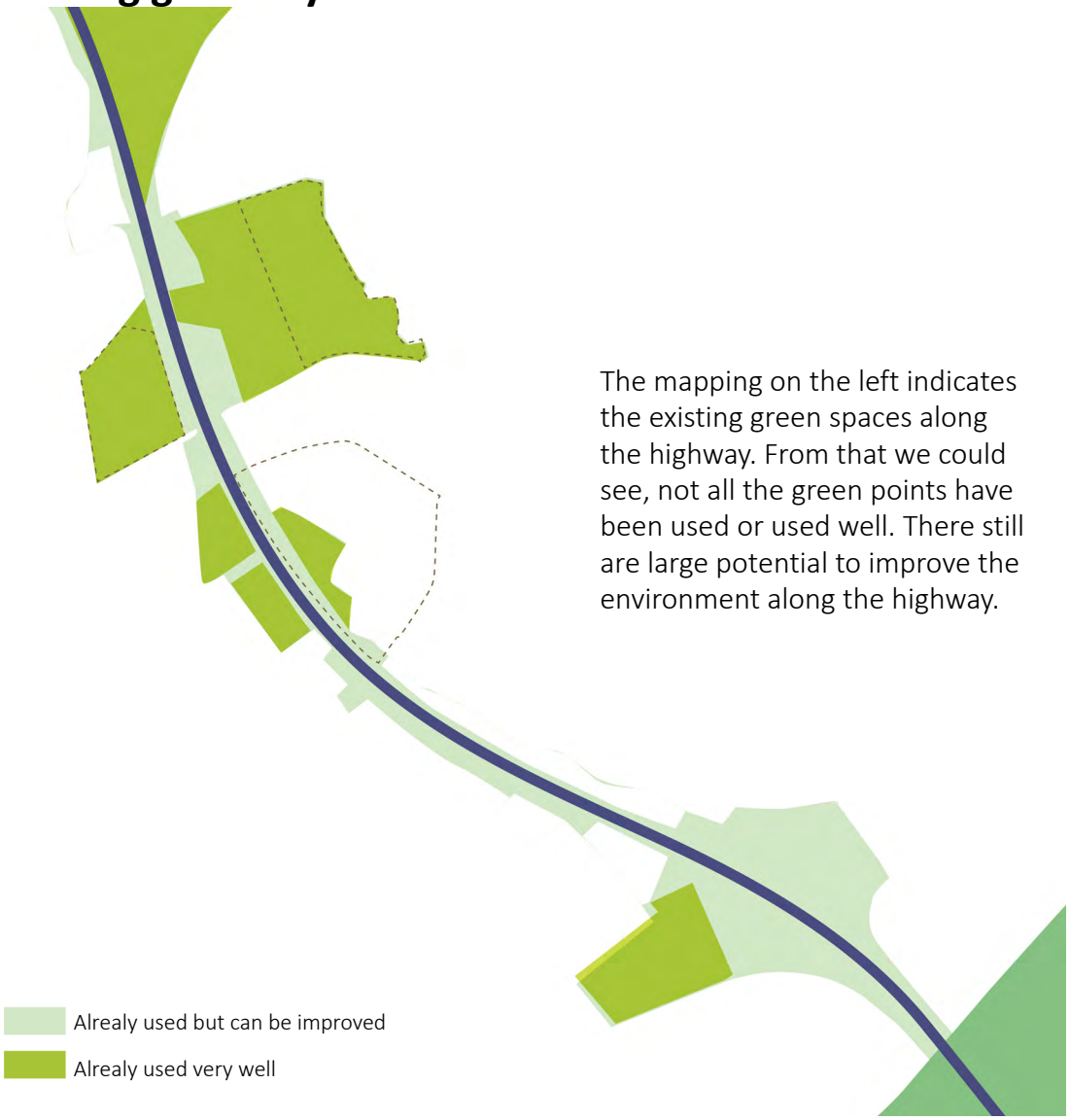
Moreover, as the three estates is a section of the green structure and located in the urban environment, it would combine the characteristics of landscape (green structure) and urban (urban environment) in one. Therefore, the proposition of the estates is to transform as urban landscape.




Urban grey structure
IJssel
Floodplain

4.2 Concept of the highway

Existing greenery

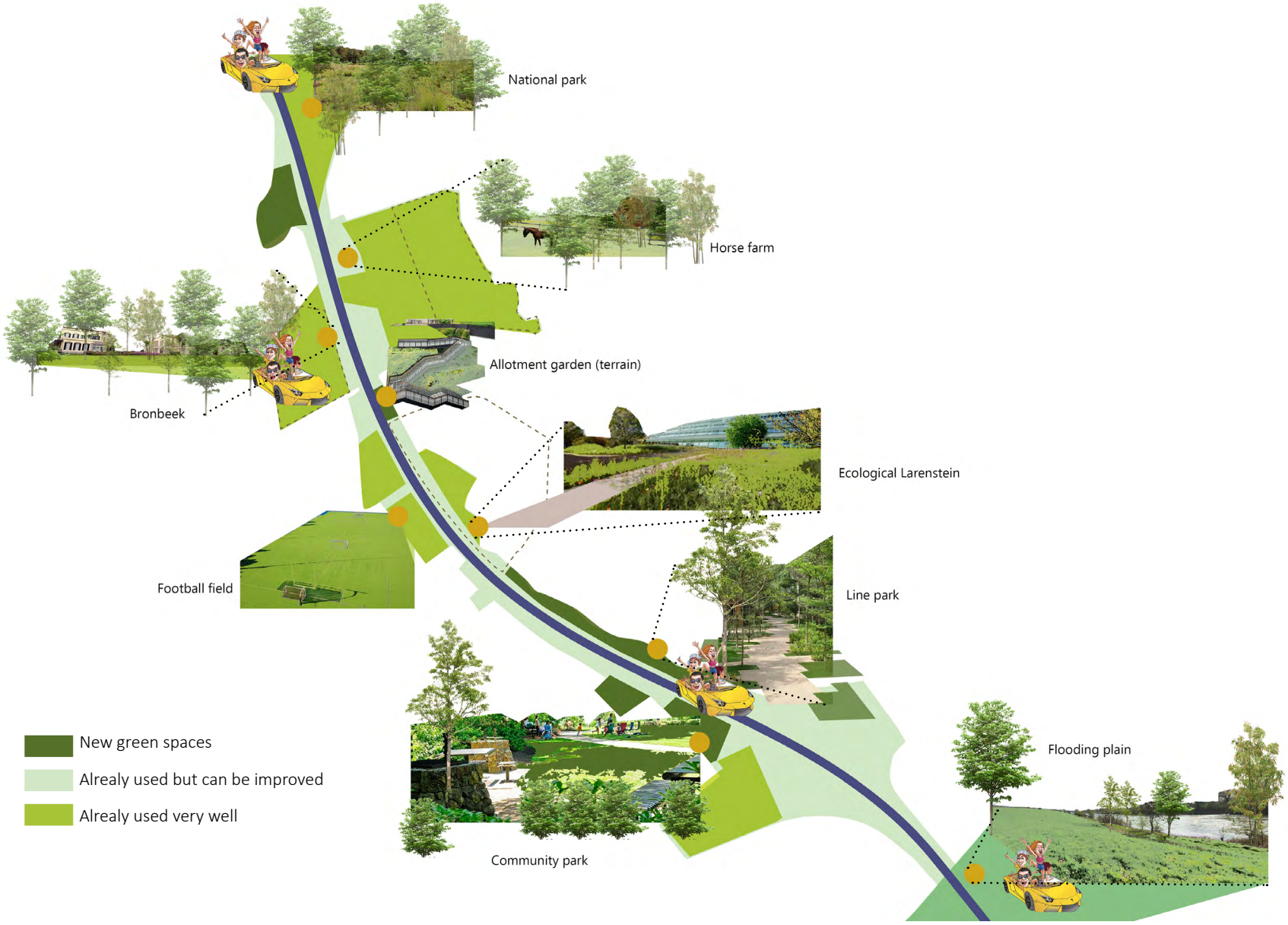


The mapping on the left indicates the existing green spaces along the highway. From that we could see, not all the green points have been used or used well. There still are large potential to improve the environment along the highway.

Since the highway would be redeveloped as green structure and more focused on the landscape quality, how will it be realized? Some strategies is concentrated on the existing greenery and vacant space with potentials like the collage on the right.

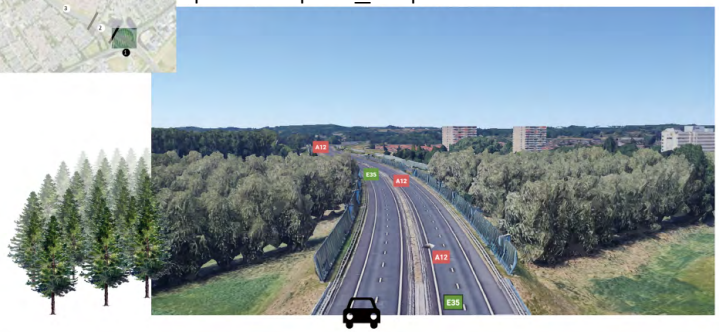
Proposed greenery

The dark green drew the vacant space with high landscape conditions that could be developed, for instance, the strip area as line parks for surrounding neighbouhood and allotment garden in my site. The light green is the existing green space that could be redeveloped, like the green horse farm next to Daalhuizen. The yellow-green are the high-qualitied landscape area, like national park and flooding plain.



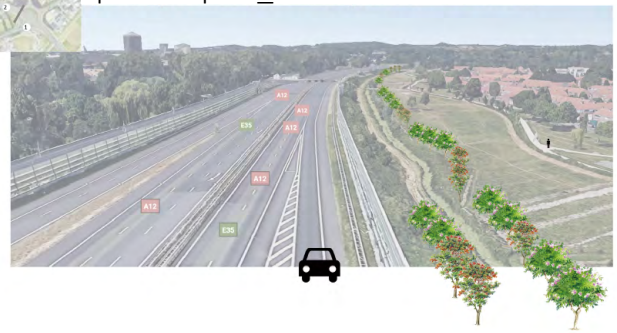
Speedscape along the highway

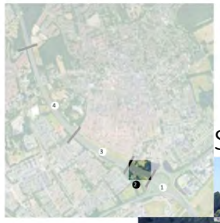
Speedscape 1_Velperbroek roundabout



The speedscape, as its name suggest, is a kind of landscape for the high-speed cars along the highway. It begins from the traffic roundabout and ends in Veluwe. It makes use of the existing landscape conditions on two sides and based on different features, creates different views.

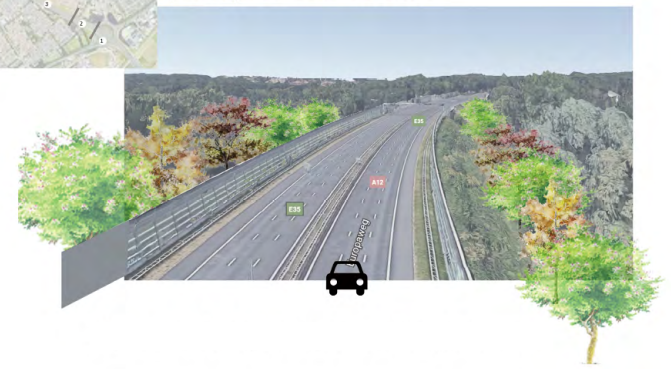
Speedscape 3_Communication inbetween



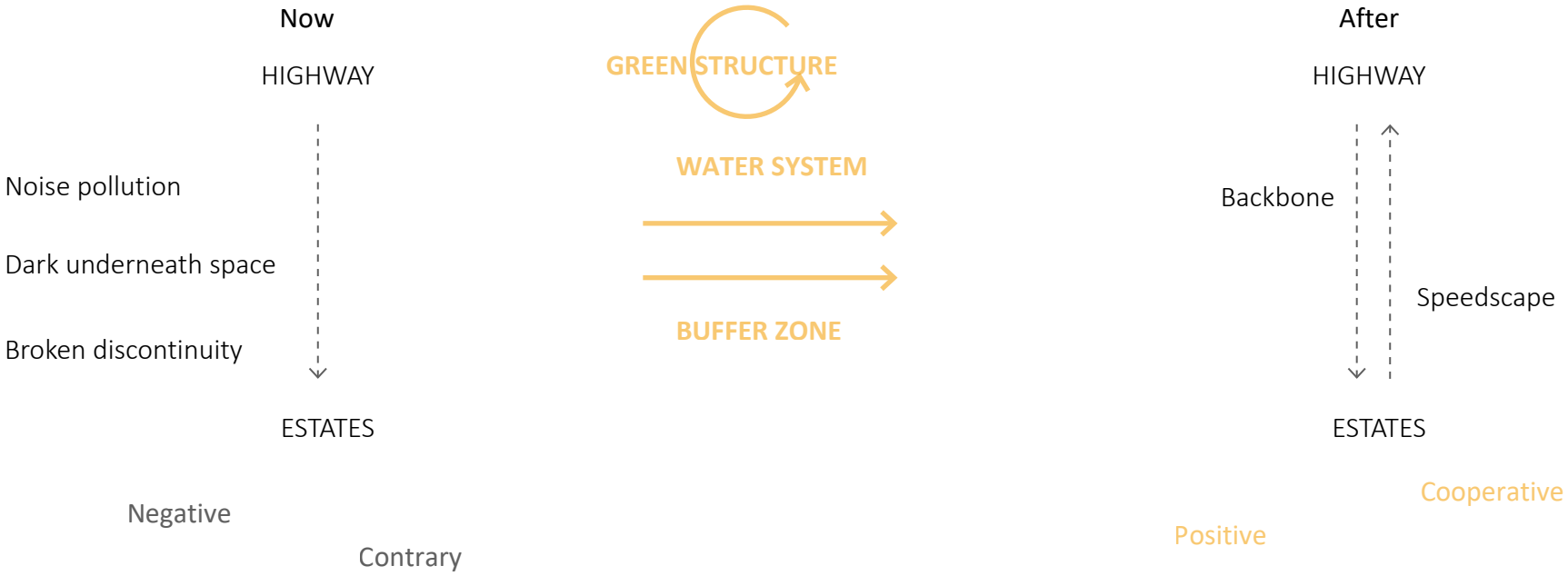


Speedscape 2_Entrance of the city

Speedscape 4_Entrance of Veluwe



Relationships between the highway and the estates



After applying the strategies, the highway would play an essential role in the region more than the disadvantages its brings. What exactly relations between the highway and the estates? The answer is in the diagram.

Now the highway triggers kinds of pollution, fragmented space and dark space underneath. The relationship inbetween is contrary and negative.

After strategies applied on the highway as a landscape green structure and some remediation strategies in the area, like linking by water system and buffer zones along the highway, the relations would be ameliorated, be positive and cooperative. The highway could be a backbone in this region that links the estates with other urban landscape. In turn, the estates as part of speedscape, provides dynamic views for the people on the highway. This will be elaborated on the next page.

5 CLUSTER'S AND ESTATES' CONTEXT

5.1 The current situation of the cluster
5.2 The features of each estate
5.3 Conclusion of cluster analysis
5.4 Problem statement

5.1 The current situation of the cluster

After regional analysis and historic development of the cluster, I would like to zoom in on the cluster scale, to understand the current situation of it.

A complex place with kinds of public transportation

Like analysis before in the regional scale, this place is complicated with lots of transportation, including highway, railway track, different scales of motor ways, all of which definitely provide high accessibility to the site. On the other hand, more issures have to be taken into account, for intance, the feelings of the travels on the train or bus. How do tackle the dynamic flow?

Legends:
- Railway
- Motorway
- Primary road
- Dynamic flow

A fragmented place with various types of landuse

As mentioned before, the main landuse pattern is residential housing, which demands needs of streets as consideration. On the other hand, the site was fallen to the pieces by urban infrastructures.

- Company site
- Retail/Commercial site

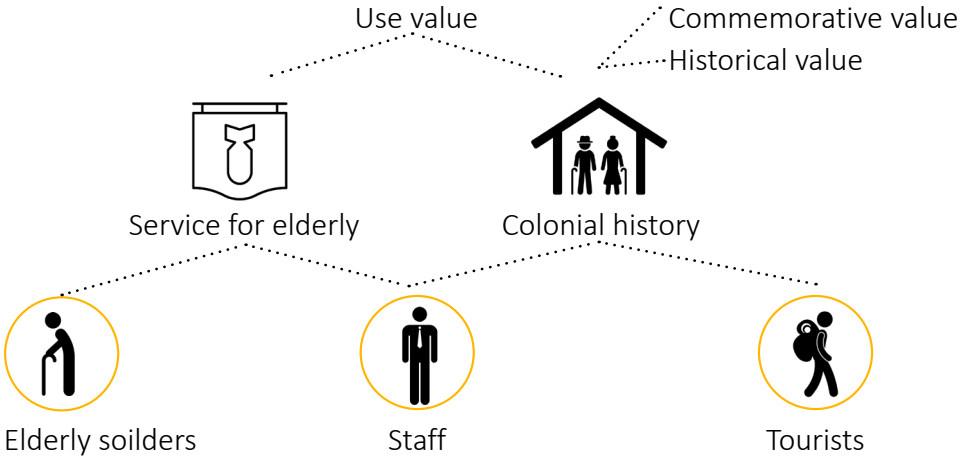
A diverse place with uses and features

The diagram shows that the users in each estate and their surrounding neigbours. It also concluded the main activities inside the estate.

5.2 The features of each estate

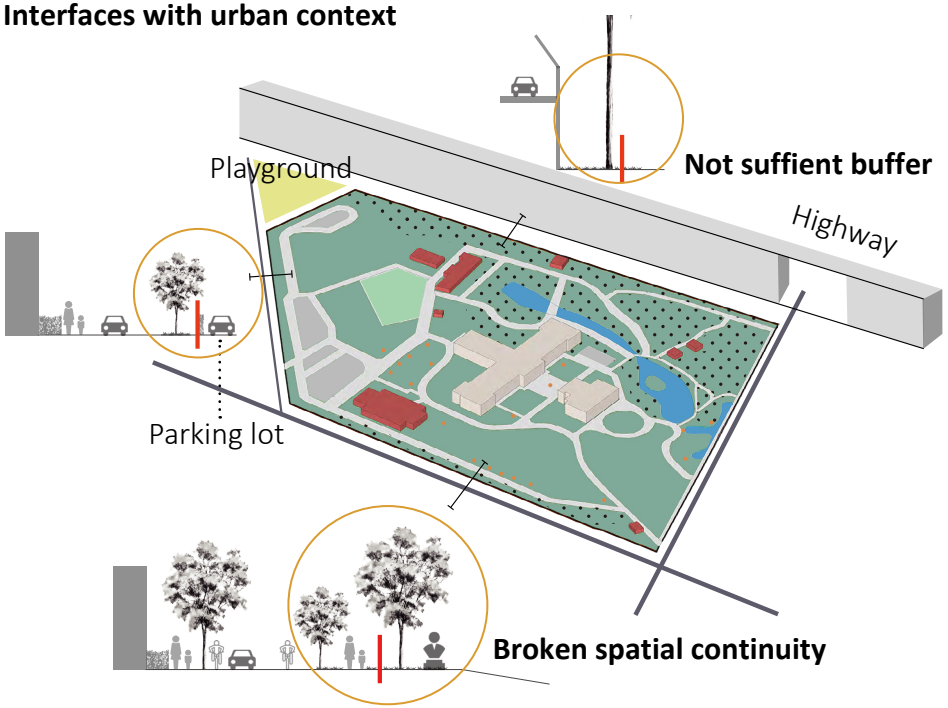
Bronbeek

Functions, values and users



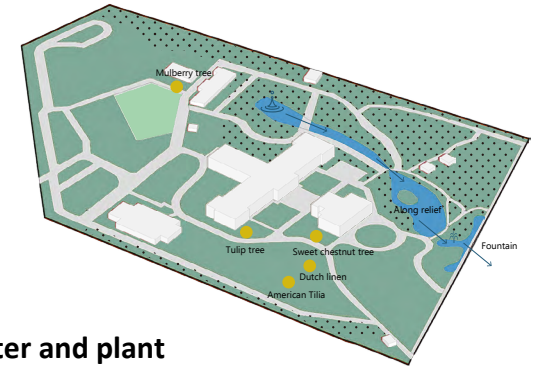
In the existing situation, Bronbeek is a military museum to memorize the period of Dutch East Indies, which indicates use value, historical value and commemorative value. On the other hand, it is also a home for elderly people as another use values. Therefore the main users in Bronbeek consists three types, elderly residents, staff and tourists. Although it is home to elderly people, less activities for them.

Interfaces with urban context



There are two types of interfaces between the urban context and Bronbeek. The first one is with urban neighbourhood, of which **spatial continuity is broken** because of the hard fences. The second one is with urban infrastructures (here is A12 highway). The main problem of it is **not effective buffer zone** in between, which leads to noise pollution and bad view of the ugly wall of the highway.

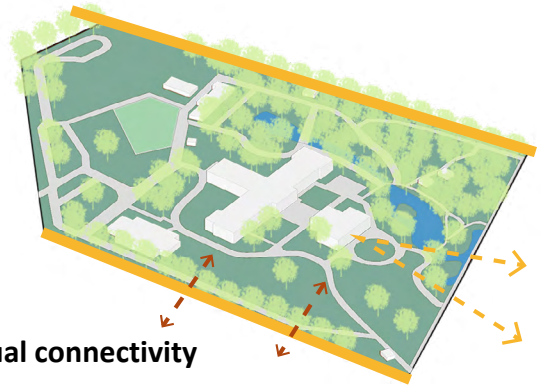
Landscape components



- Valuable trees
- Animal husbandry
- Dense forest (beech, maple, summer oak, American oak, linden tree)
- Fence

Water and plant

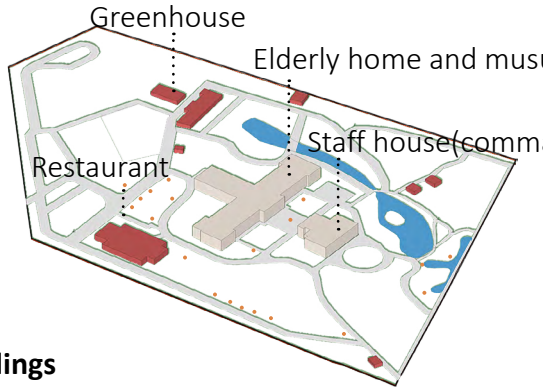
Except the heritage buildings, there are some valuable trees in Bronbeek which should be preserved as well. Also, a fountain is starting from here and follows the terraces flowing to outside neighbourhood.



- Barrier
- Visual connection
- Opportunities

Visual connectivity

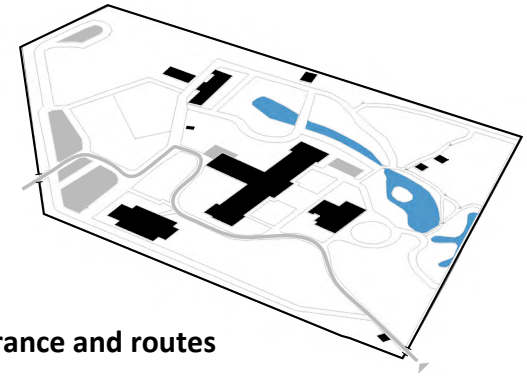
There is a good view connectivity from the mansion to outside neighbour in the south. But it is **blocked by trees and fences** in the west which should be open.



- Monuments
- Main buildings
- Service buildings
- Fence

Buildings

The main service building in Bronbeek is museum which was transformed from the heritage building. But it is **mixed-use** as elderly home, which causes inconvenience for the visitors.



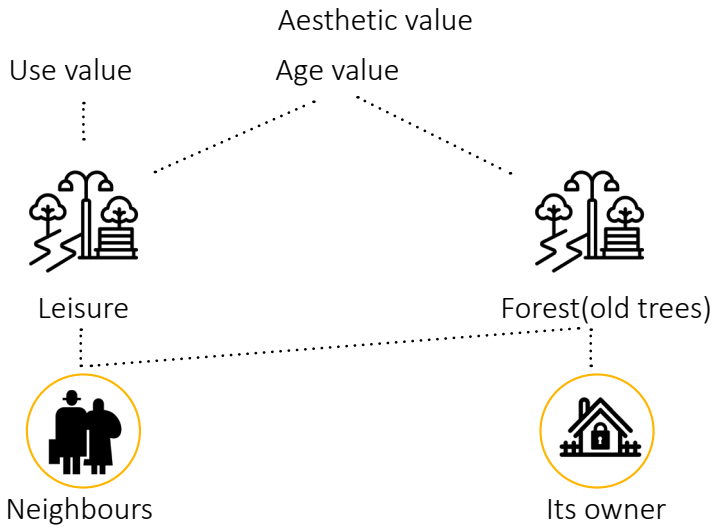
- Entrance
- Parking lot
- Vehicle road
- Fence

Entrance and routes

The existing **entrance is towards to the crossroads** which is quite inconvenient. And **the pedestian and vehicular route inside is interlocked**.

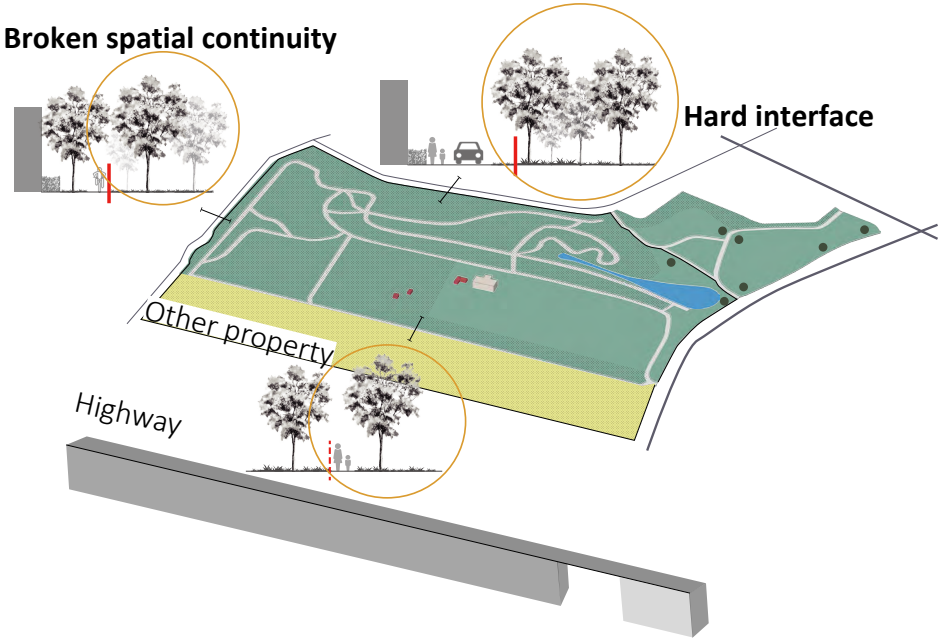
Daalhuizen

Functions, values and users



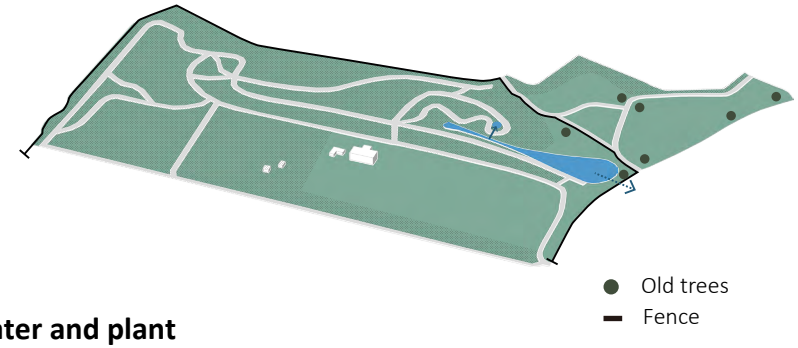
Daalhuizen consists of two parts, a large private inaccessible forest and a small open public city park. Although the forest cannot be visited, age value and aesthetic value of striking forest could be ignored. The city park of course has use value and aesthetic value. In addition, due to some monumental and special tree species, it has age value. It is surrounded by residential houses with less leisure programs.

Interfaces with urban context



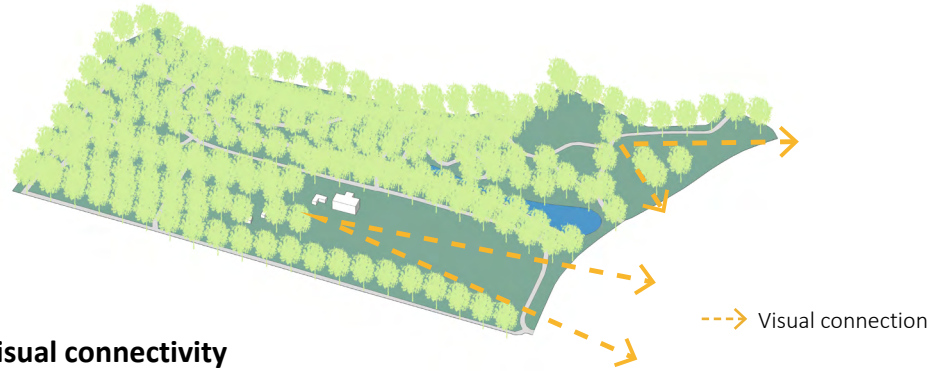
There are two types of interfaces between the urban context and Daalhuizen. The first situation is the same as Bronbeek. The second one is **hard interface by fence**, which is sort of **not friendly for people.**

Landscape components



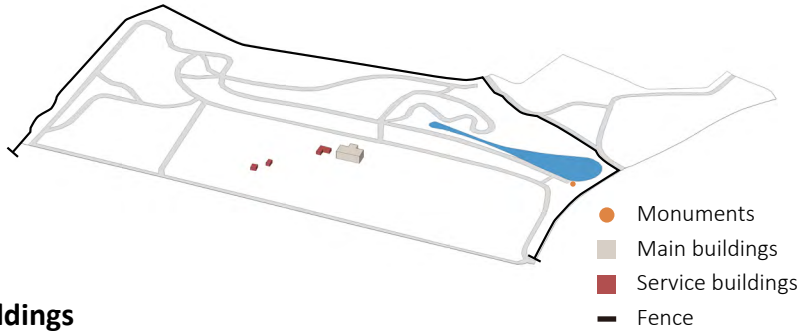
Water and plant

Except beauty of the magnificent forest, the monumental ancient trees are also valuable and preservable. The water flows to the neighbourhood as well by pump.



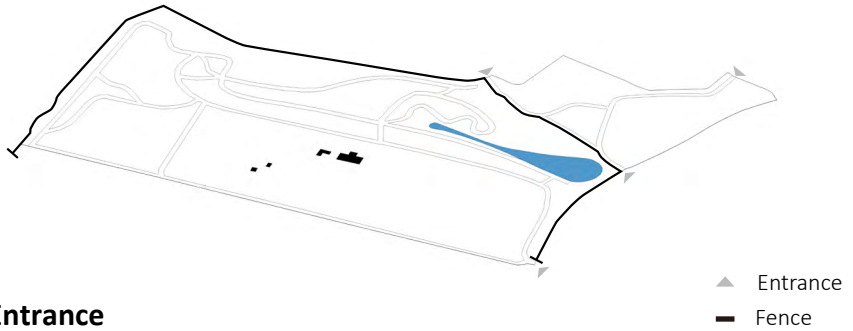
Visual connectivity

The existing visual connection with urban neighbourhood in the north is quite open, which shapes a welcoming atmosphere for the pedestrian.



Buildings

The existing buildings in Daalhuizen are quite simple, a mansion which was build up later and some service buildings. There is a municipal monument close the pond.

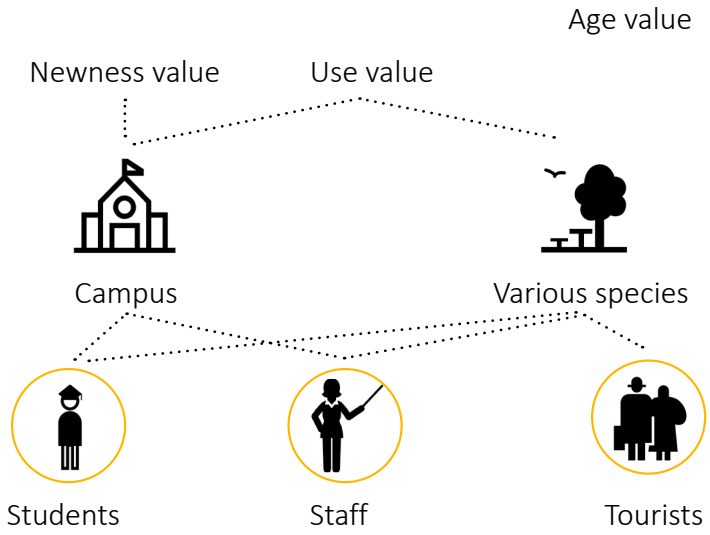


Entrance

The entrances around Daalhuizen basically could be classified two categories. The first one is to the private forest which actually are not working for the public. The second is to city park.

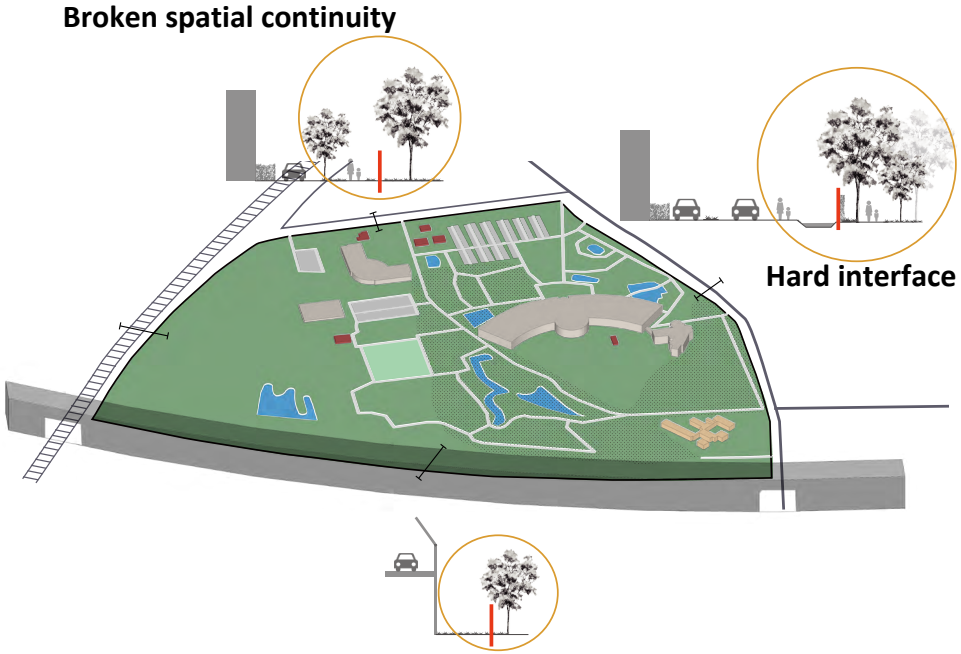
Larenstein

Functions, values and users



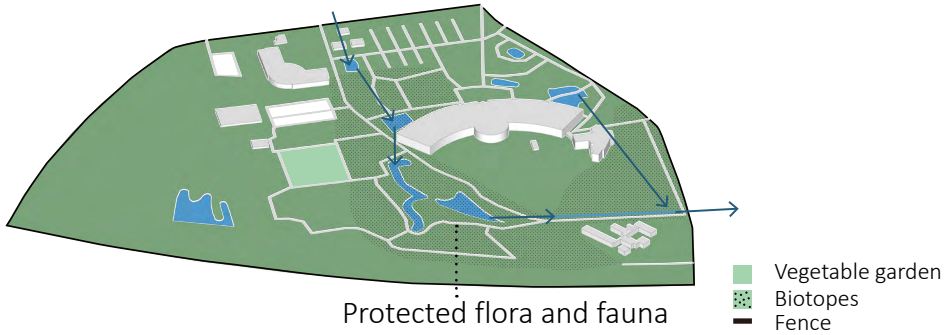
Larenstein now mainly functions as a collge, which reveals use value and newness value. Another significance of Larenstein is that there are numerous rare species in this ecological park. As mentioned that, everything about historic heritage is gone. It reminds people of age value. The main users in this estate are students, teaching staff and some tourists sometimes. Although the species in Larenstein are rare, it lacks of ecological facilities so that less people realized.

Interfaces with urban context



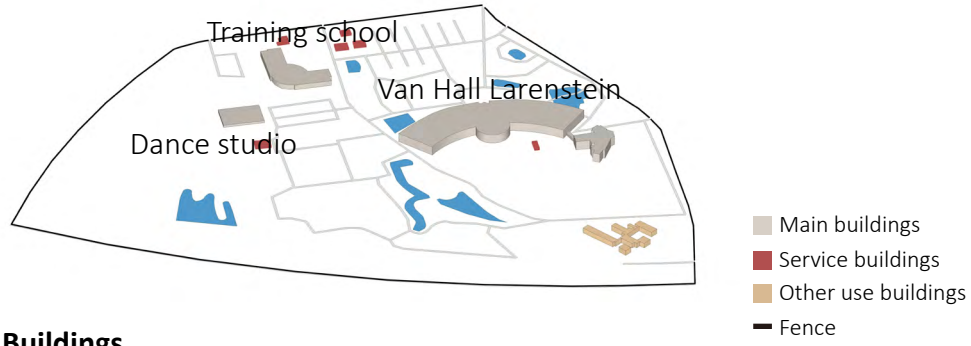
There are three types of interfaces between the urban context and Larenstein. The first one and second two are same as in Daalhuizen, broken **spatial continuity and hard interface** for the neighbouhood. The third is the dense forest between the urban infrastructure (A12 highway).

Landscape components



Water and plant

The water flow in Larenstein is from east to south neighbourhood. And the great importance of Larenstein is **several boiotopes** living in the forest.

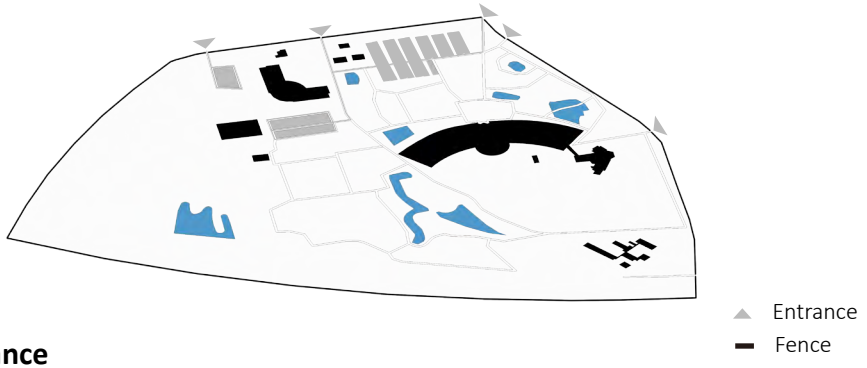


Buildings

As Larenstein is a consummate college, types of buildings are more comprehensive, like teaching buildings, service buildings.

Visual connectivity

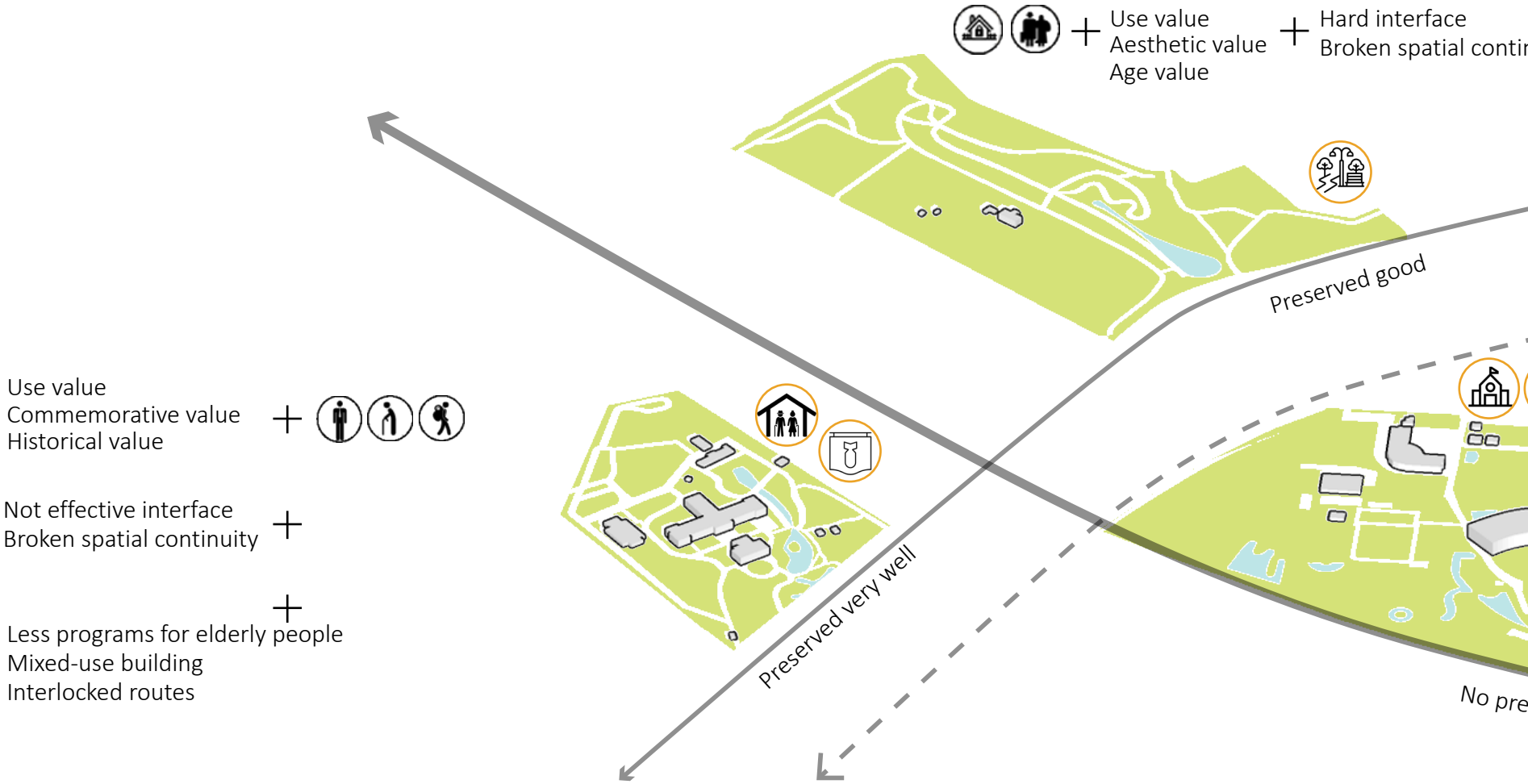
The existing visual connectivity in Larenstein to outside urban context is from the open meadow over the railway track to the vacant part. As it is adjacent to the railway track, the **feelings of the passengers on the trains** is one aspect that could be taken into account.

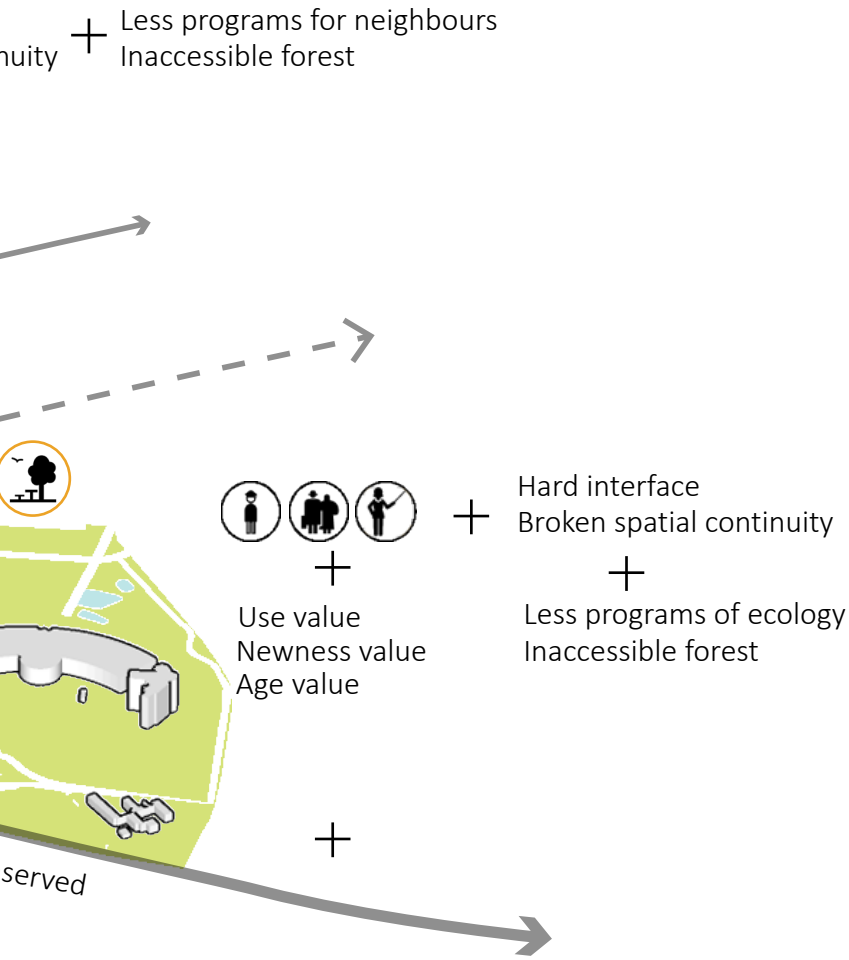


Entrance

The entrances to the campus are several, some into the parking lots and some by pedestrians. But among them, no one is for entering the **ecological forest as it is limited by campus**.

5.3 Conclusion of cluster analysis
Summary of the estates





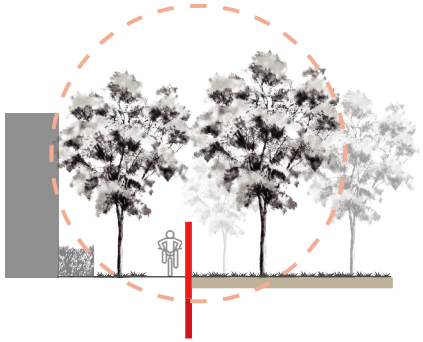
After description of each estate, the diagram above summarized the individual features and problems. It also concluded the common problems in this site, that is, **lack of landscape programs for specific users and problematic interfaces** which block the connectivity with urban environment.

As the landscape program facilities are sort of based on each estate, they will be illustrated later on detailed scale in design process. The problematic interfaces were summarized on the next page.

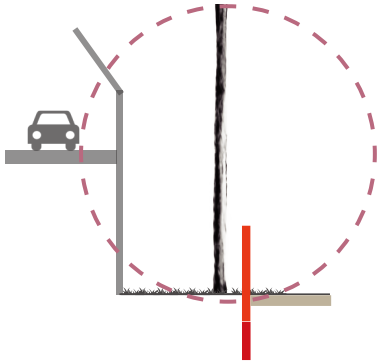
Summary of the interface

Types of interface

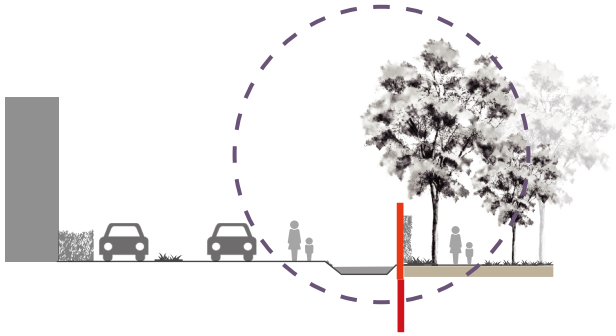
Broken spatial continuity



Not effective buffer zone



Hard interface



Distribution of problematic interface

After analyzing the existing interfaces between the estates and urban context, there are three types of problematinc interfaces which are visualized on the left, broken spatial continuity, not effecient buffer zone and hard interface. Some of are owing to the hard fences while some are due to less trees. Therefore, one of the design tasks is to improve these interfaces.

The mapping above indicates how the interfaces distributed.

5.4 Problem statement

Based on the estate cluster context and single estate analysis, the problem statement on this scale are as followed.

THE ESTATES

1. Lack of the connection with the urban context

2. Lack of effective service for the public

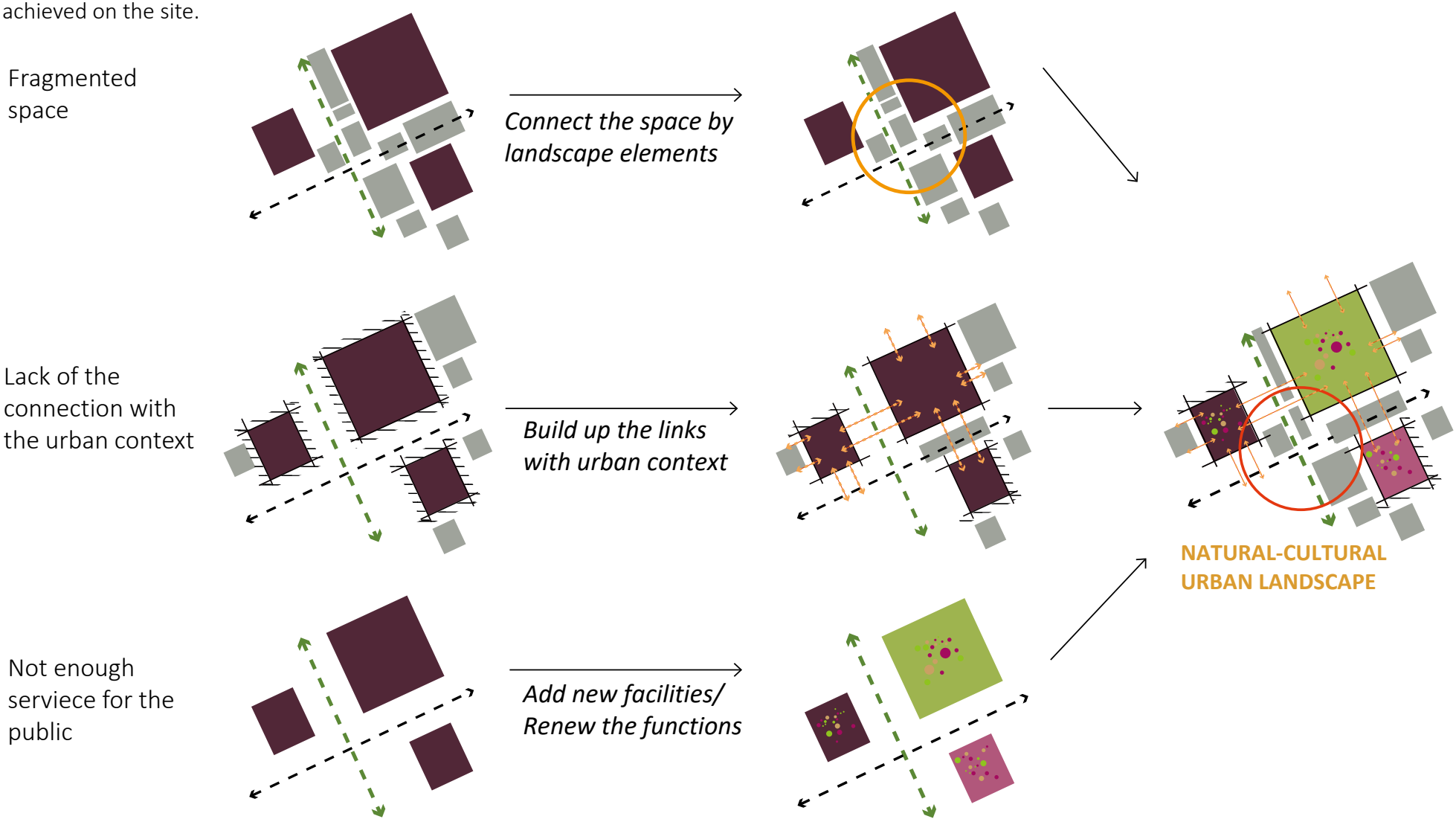
For estates scale, as far as I'm concered, when the city developed, the links between the estates and their surrounding urban environment are missing, like the entrance from the city into the estate. On the other hand, as mentioned before, the service and landscape facilities are neither enough nor functioning well in each estat for the public.

6 CLUSTER'S AND ESTATES' CONTEXT CONCEPT

6.1 Concept of the cluster
6.2 Overall plan of the cluster
6.3 Plan of each estate and inside details
6.4 Summary of the toolbox
6.5 Extra terraced garden
6.6 Landscape tour in the cluster

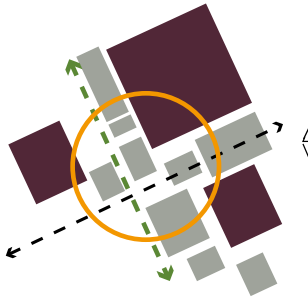
6.1 Concept of the cluster

The strategies for the cluster include three steps. In the following illustration, each step will be explained from sub-steps and how it achieved on the site.



Strategy 1_Connect the space by landscape elements

The fragmented space would be connected by physical landscape elements, like water system, continous path, or spatial connection, like visual connection, transitional space, or to build up the psychological connection by atmosphere and activity calendar. The elements in the frames are applied in the site.



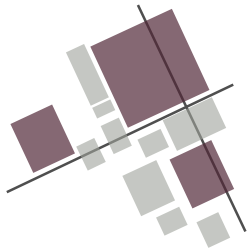
Physical connection

Spatial connection

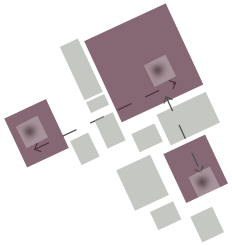
Psychological connection

Wood land

Water system

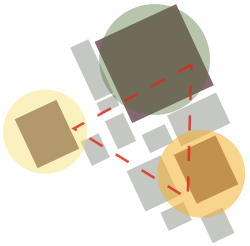


Path

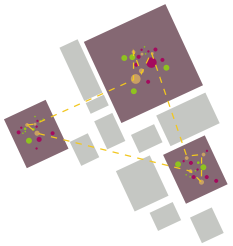


Visual

Transitional space



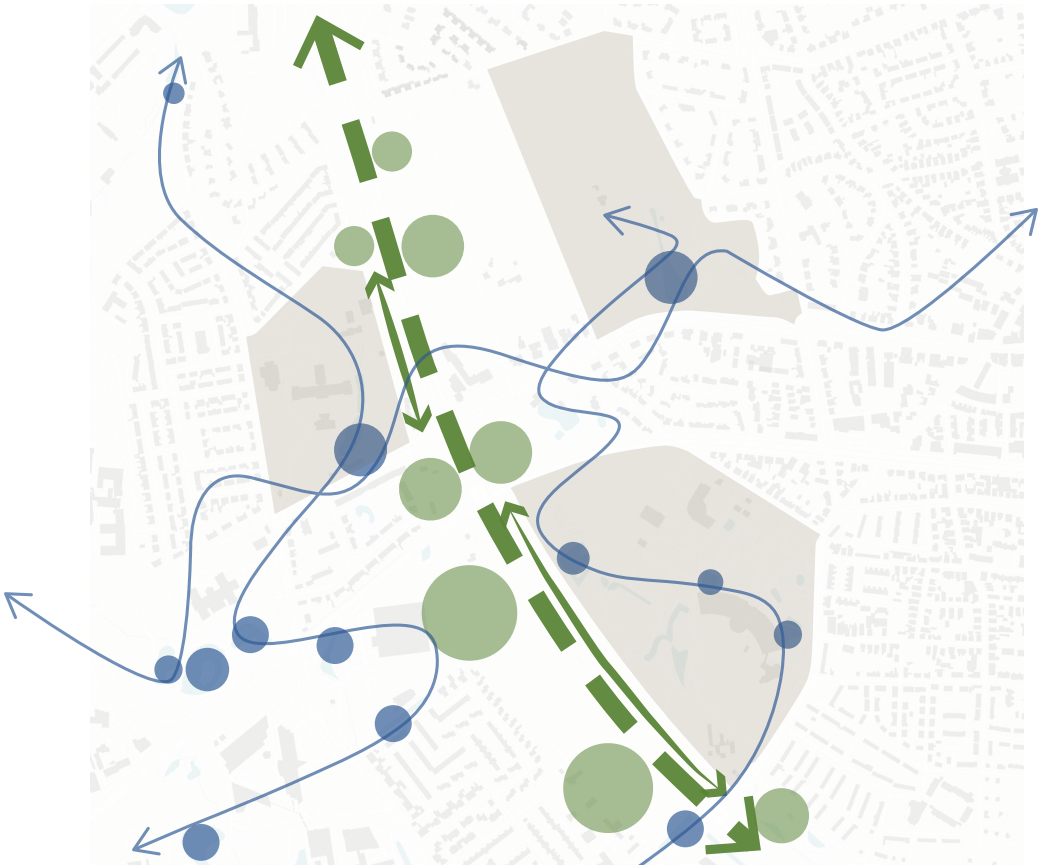
Atmosphere



Activity calendar

Strategy 1_Connect the space by landscape elements

Green and blue structure

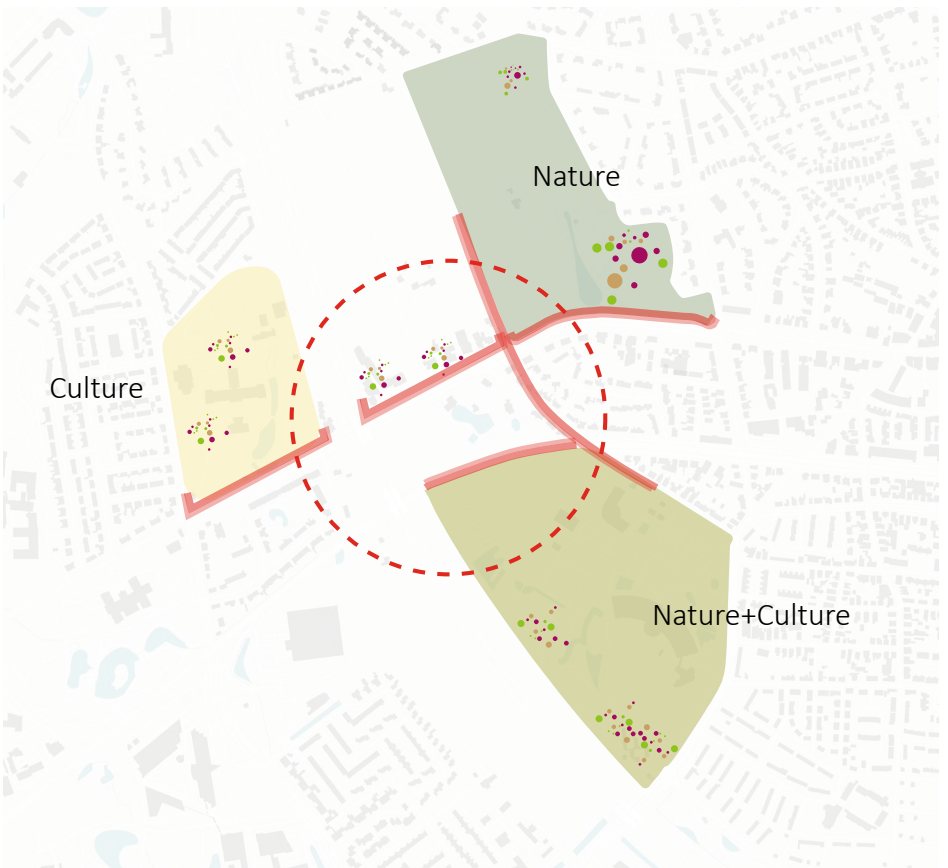


The importance of water system except connecting the space, is also to repair the broken surface system.

Legends:

Ponds
Water system
Green space
Buffer zone
Highway corridor

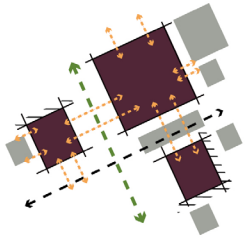
Atmosphere



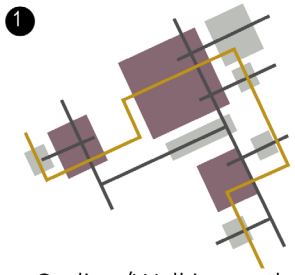
Transitional space is to build the connection between the estates and the urban environment. Since the estates have a long history, the heritage features should be preserved when develop its landscape features.

Transitional space
Representative programs

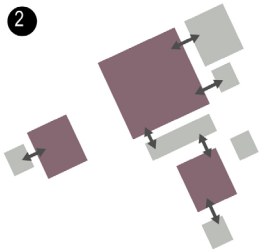
Strategy 2_Build up links with urban connext



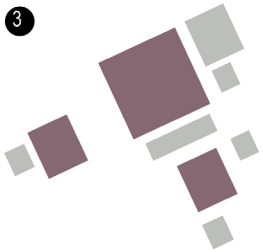
By landscape features



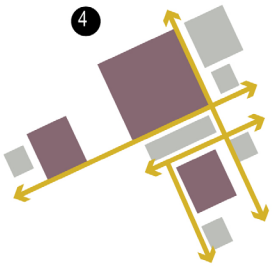
1 Cycling/Walking path



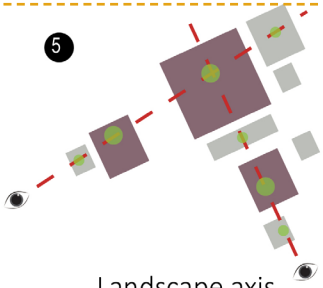
2 Proper entrance



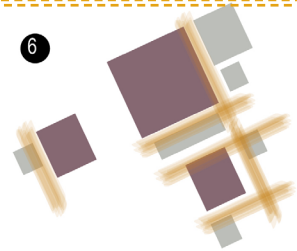
3 Fence removed/improved



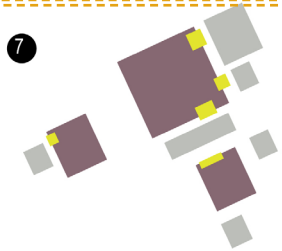
4 Pattern continuity
Path, facade...



5 Landscape axis

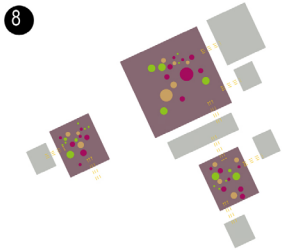


6 Transitional space



7 Transitional facilities

By psychological activities



8 Activity calendar (widely used)

Similar to the strategies on fragmented space, the strategies to connect with urban environment are divided into two categories, by landscape features and psychological activities. The sub-strategies in the orange frames are applied in my site, like proper entrances next to the bus station for Bronbeek, same materials in the whole site, and transitional facilities and space which bridge the inside and outside.

Strategy 2_Build up links with urban connext

Visual connection and entrance

Visual connection is an crucial spatial element that ties inside views of estates and outside views in urban environment closely. By doing so, people outside the estates could be attracted into it. As for entrance, approriate entrances towards to the street corner or close to the pubic transportation station could be preference for the visitors.

Legends:

Entrance/Axis

Visual connection

Pattern continuity

How to link outside with inside and also three estates together? Pattern equalized would be a nice choice. And it is easy to apply on the new facilities and the ones that need redecoration. It could be easily recognizable as a unit when adopted in one design language.

Transitional facade

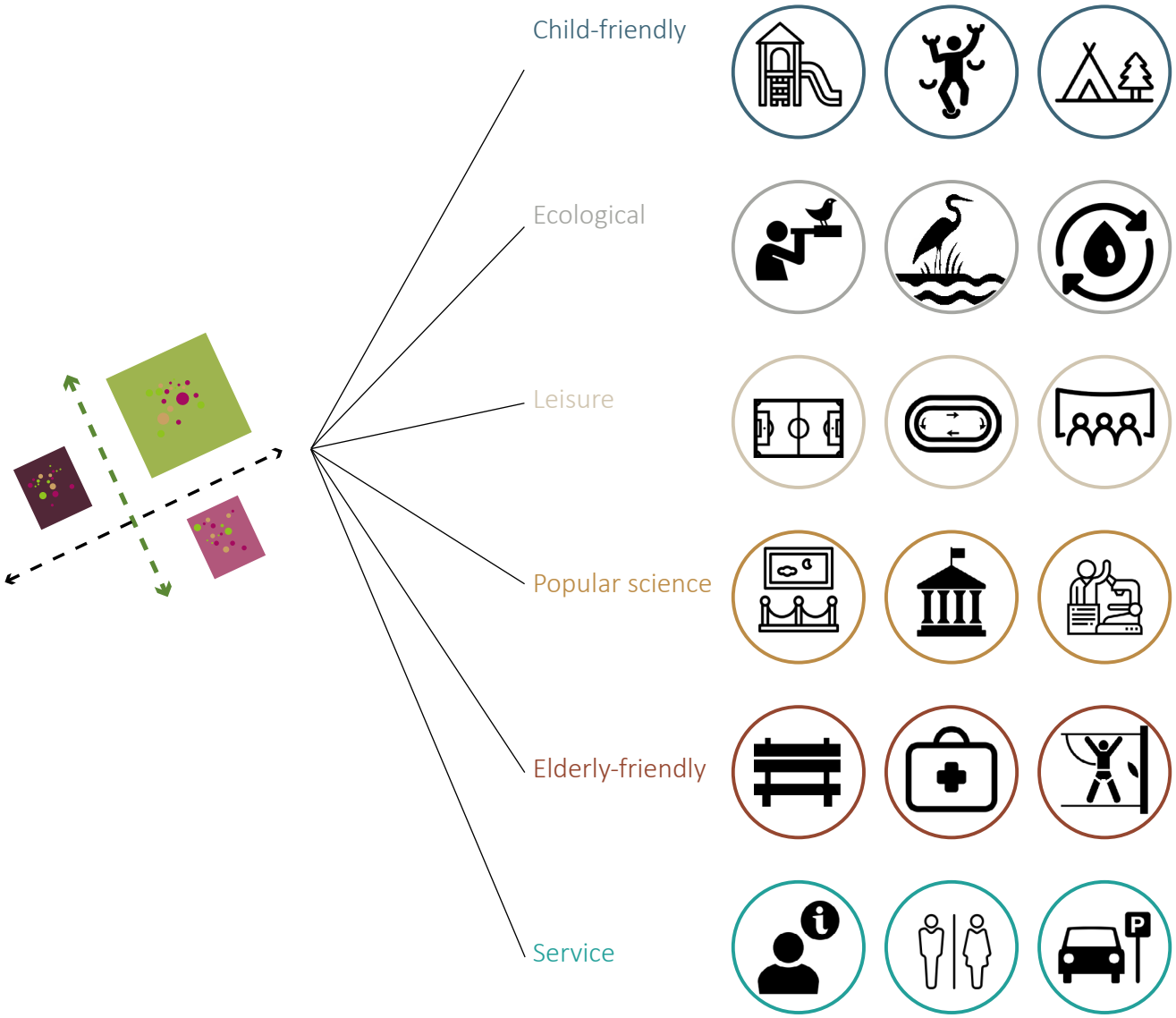
Transitional space and transitional facilities are collectively referred to as transitional facade, like the examples in Sonsbeek. In Bronbeek and Larenstein, it is possible to have new service buildings in front of the urban environment as facades. In Daalhuizen, as it is quite open, it is better to preserve the open lawn as a welcoming place.

Neigbourhood

Transitional facade

Urban grey infrastructure

Strategy 3_Add new facilities /Renew the functions



Since the estates transforming into urban landscape infrastructures, except improving their landscape quality, their functionality as urban infrastructures also should be ameliorated. As mentioned in analysis, there are not enough facilities in each estate. And targeted each estate, types of facilities are different. The list on the right are potenial landscape facilities that could be constructed.

Strategy 3_Add new facilities /Renew the functions

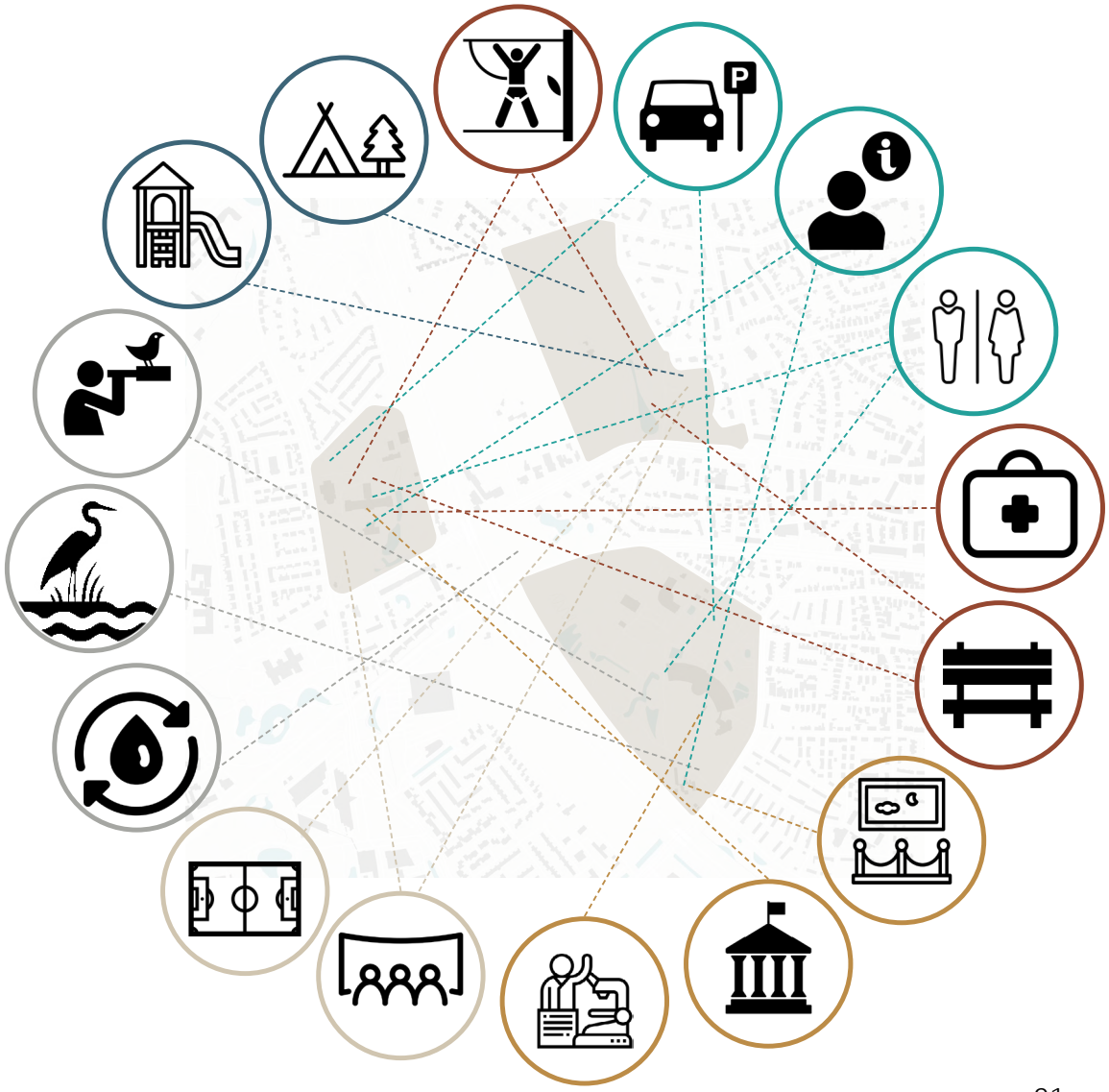
The diagram on the left represents the facilities of necessity. Some may be existing while some should be in the future.

Bronbeek as museum and elderly home, the existing facilties are well-developed. Some facilities for the inside residents should be arranged, like self-contained orchard for food provision, recreational amphitheater for neighbours and elderly people.

Part of Daalhuizen is open as public park in the urban neighbourhood. There are less programs involved. In the future vision, landscape facilities for community would come in, for instance playground, sitting facilities. After forest reopen, more exploration and activities will happen in, like camping, even maze.

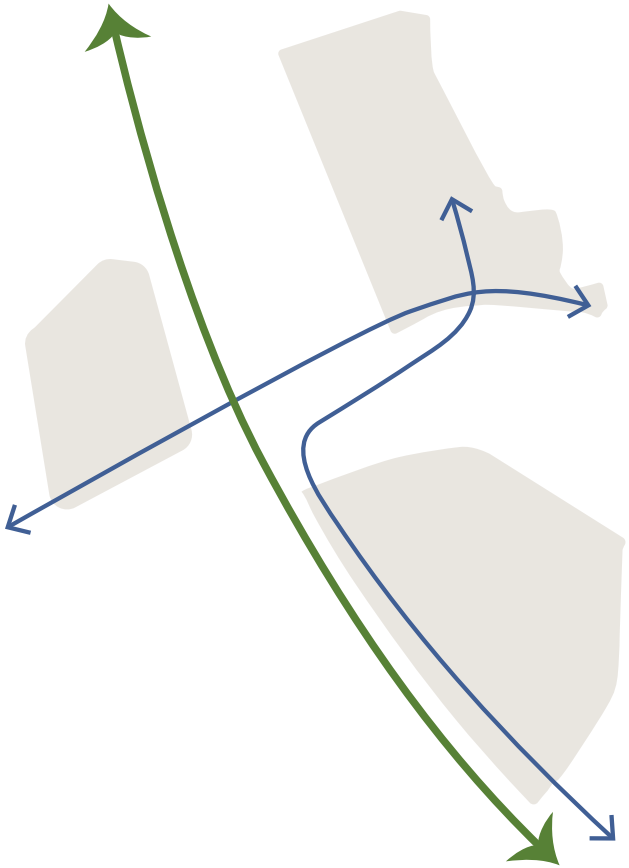
Larenstein nowadays works as a college. It ecological foresty area is less known. After reformation, landscape facilities about ecological forest would be developed, like observation tree-house, wetland, etc.

In a word, the facilities are based on the necessity of the existing users and future visions.



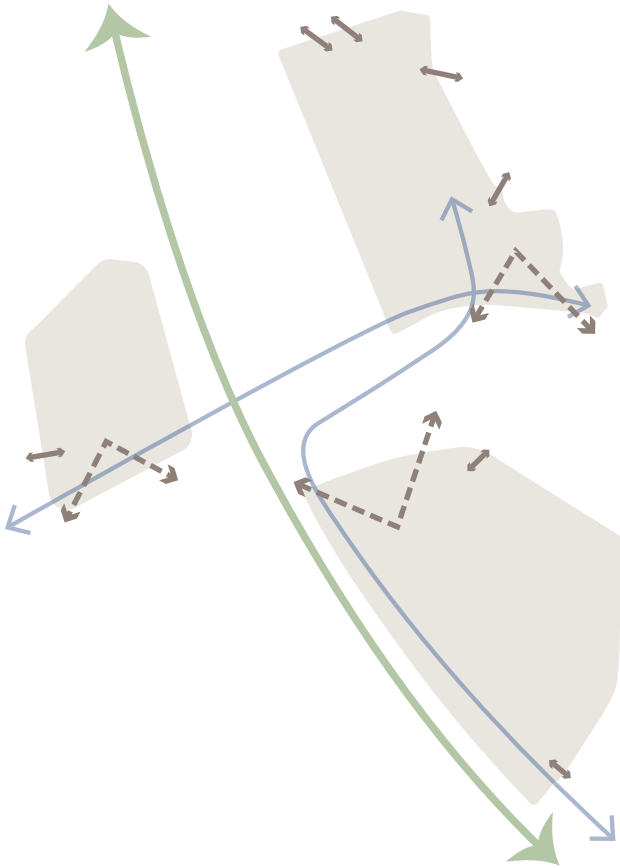
Structure of the cluster

Step 1 **Green and blue structure**



Redevelop the highway as the green structure and repair the bronben surface water as blue system

Step 2 **Connection with neighbour**



Join the estates and urban context together directly by sight communication and proper entraces

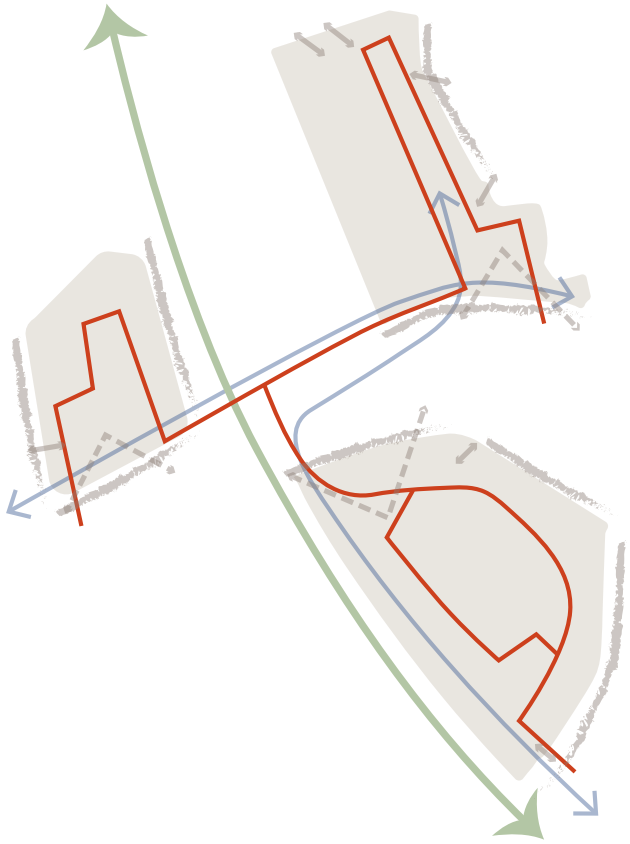
Step 3 **Transitional spac**

Intervene the transitional s
the estates as interfaces to
urban context.

e

pace and facilities around
enhance the system with

Step 4 **Continous pattern**



Apply the same design/pattern language as identification of the site

Step 5 **Facilities**

Involve the landscape facilities as the final step to meet the command of the street.

6.2 Overall plan of the cluster
Masterplan of the cluster

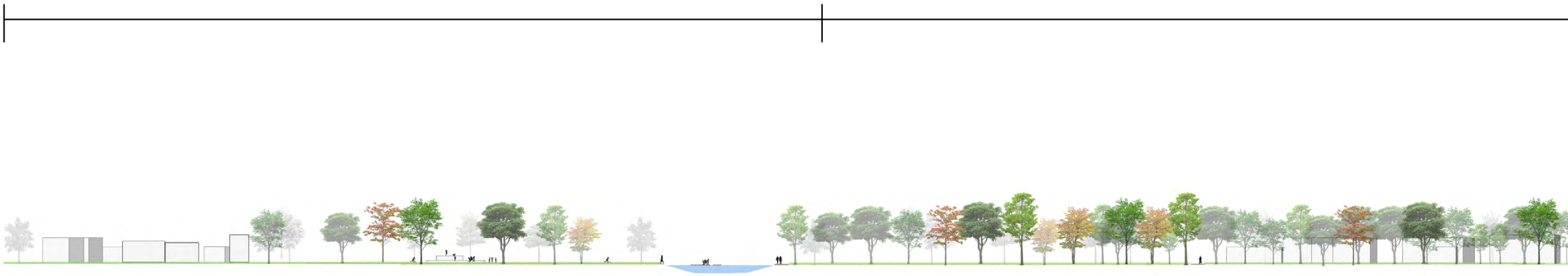
After the structure of the cluster, the masterplan was generated. The masterplan on the right represents the comparision between the existing condition and the future. More stories about each part and details will be elaborated in the following sessions.

Now
VS
Future
Daalhuizen
Terraced garden
Larenstein
Bronbeek

Section of the cluster_From Bronbeek to Daalhuizen

The section from Bronbeek to Daalhuizen shows the landscape facade to the urban context of the cluster. Bronbeek and Daalhuizen are more public. In between along the highway is the old dense forest.

DAALHUIZEN



HIGHWAY **BRONBEEK**

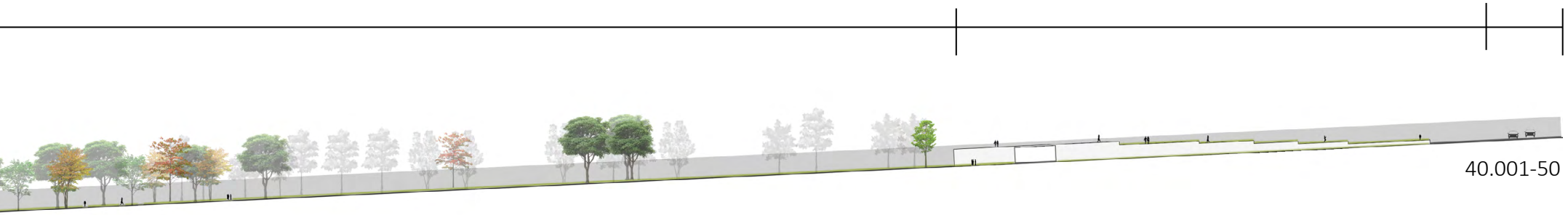
Section of the cluster_From terraced garden to Larenstein

The section from terraced garden to Larenstein shows the elevation condition of the cluster.

LARENSTEIN

10.001-12

TERRACED GARDEN



40.001-50

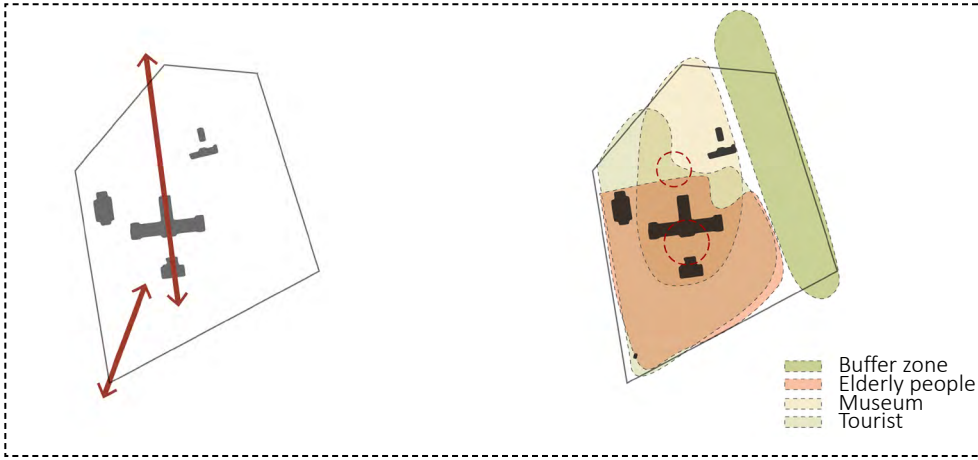
6.3 Plan of each estate and inside details

Bronbeek_Structure and plan

Axis

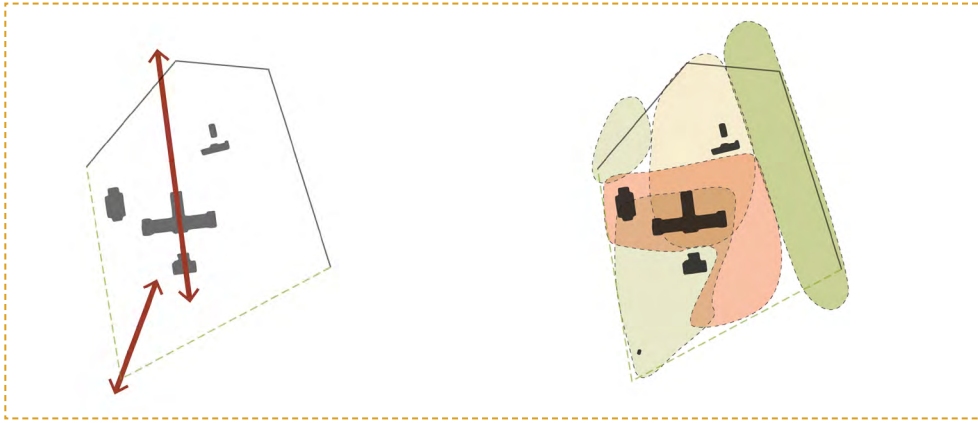
Zoning

Now



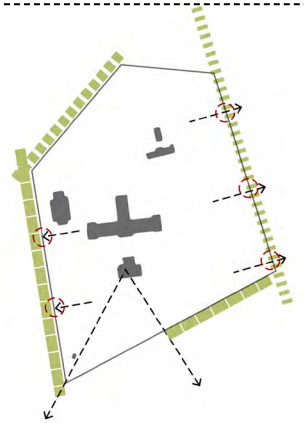
Prolong the existing axis within Bronbeek

Separate the zonings without any interrupt to each other

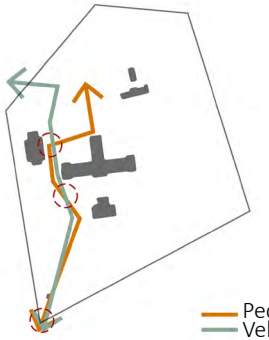


❶ Guard room
❷ Staff house(commander's home)
❸ Military home and musuem(previous estate)
❹ Restaurant
❺ Animal husbandry
❻ Greenhouse
❼ Depot
❽ Parking lot

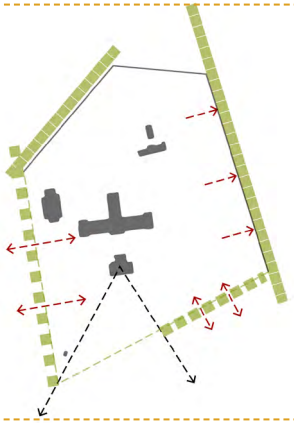
Connection with urban context



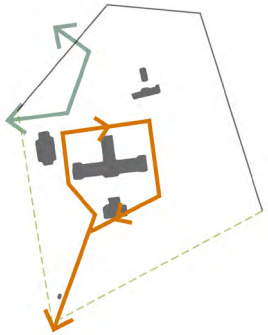
Route



Open the interface with neighhourhood and close it with the highway



Split the pedestrian route and vehicular route up



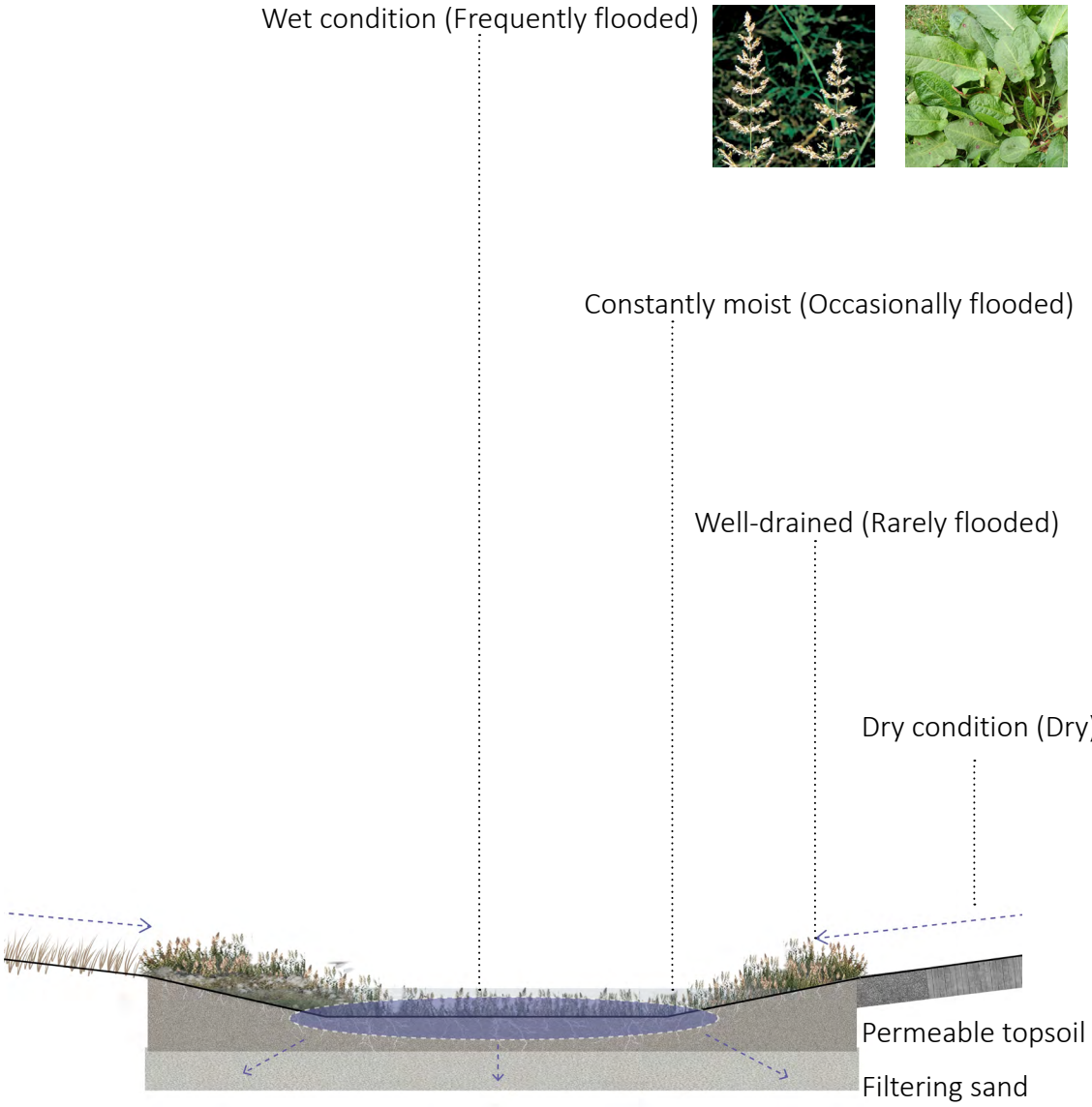
Future

⑨ Rain garden
⑩ Outdoor space for elderly residents
⑪ Vegetation garden
⑫ Orchard

Bronbeek_Landscape facilty_Rain garden as amphitheater

The detailed landscape facility I chose is a new rain garden next to the neighhourhood. It as an attraction connects the neighbourhood and Bronbeek, which would be used as amphitheatre when dry.

The reasons of rain garden is the soil condition and water condition. As mentioned in regional landscape condition analysis, the soil is coarse sand which helps water penetrate. And this part of Bronbeek is under the effect of upstream water. Therefore, rain garden would be helpful during rain. On the other hand, the slope here from west to east is good for collectiong water.

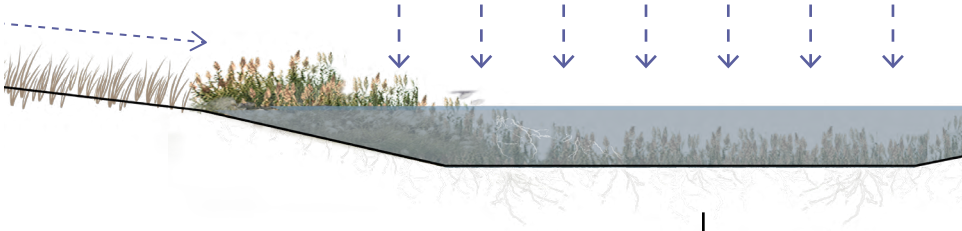


The section on the left indicates the compositions of the rain garden. Underneath soil layer mainly consists of permeable topsoil and filtering sand. Both of help is helpful for penetraing the rain water. As for plants here, the conditions is basically from dry to wet from the slope to the basin. The optional plants are listed above.

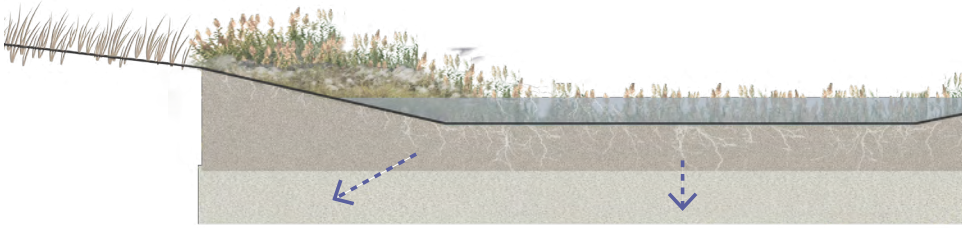
Rainy

How it realized?

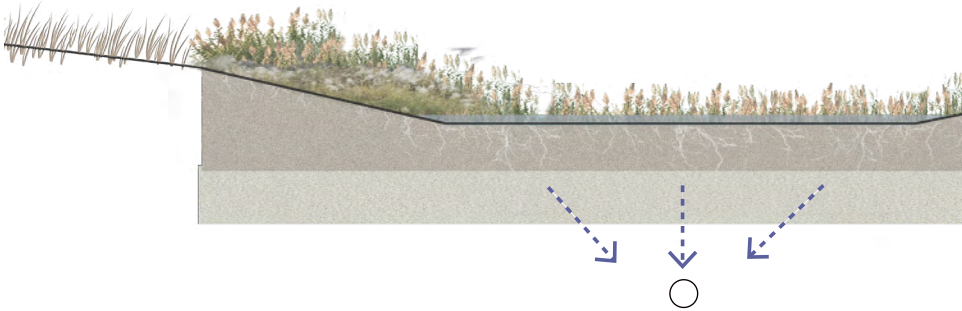
Collect

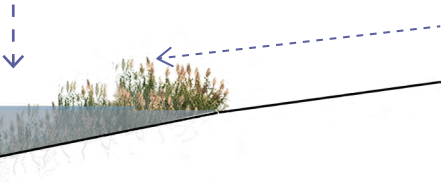


Penetrate

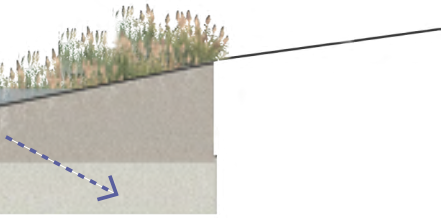


Drain (if too much)

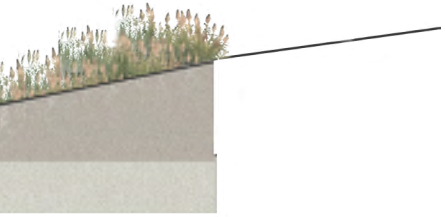




When rains, the basin collects the rain water from slope and pavement. The wet plants can hold the water and be irrigated.



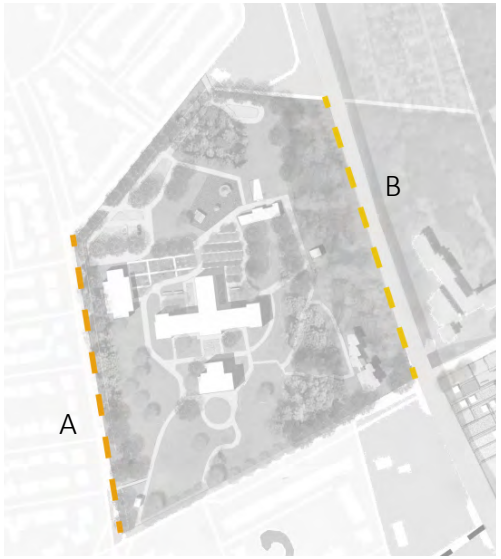
After raining, water is filtering into the permeable soil and sand gradually.



If rains too much and the soil system cannot handle that, the water will be collected by the pipe and drainaged.

Dry

Bronbeek_Landscape facilty_Interface improvement



A. With neighbourhood

The existing buffer zone between the highway and Bronbeek is not enough.

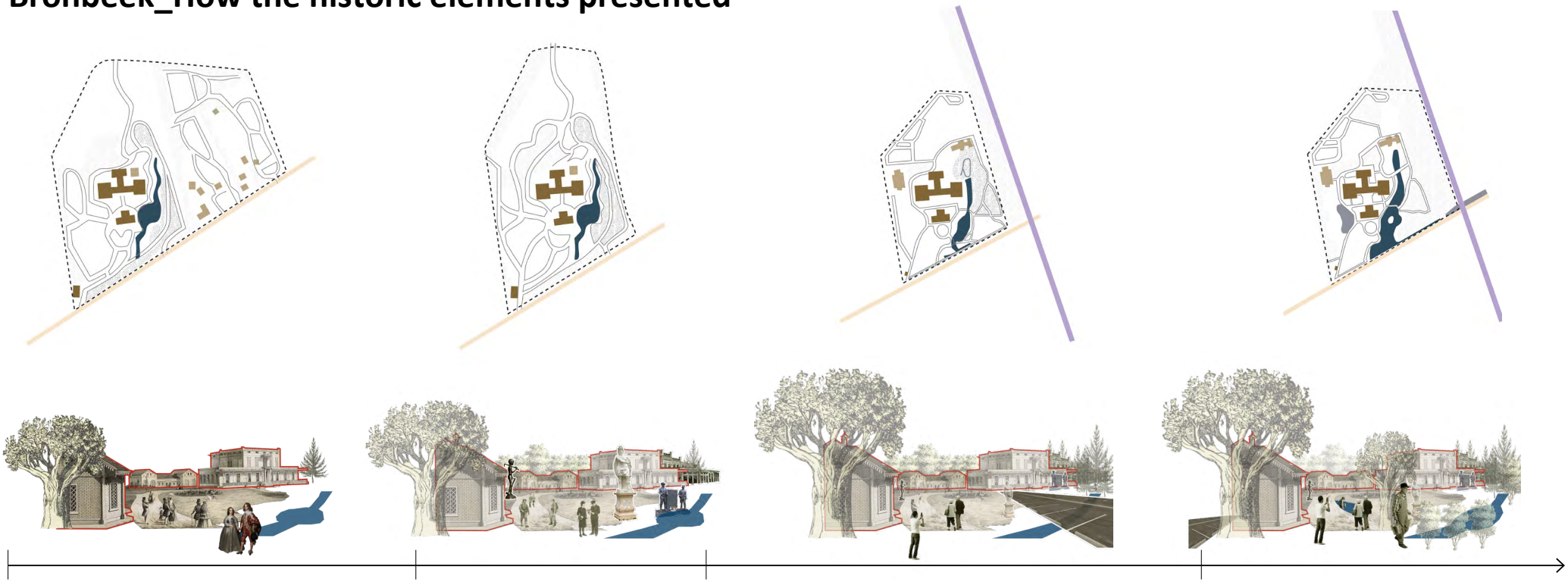
The buffer zone will be enhanced by planting more plants with different heights, in order to impede the ugly wall, and also creating a nice view.

B. As buffer zone

The existing buffer zone between the neighbourhood and Bronbeek is hard and not welcoming.

The hard fences will be removed, replaced by soft edges. Pedestrian would be attracted by the view within Bronbeek rather than refused.

Bronbeek_How the historic elements presented

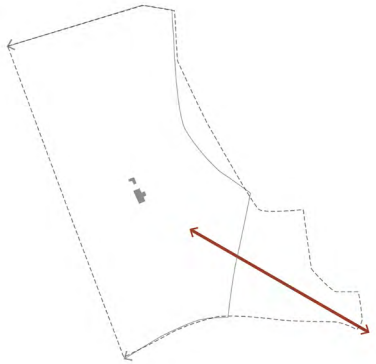


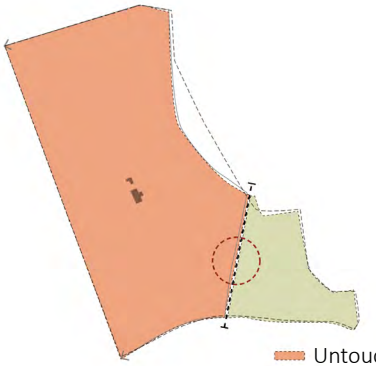
Daalhuizen_Structure and plan

Axis

Zoning

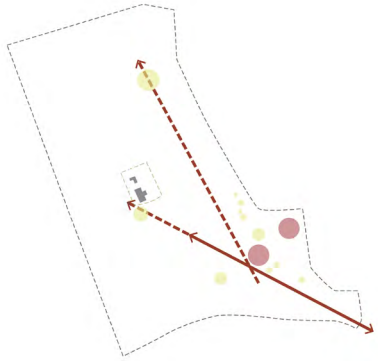
Now

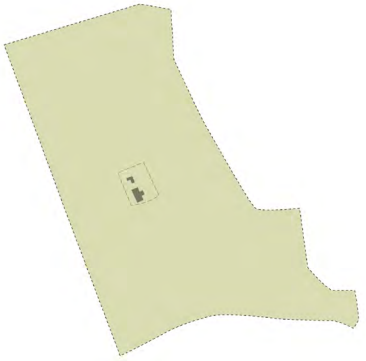




Extend the axis into the forest and more landscape facilities along the axis

Remove the border of the forest and integrate it into the public park



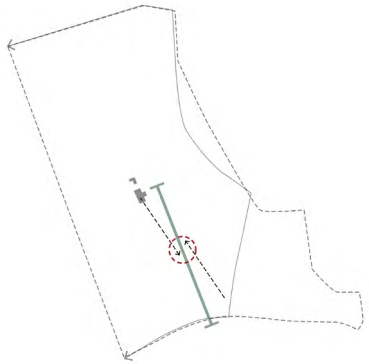


❶ Dordtwijck
❷ Daalhuizen municipal park

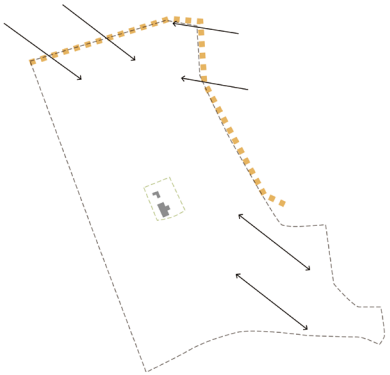
Connection with urban context

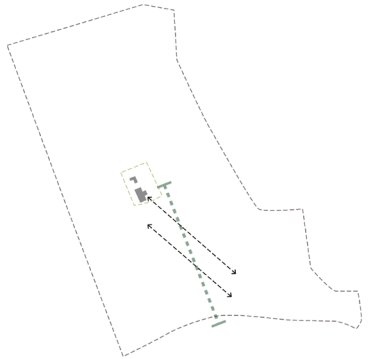
Open the interface and entrance to the neighhourhood

Inside views



Eliminate the barrier between the mansion and public space, to reconnect the visual communication





Future

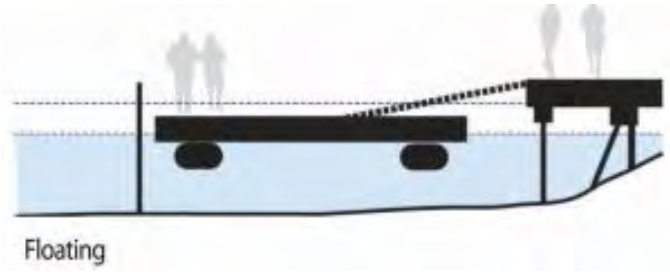
❸ Outdoor activity space
❹ Platform
❺ Playground
❻ Sports field
❼ Forest exploration

Daalhuizen_Landscape facilty_Platform to play in the water

The detailed landscape facility I chose is a platform over the pond. It works as a path, linking the mansion and the public space. On the other hand, it is an interesting place for children playing the water and have rest over the water.

The structure of it is on the upper right corner. It is floating wooden platform, fixed by hinge to tackle the high water level. The wooden materials of platform and benchs is from the trees which are recycled in the park.

Structure



Daalhuizen_Landscape facilty_Interface improvement

A. With neighbourhood

The existing forest is inaccessible for the public by fences.

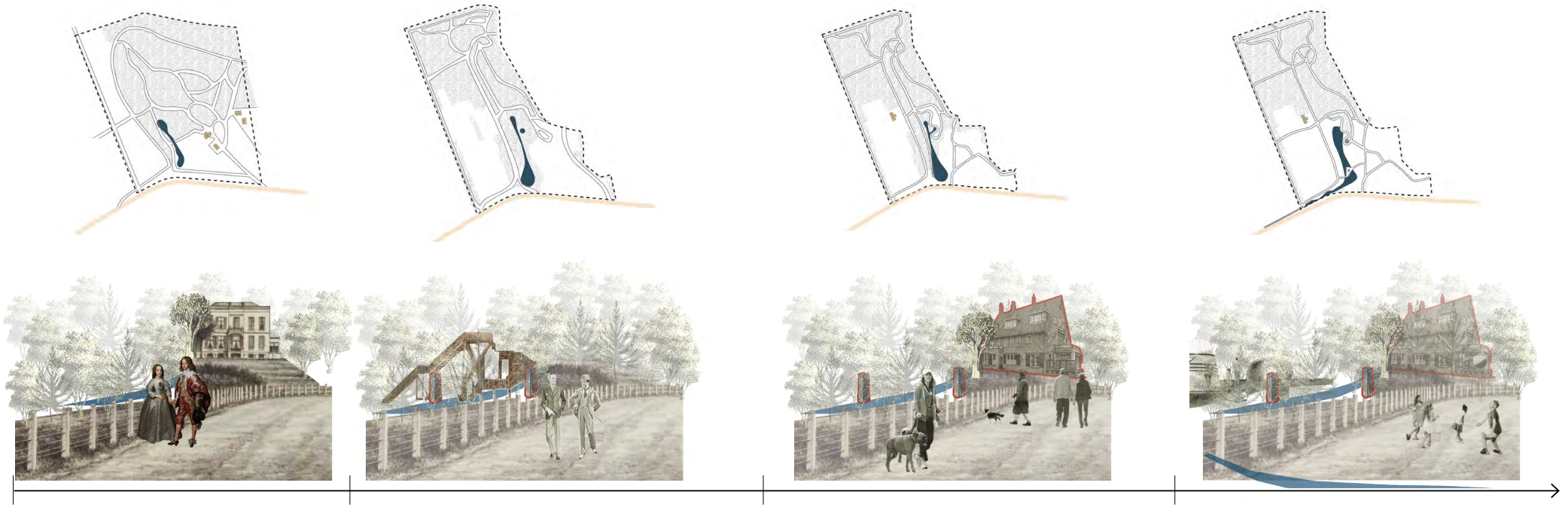
The improvement might be quite easy, to remove the fences.

B. Entrance

There are less entrances into the park.

More entrances with obvious logo will be introduced, greeting the public and neighbour.

Daalhuizen_How the historic elements presented



early stage:
AS PRIVATE ESTATE

when property changed and open to public partly:

now:
HALF PRIVATE, HALF OPEN

proposed:
COMPLETELY OPEN

USE VALUE

AGE VALUE

AESTHETICAL VALUE

Historical elements

Historical water

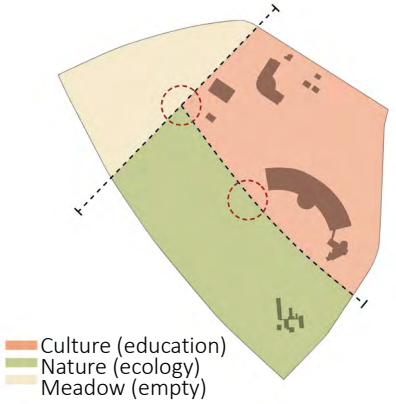
Historical trees

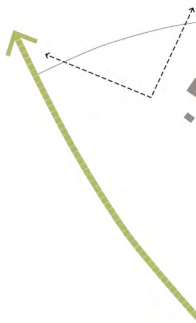
Larenstein_Structure and plan

Zoning

Connection with urb

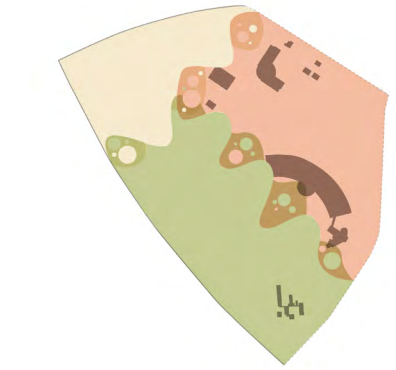
Now

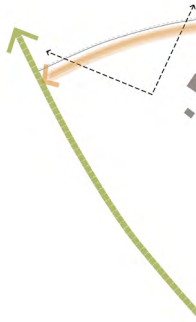




Integrate the zones and interact each other

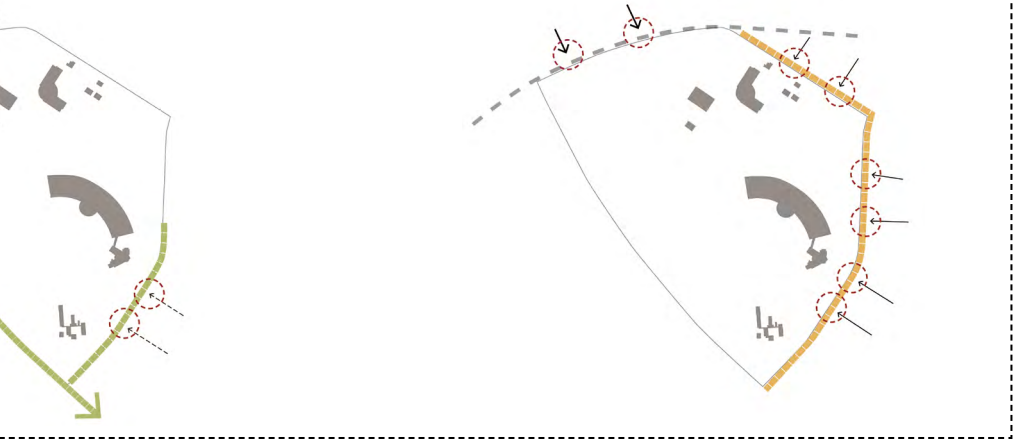
Eliminate the barrier ar
communication with th
shape dynamic-scape a





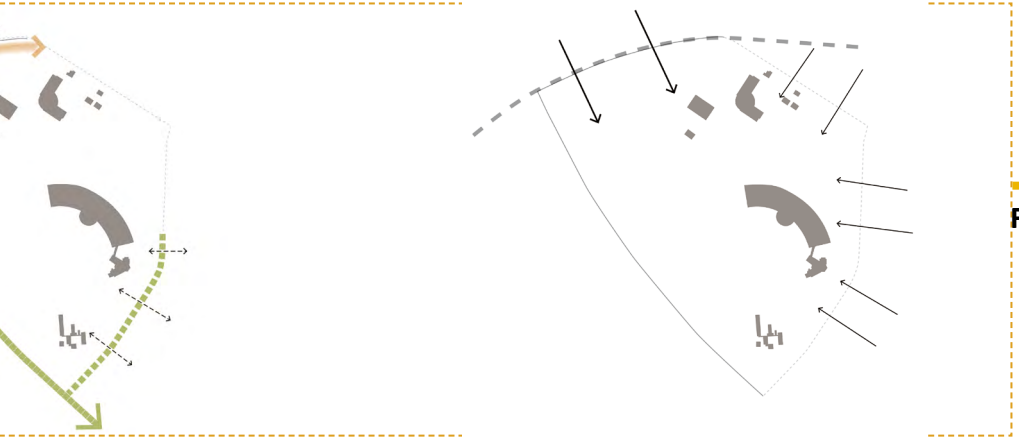
1 Church
2 VHL
3 Ecological forest
4 Dance studio
5 Parking lot
6 Training school

pan context



nd reconnect the visual
e neigbours, and
long the railway track

Connection with the neighbour to be more accessible and improve the accessibility in the local scale



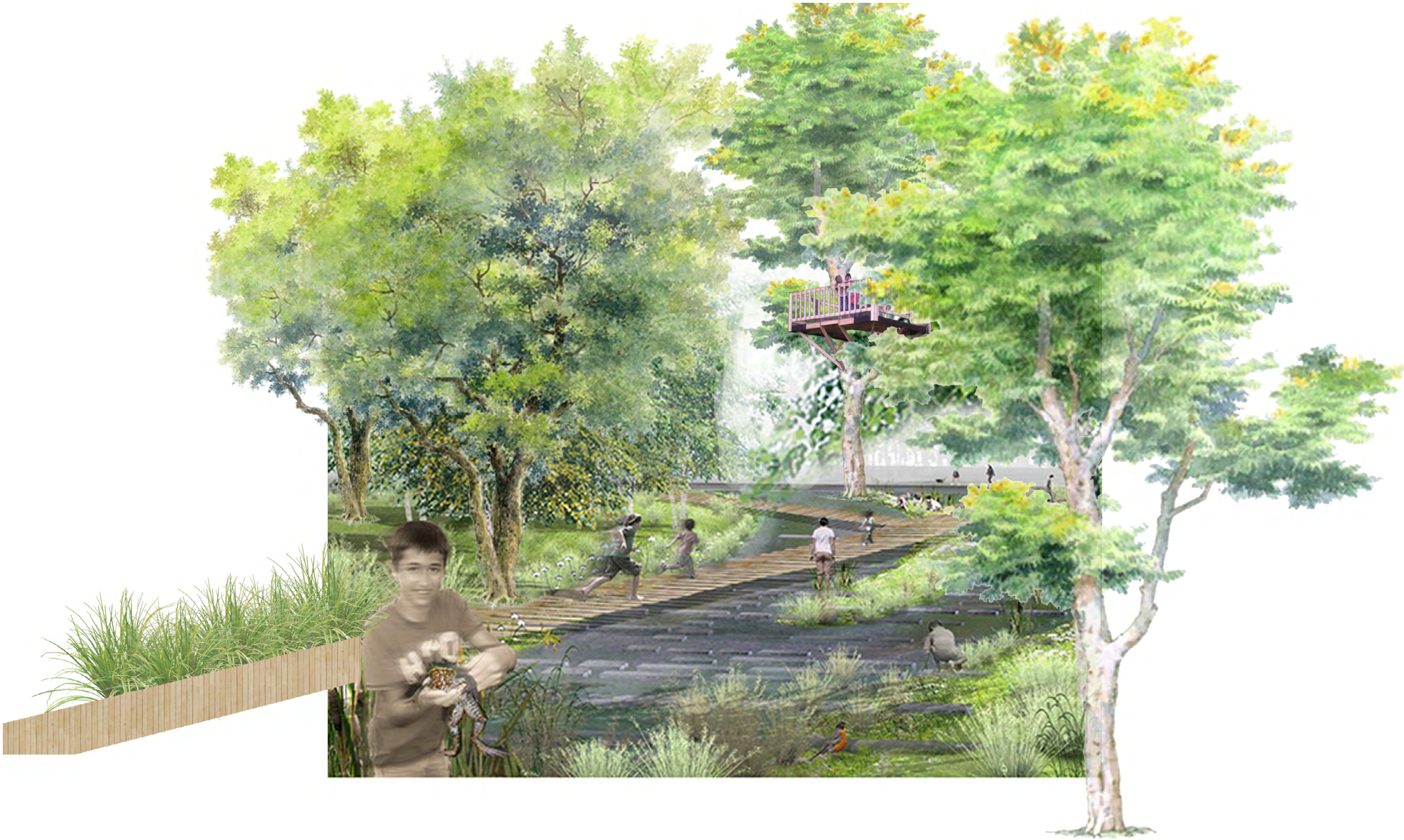
Future

7 Outdoor stage
8 Shrub garden
9 Orchard
10 Food forest
11 Case of wetland
12 Ecology exhibition center

Larenstein_Landscape facilty_Wetland as Eco-paradise

The detailed landscape facility I chose is a wetland. As mentioned before, one of the main problems in Larestein is less attention to the ecology environment from the public. In my vision, the importance of ecological value will be emphasized. One of the approach is to add more ecological landscape facilities. Here, I take the wetland as an example.

The existing condition is good enough. What I have done is intervention of a floating eco-island some simple wooden pavement. An observation tree-house will be built up hidden in the forest.



Larenstein_Landscape facilty_Interface improvement

A. With neighbourhood

The similar problem as Daalhuizen, the eco-forest is inacessible.

↓

One of the approaches to keep the border is to replace the hard fence by soft hedge

B. As buffer zone

The existing buffer zone between the highway and Larenstein is not enough and monotonous.

↓

My idea is to have more colorful trees here to block the views, also to create a speedscape for the vehicle.

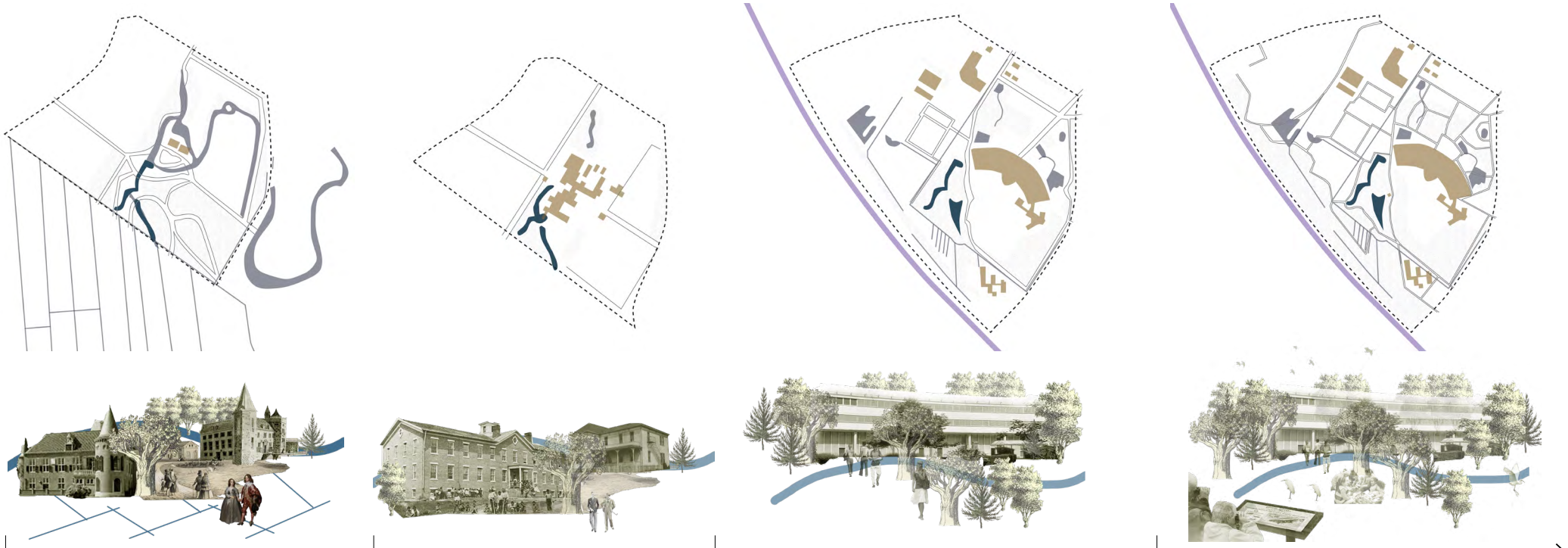
C. Railway track facade

It is quite boring when one sits on the train passing here.

↓

The facade could be more interesting and dynamic, with different seanoal trees and steam.

Larenstein_How the historic elements presented



early stage:
AS PRIVATE ESTATE

when function changed:
BOARDING SCHOOL

now:
AGRICULTURE SCHOOL AND BIOTYPES

proposed:
ARGICULTURE SCOOL AND ECOLOGICAL PARK

USE VALUE

AGE VALUE

NEWNESS VALUE

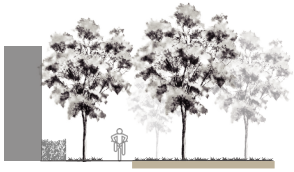
Historical elements

Historical water

6.4 Summary of the toolbox

Broken spatial continuity

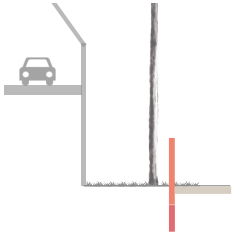
Remove(if possible)



Hedge

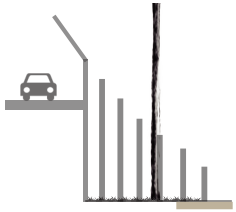
Dense green gradient

Not effective buffer

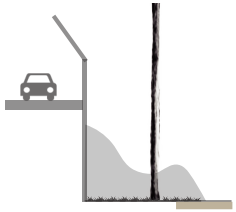


Climbing plants and gradient

Construction

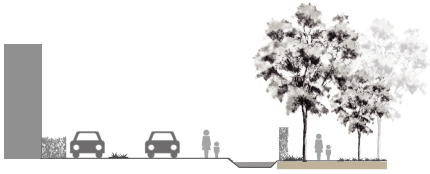


Relief

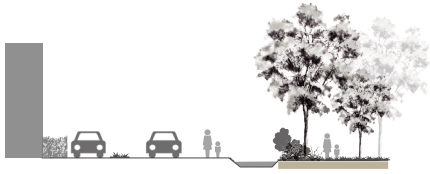


Hard interface

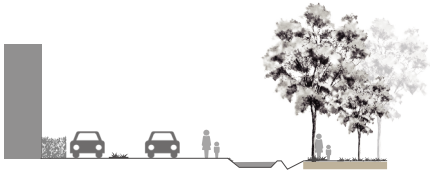
Remove(if possible)



Dense green gradient

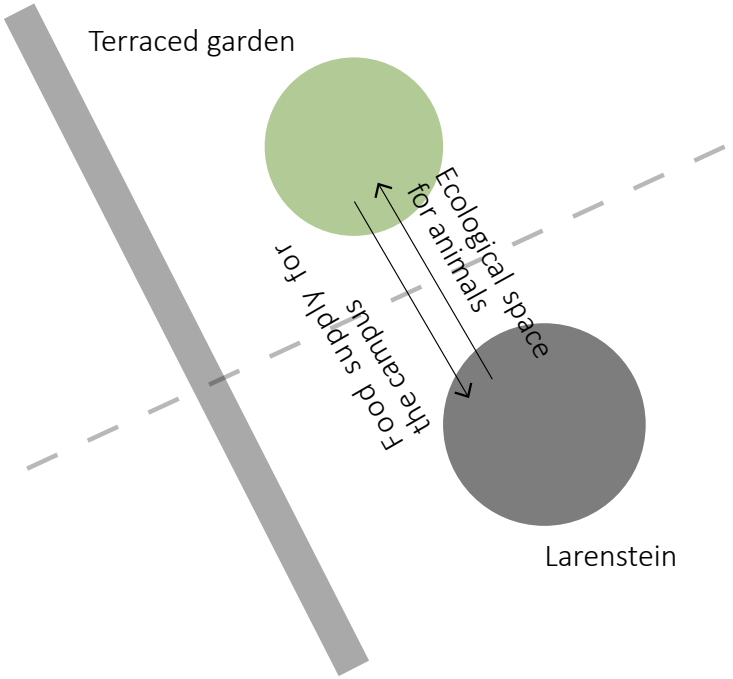


Ha-ha wall



6.5 Extra terraced garden

The reason for a terraced garden



As proposed in the vision of the highway, the green structure will be realized by different types of landscapes. Terraced garden is a good choice between the cluster. The reasons is below.

First of all, as the intersection of three estate, it should respond to everyone. For instance, the atmosphere aspect, terraced garden is a place with cultural elements (agricultural exhibition) and natural elements (all kinds of crops).

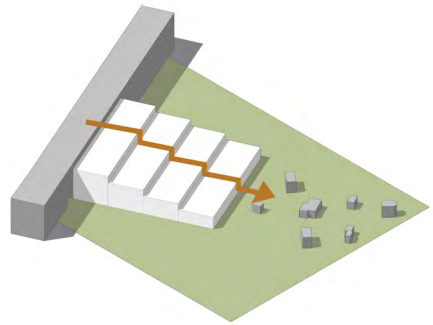
Secondly, there is a large benefit as a terraced garden like the diagram showing. It could supply food for campus. In turn, some creatures rely on the ecological corridor of the highway. Garden would be one of the biotopes.

Last but not least, as for reformation of the terraced garden, it eliminates the height difference of the highway. And on the other hand, it is quite convenient by elevated path crossing the railtrack.

Reformation process and plans

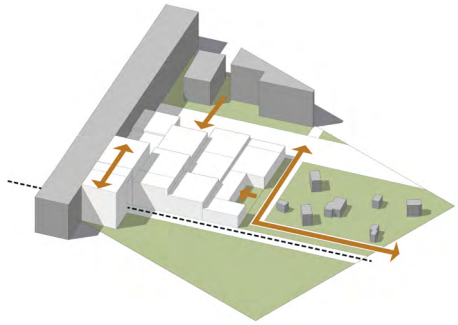
Present

Step 1



Lower the height from the highway to the ground

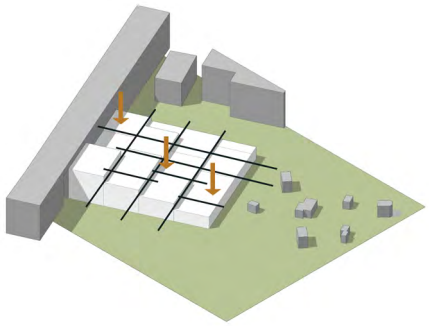
Step 3



Connect with different directions, to the neighbours, to Larenstein

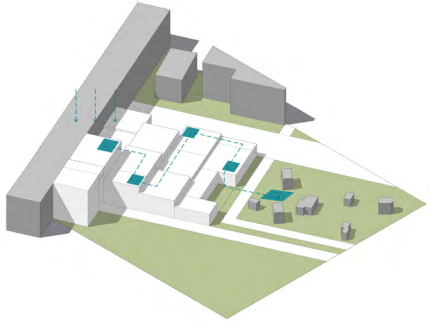
Future

Step 2



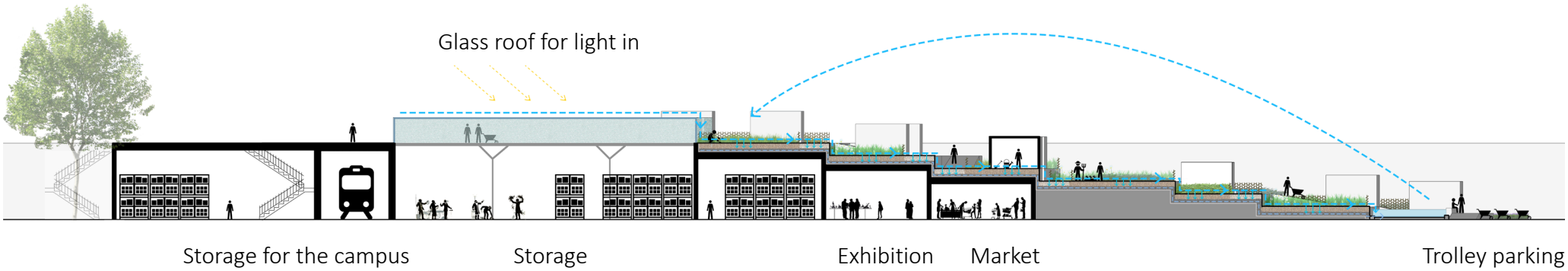
Cut into piece in order to coherent with surrounding patterns.

Step 4



Set the ponds for water recycle.

Energy self-sufficient section



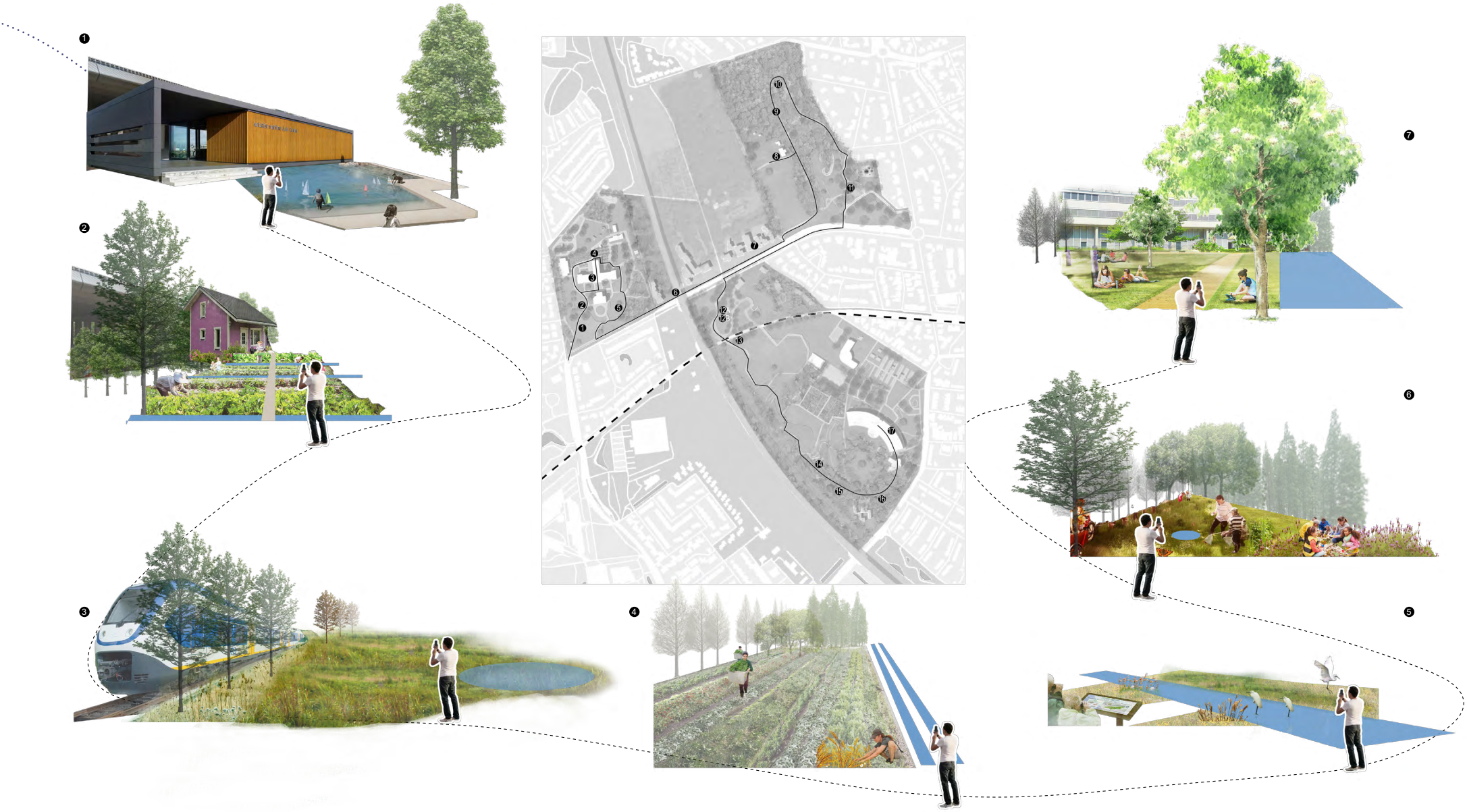
The terraced garden can be divided as two, inside and outside.

Outside space is field for crop planting and close to the street, some flowers. And at the entrance of the garden, there are two small trolley parking lot. The slope is for the trolley to transport the crops as well. Each small garden has a small house for the owner to put their tools.

Inside space is room underneath the terrace and each function is displayed above.

As for energy self-contained, it means that the garden could collect the rain water by the ponds on each stage and from the glass roof. After using for irrigation, water flows into the pond for storage. When there is dry, water can be pumped up to the terraced garden for irrigation. The pump is maintained by solar energy. And the light in the room is also from solar.

6.6 Landscape tour in the cluster


1
2
3
4
5
6
7

7 REFLECTION

Reflection on the topic of the Flowscapes studio and to the lab

As expounded in graduation guide of landscape architecture 2019-2020, Flowscape discusses ‘infrastructure as landscape’ and ‘landscape as infrastructure’ on ‘extremely large and very small interventions’. My graduation project, ‘From isolation to integration _Transforming three estates into an urban landscape’ exactly responds to that. In the whole process, the sequence of multiple scales is from the large regional scale, the local cluster scale, to the estate scale and the detailed landscape components scale. In the strategy section, ‘infrastructure as landscape’ refers to redeveloping the highway as a green landscape structure, which bridges Veluwe, the flooding plain and Ijssel river. And, besides highlighting the landscape heritage in three estates, their functionalities of service, like cultural, educational and leisure are also enhanced. That is how ‘transforming as urban landscape’ reflecting in ‘landscape as infrastructure’.

As for our lab, ‘designing resilient heritage landscape _Garden of Gelderland’, it requires to take sustainable spatial development and spatial design strategies for future-proof estate landscape into account. It would involve climate change, spatial fragmentation, tourism and recreational co-use. Coincidentally, my project is concerned about last two challenges. In responding to fragmented space in my site caused by urbanization, the strategy is to repair that by green and blue structures, coherent atmosphere and transitional space and facilities between the estates and urban environment. The balance between the tourism and recreational is kept by divided routes and service, intervention of new facilities and guidance of sight and space. What’s more, three individual landscape facilities in each estate is to repair the broken surface water system, and on the other hand, as an optional drainage approach to tackle the extreme water level in the future.

A description of the societal relevance

First of all, as mentioned in the theory, heritage (landscape) is valuable to all the human beings with commemorative values and present-day values. It reminds us of the passage of time, the natural process of death, the recorded human past and even the conscious moment. Or, it serves a useful purpose with aesthetics. Regardless of which value, it is closely related to our society.

And there are more than 2000 estates reserved in Netherlands, of which 18% are in Gelderland. However, with time going by, the surrounding environment of the estates has changed and new challenges on the estates has happened, including climate change threat, spatial fragmentation and increasing tourism. Therefore we, landscape architects, should take the responsibility to seek the sustainable solutions. The three estates in my site is one of the cases that faced with so many typical spatial problems. The strategies that I proposed are not only targeted at my site but feasible and widely applicable which can be generalized on other heritages under the threat of urbanization.

A reflection on the strong and weak sides of the chosen methodology

As far as I'm concerned, the methodology I have undertaken most in the process include research before design and research on design.

Research before design, I would say as the opposite of research for design, is to do the overall research as much as possible on the site, rather than research on some specific aspects. By doing that, the site could be understood more comprehensively from social, cultural, economic, ecological and political aspects. And also because of that, I would find different problems in the site and choose an interesting one. The weakness is time-consuming. And because of too much information, it is sometimes hard to select the most relevant.

Research on design is about case study. By seeking the most appropriate cases, practical principles that fits in my site would be summarized. Case study also gives me inspirations.

Last but not least, the most weak sides of me, or of the whole project might be too much attention on functionality or programs at beginning as I am deeply influenced by urbanism. I would appreciate my mentors who pointed out the right way of what landscape architects should do.

A discussion of possible problems that occurred during data collection

There are lots of problems during data collection, including precise percentage of users in each estate, the landscape types like soil type in the building-up area, the history of Larenstein and data of middle vacant area.

First of all, it is quite hard to realize the ratio of the users. What I did is that when I visited the site, I counted the people in the site and observed a little to figure out their roles. For instance, when I visited Bronbeek, I recorded how many staff, elderly people and visitors here, in order to estimate the percentage.

Secondly, we could see the landscape types in no-build-up area. The landscape types, like top-soil condition, in build-up area, could be inferred from the area next to it. And sometimes, it is better to check by tracing landscape formation process.

As for Larenstein, because there is nothing about past heritage, it is difficult to collect worthy data. Also the middle part, it is also hard to find any valuable information. What I was trying is to write the emails to the contact persons or relevant staff, like the contact information on the brand. Luckily, they are nice and gave me some useful links.

Difficulties to visit the site, digital mentoring and other issues related to the Corona-crisis

As for me, the main impact that Coronavirus took are three issues. The first one is inaccessible to the library. I have to admit that I am the person that only can focus on when in the right study place. No library is such a huge obstacle for me. And I really spent a long time adapting myself to study at home. And fortunately, I made it. Second thing is that communication with mentors are quite uneasy especially in the designing process. I do not like digital mentoring because by screen, it is sometimes not clear or easy ongoing when we need more detailed and very precise guidance on designing. The third one is that I could not visit the site for the third time when I had to collect some details because that was the time when coronavirus was spreading in Netherlands. I had to review by photos.

Last but not least, I often felt bothered and stressed during quarantine especially doing Q4 and graduation at the same time. My mentors encouraged me a lot, to go out with friends, to communicate with my family, to leave some free time for leisure. They affirmed my ideas and really gave my lots of freedom in exploring this amazing field. I am really grateful to them and I would say, what they encouraged will stay with me, a not very confident girl sometimes, throughout her life.