Integrated Mobility

Improve the Accessibility to Military Heritage in Soesterberg under the Forest Context

Integrated Heritage Landscapes with Mobility

ImrAccessibility to Military Heritage in Soesterberg under the Forest Context

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Msc Graduation thesis report of p5
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Landscape Architecture Track
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My motivation of this project is to explore more about the national heritage and the way to better develop these precious memories. They generated from the past, exist at the moment and need cherish in future. While the urban expansion trend worldwide cannot be neglected over the years, it is getting urgent to think about the role of heritage in the process of contemporary urban development.

Photo taken by Y.L

CONTENT

4. DESIGN STRATEGY

5. DESIGN IMPLEMENTATION

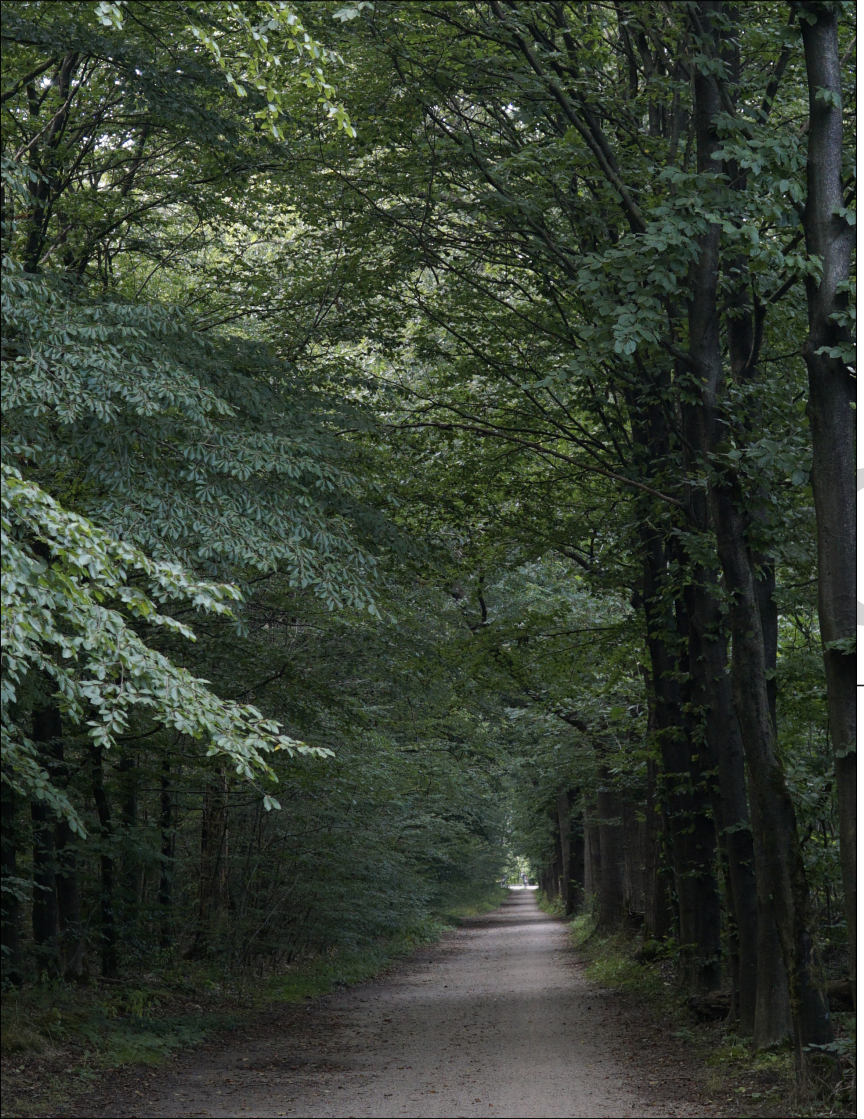
6. CONCLUSION & REFLECTION

APPENDIX

‘Je kunt een kind wel uit de oorlog halen, maar hoe haal je een oorlog uit een kind?’

"You can take a child out of a war, but how do you take a war out of a child?"

source: https://www.warchild.nl/onze-visie/



01

INTRODUCTION

This chapter holds a preface and gives a general overview of the site. This helps to understand what are the essentials of the site and what kinds of elements want to be further diagnosed in this project. The rich military heritage, diverse forest located in unique topography, and the complicated road system in between Utrecht and Amersfoort are presented from my perspectives to reveal the problems. This chapter also gives clear orientation to chapter 3 about research and analysis, setting the base of 3 main object layers and 3 research scales.

Photo taken by Y.L

1.1 Topics orientation

MILITARY HERITAGE

The military history in the Netherlands can date back to the Spanish times. This unique culture not only represents political conflict, but also shows the lives of the past. People's activities during the wars modified the lands and landscape in an intentional way.

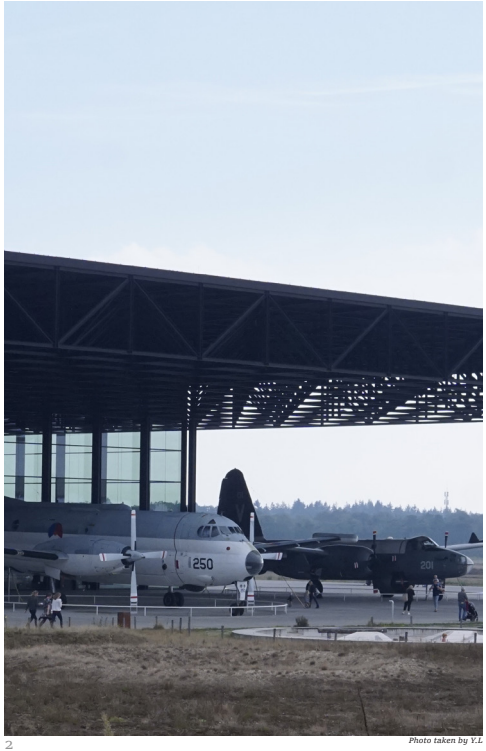


Photo taken by Y.L

FOREST LANDSCAPE

Forests, as the most widespread landscape context in Europe, the Dutch forest knows a long history of human influence. This influence is visible today, for example, by the dominance of Scots pine *(Pinus sylvestris L.)* as a result of large afforestation prorgammes initiated around 1900.

Photo taken by Y.L

URBANIZATION

The landscape of the Netherlands is a man-made landscape. Randstad and its wings play an unreplaceable role in the whole Europe's metropolitan framework. Urban fringes are under the pressure of constant urban expansion and this results in rural landscape fragmentation.

Photo taken by Y.L

OBJECT LAYERS

To better understand these 3 topics, it is more clear to split the objects by seperate layers. The form to manifest the topic varies: the mobility networks shows the urban expansion, the ecological corridors show landscape distribution and the military innundations with defense lines represents military heritage sites.

As it is shown in the axon diagram, the most overlapping area in different topics gives me the reason to zoom in to the regional scale. This scale focuses on the suburban area between Utrecht and Amersfoort. Putting the heritage landscape in the first place, intensive clustered mobility networks conflict with heritage preservations. So the regional scale is more about detailed conflicts and more specific heritage sites. Meanwhile, although the soils in the Netherlands is diverse, the soil here is all sand and there is no water course, which makes the land cover monoculture in forest.

Overall, the object layers logic goes along in the regional scale analysis. It is consistent in all 3 scales.

map drew by author
Data based on:
https://rce.webgispublisher.nl/Viewer.aspx?map=Paleogeografische kaarten
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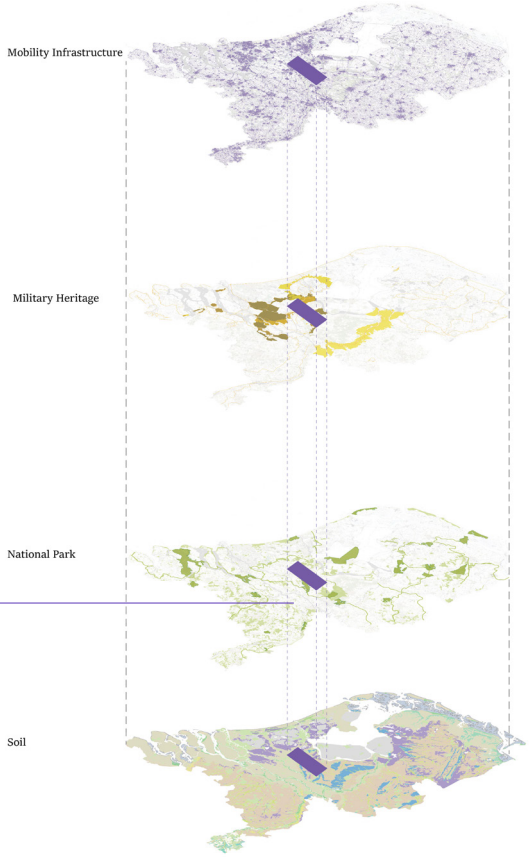
google earth satellite image of the regional scale



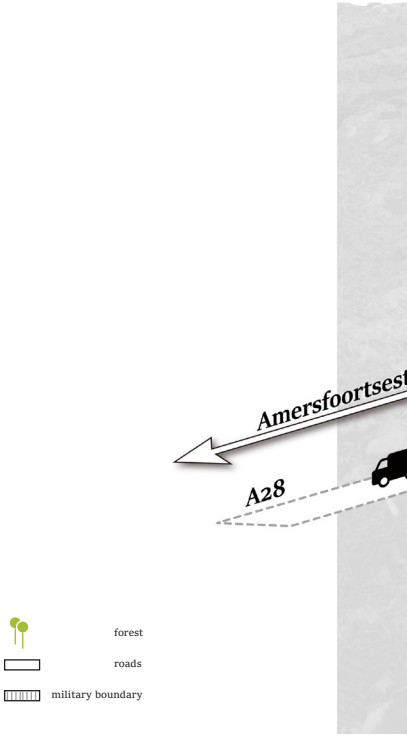
1.2 Fieldwork

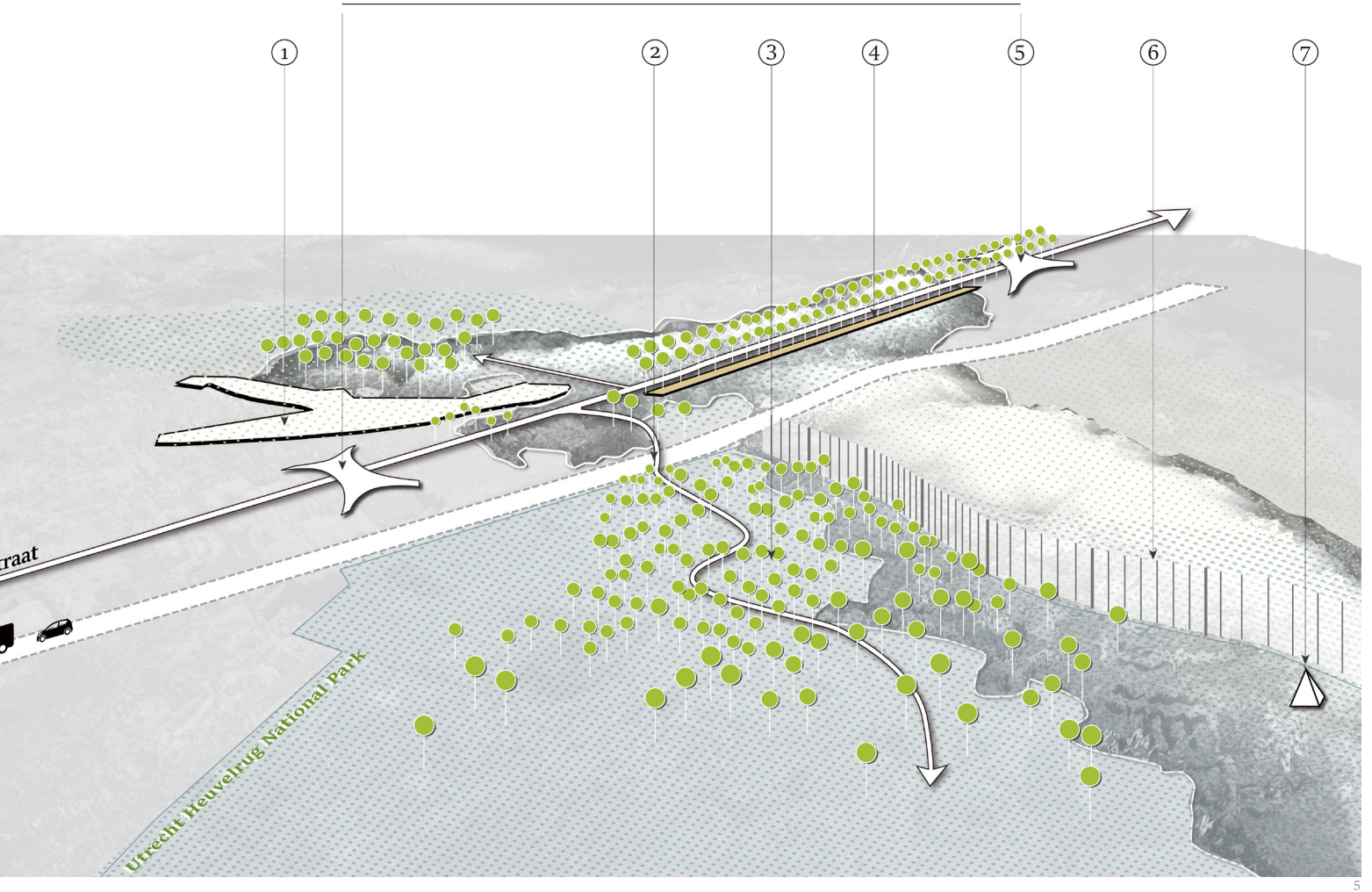
The field work conclusion are 7 impression nodes that represent the identity of the sites.

The most dominant heritage sites is the Soesterberg Airbase with complete buildings of national military museum and runway patterns of the NATO airbase. (No. 1) The pyramid(No.7) hidden in the dry forest.

While the road system is diverse and composed with different types of mobility lines, including railway, highway(No.2), ecoduct(No.5) and the long straight street Amersfoortsestraat(No.4)

The dry forest covers most of the suburban areas between Utrecht and Amersfoort. And the path in the forest are most twisted and hidden.(No.3)



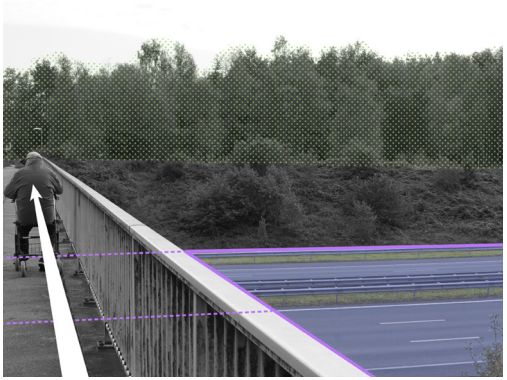

1
2
3
4
5
6
7
traat
Utrecht Heuvelrug National Park

1.2 Fieldwork

1 Soesterberg National Military Museum

The space surrounding the museum is wide heathlands with scattered programs in sandy environment.

2 A28 Highway

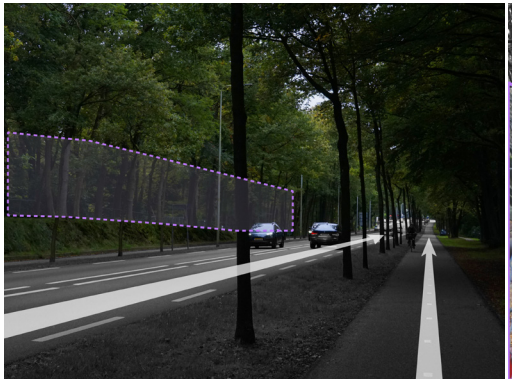


Pedestrians and bikers can pass through the highway by several flyovers. Trees function as sound buffers on both sides of the highway.

3 Utrecht Heuvelrug National Park

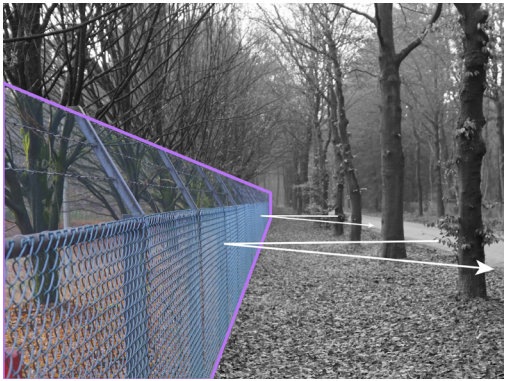
The national park is the largest domain in the site. When cycling in the park, narrow footpaths with tall trees covered can be seen from time to time.

4 Estates & Amersfoortsestraat



The Amersfoortsestraat is the oldest road connecting Utrecht and Amersfoort. Historic estates as well as symmetric tree lanes forms the landscape of this road.

6 Military training base boundaries



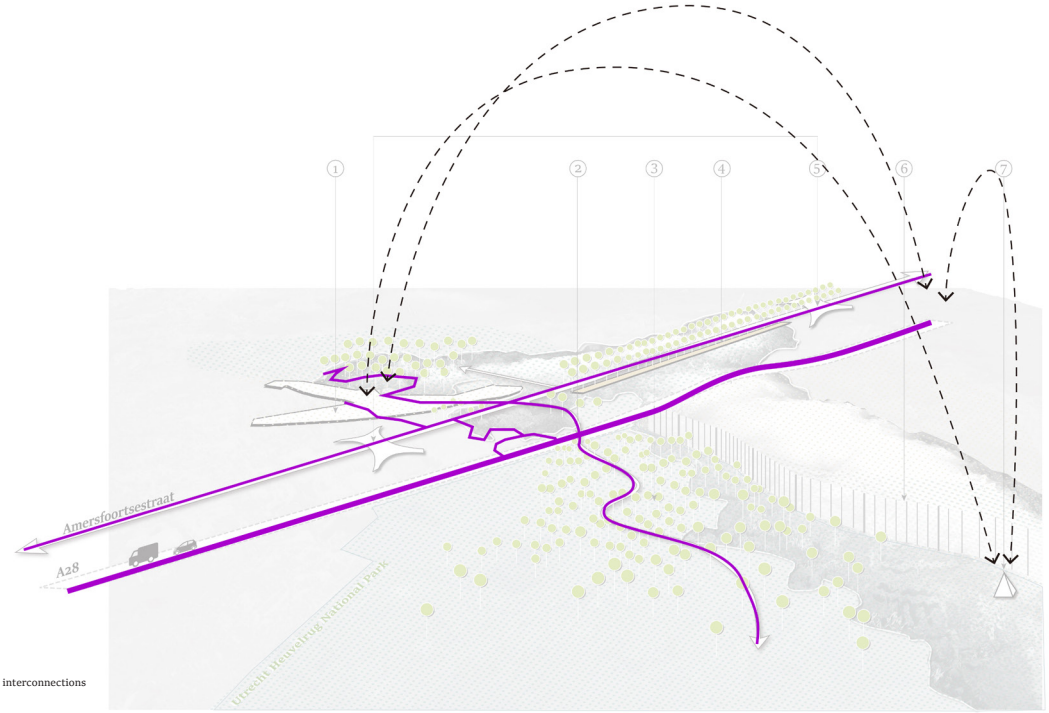
There are still some military training base still in use in this area. Fences, walls and warning signs can be seen along the roads and block the connections.

7 Pyramid

This pyramid is located in the centre of the forest but does not enjoy much fame and tourists. When climbing on the top, you can have a whole view of the forest and even that of the cities.

1.3 Problem Statement

During the site visit, the most prominent problem is the inconsistent experience between different heritage sites. The choice of the road is always disrupted due to the complexity of road types.

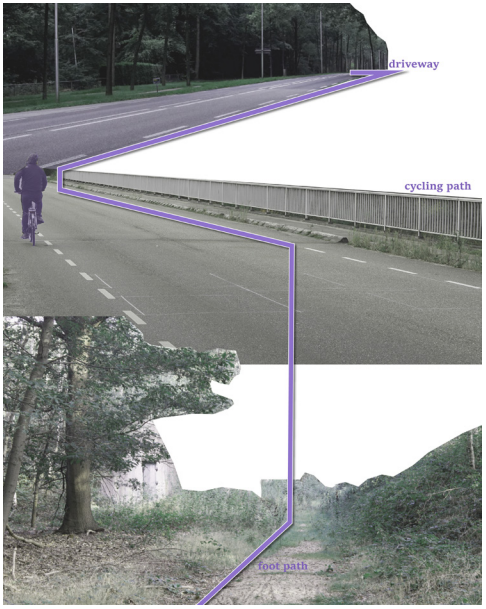


FRAGMENTED MILITARY SITES

The fragmentation of military sites manifests in their scales. Large domains are airbase or military training sites that covers the whole heathlands, medium domains are mobilization complexes hidden under the hills while small domains are just scattered along the cycling paths. They don't have logical connections and directory instructions in between.

FRAGMENTED ROAD SYSTEMS

Although the richness of mobility is high, but the system doesn't work very well. It is hard for people to find the way from one site to another site due to the hiddenness of the sites. The diversity of roads worsen the situation and need much clearer hierarchy to better organize them.



MONOCULTURAL FOREST

Since the forest was planted out of wood production reasons, the tree species in this area is quite singular with pine and spruce trees. This makes forest vulnerable when facing diseases and climate changes.

1.3 Problem Statement

Fragmented military sites

large domain

Military training base
National Military Museum
Kamp Zeist

medium domain

Military mobilization complexes hidden under the hills

small domain

Docks
Firewater ponds

phots taken by author

The hierarchy of the military heritage sites is not clear now. Multi-scalar distributions make the perception of the heritage inconsistent.

source: base map data from mapbox, data from https://www.atlasleefomgeving.nl/kaarten?config=3ef897de-127f-471a-959b-93b7597de188&gm-b=1544180834512%2Ctrue%2C1%3B1553436968685%2Ctrue%2C0.8%3B&gm-x=150000&gm-y=455000&gm-z=3

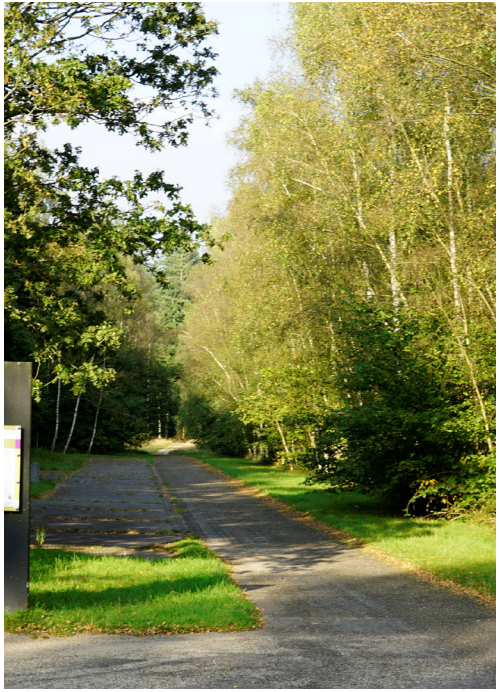
1.3 Problem Statement

Fragmented road systems

car lanes

Amersfoortsestraat, straight car lanes with tree-covered cycling paths

cycling paths



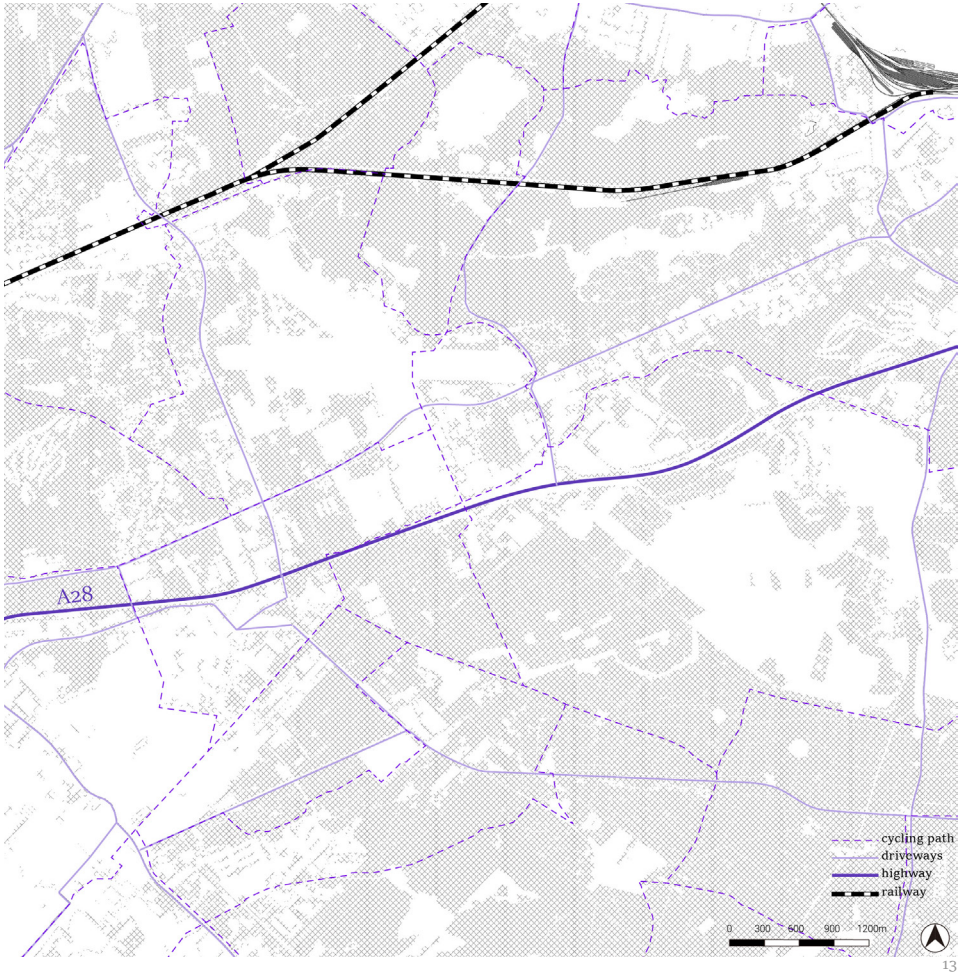
Cycling paths in the woods

foot paths

Hidden and shapeless walking path in the woods

phots taken by author

The roadmap shows different kinds of mobility lines across this area between the pattern of forest and urban areas. Some of these road lines, such as the highway, functions as the boundary of the military training sites.



source: base map data from mapbox, data from OSM

1.3 Problem Statement

The current cultural experience between each heritage sites is disconnected and the physical access logic behind the cultural heritage sites are omitted.

1.4 Research Question

How to improve the accessibility , understandability and presentation of the military heritage in a forest environment?

What is the natural approach to diversify the monoculture forest?

What is the definition of heritage accessibility?

How to increase the accessibility in different mobility systems?

How can people understand the story behind by perceiving and involving in the landscape?

What are the principles of presenting a heritage landscape?

1.5 Relevance

Scientific relevance

The urbanization trend in Randstad is typical in every metropolitan cluster in the world. And the expansion of urban fringe threats might be the future trend of urbanization. What's more, the development of urban infrastructures and the preservation of rural landscapes conflicts with each other. The evalation of the system and the coresponding approaches to strike a balance between the two intentions could be the reference for other cities development mode.

Forestation is not only about planting more trees and getting the 'green' back nowadays. Sustainability, diversity and planning -based system of forest are the future focus, which is related to other subjects such as urban planning and ecology study.

Military heritage is an important composition of culture heritage and reflects the human philosophy in turbulent times. The logic behind the heritage reveals the way people made use of the land, and that instructs on future development of the area.

Social relevance

Some historic roads are not so integrated in the regional scale but are beneficial to residents in the local scale. The diverse road systems and transportation modes can be further innovated and developed in the future to meet local commute and tourists' experiential needs.

Forestation involves not only human, but more importantly, animals. They are silent stakeholders of the landscape and set limits of landscape development. The design with forestation could change and diversify the space of their living environment. In addition, the interaction between human and animals can be further strengthened.

Amersfoortsestraat itself is not only a historic roads, but also represent culturally significant infrastructures functionally related to the roads. The estates, tree lanes and overall planning structures are all the results of the construction of this road. Integration of these elements involves community cognition of their familiar landscapes and rejuvenated heritage can boost culture recognition and appreciation.

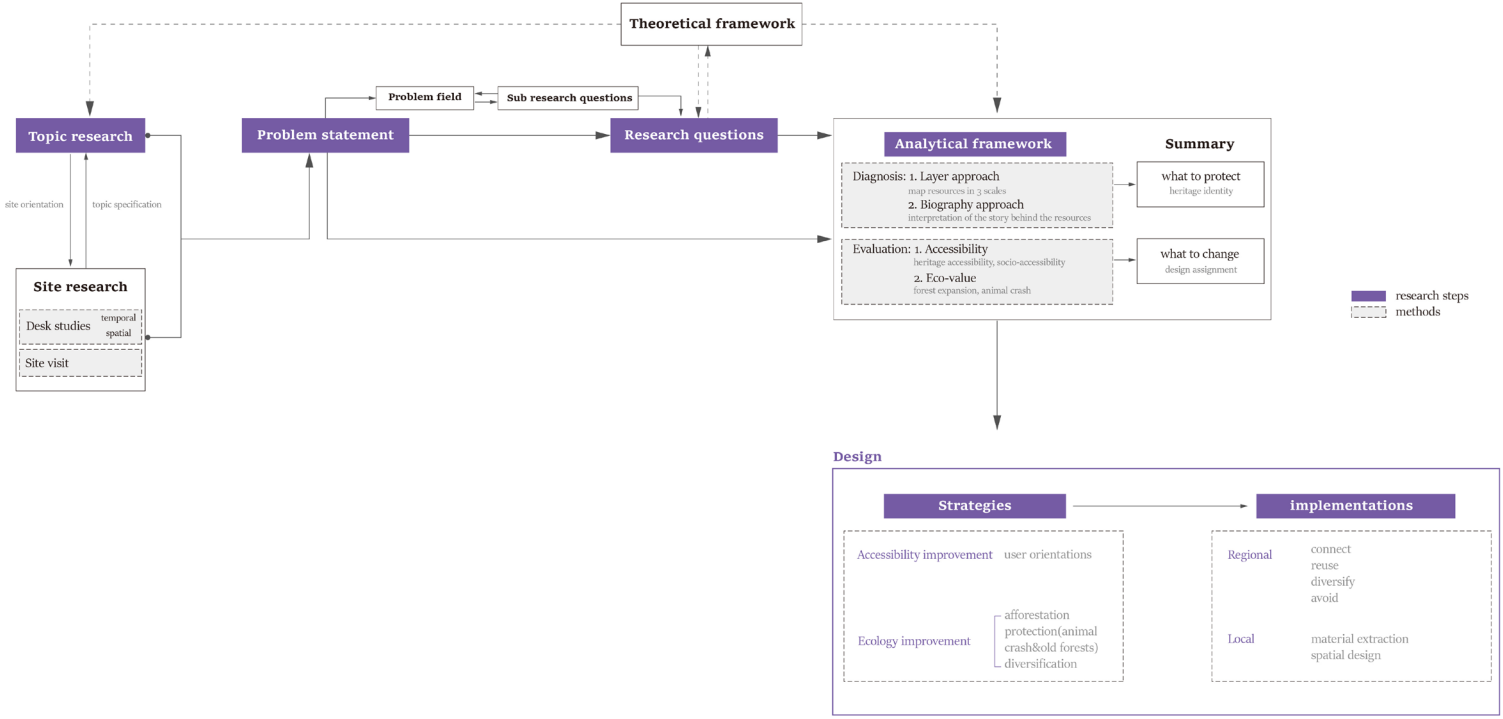
02

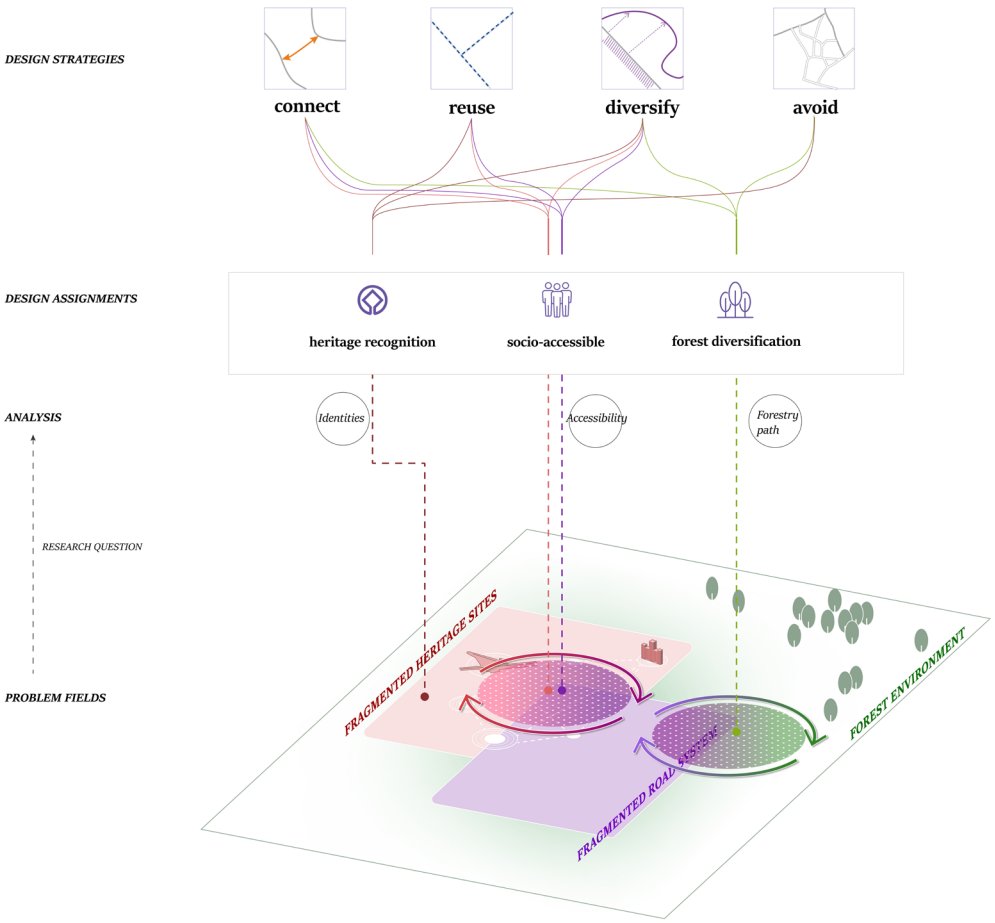
METHODOLOGY

Following the first chapter of the problem statement and research question, this chapter further explains how the theories are organized. First, the whole research plan and the specific steps in the whole process is presented. Next, the theories and supporting literatures are introduced, which is accompanied with personal understandings. Last, analytical framework responding to problem statement is generated. This part introduces the site understanding structures as well as detailed analysis that related to design explorations.

The main method used is landscape biography and layered approach. Subsequently with both spatial and temporal recognition in different scales and topics, the analysis part gives the answer to 'what' and 'why'.

2.1 Research framework




DESIGN STRATEGIES
connect
reuse
diversify
avoid
DESIGN ASSIGNMENTS
heritage recognition
socio-accessible
forest diversification
ANALYSIS
Identities
Accessibility
Forestry path
RESEARCH QUESTION
PROBLEM FIELDS
FRAGMENTED HERITAGE SITES
FRAGMENTED ROAD ACCESS
FOREST ENVIRONMENT

2.2 Theoretical Framework

CULTURAL HERITAGE

Landscape becomes a form of codification of history itself, seen from the viewpoints of personal expression and experience.

Natural heritage and cultural heritage

Cultural heritage is the theory base of the heritage landscape study. Heritage has multiple meanings. The general classification could be natural and cultural. We tend to consider landscape as natural one and man-made heritage as cultural one. But with the influence of human interventions, there is barely pure wildness in human's living environment. Most cultural heritage created by human because of the living environment from which they were derived. A good example to explain this is the Natura 2000 network in EU with over 27000 sites spread through Europe(Commission, E. and D.-G. f. Environment (2018). Europe's cultural and natural heritage in Natura 2000, Publications Office.). These sites are usually very accessible to form an integral part of our living rural landscape in which local communities continue to live and work. Since the cultural and natural heritage face similar threats facing urban expansion and climate change, the more overlaps there are, the more opportunities there will be for joining forces. There are currently 43 cultural landscape sites on the WHS in the EU, all of which overlap with Natura 2000 sites.

Culturally cognitive landscape

On one hand, from the perspective of human beings, heritage landscapes bear anthropological meanings because it is human who created them. One the other hand, heritage defines landscape's role of the meaning-carrier identity of human history. So understanding the struggles, achievements and accidents behind the curtain helps us find who we are, what position we should take. In this way, landscape as cultural product plays the role of communicating the past and currency.

To well recognize the history behind a landscape, this involves the examination of landscape as seen initially by the viewer and a second landscape which is produced through local practice and which we come to recognize and understand through fieldwork and through ethnographic description and interpretation. (Landscape, Memory and History, Stewart, Pamela J.)

The 'subjective universe'(Farina, 2010) is created because the individual connection with the objectives are unique and singular. For instance, the way we perceive a flower varies from person to person. Some pay more attention to its color and make it dye while others like its smell. The way that local people understand the land must be different from others and the adaptation process is the way they make use of the land. So that could be an intervention starting point of landscape architects of how we should perceive and recognize the landscape.

Heritage as sector, factor and vector

The role that heritage plays is gradually transits from logical positivism to constructivism in a changing physical and social context in the Netherlands. (Joks Janssen, Eric Luiten, Hans Renes & Eva Stegmeijer (2017)) Heritage as vector for socio-related issues that the direction of spatial projects is defined by heritage. Heritage as sector since it is the destination of routing, and the factor means it brings diversity to the experience process. Nowadays, we take heritage as physical base with special meanings but more importantly, it is more integrated with social aspects in Utrecht. As can be seen in the analysis chapter, the road system in-between cities are not so integrated in the regional framework but more useful for local commute. So heritage, in this way, benefit people's daily lives and instructs on future development.

ACCESSIBILITY TO CULTURAL LANDSCAPE

The ways of moving should give the visitor an understanding of the connections between the monuments in time and space.

Road landscape as cultural heritage

Taking road landscape as cultural heritage means focusing on landscape as a whole. Valuable objects and roads function as part of historic road network. If ‘landscape’ is defined as culturally configured nature, then infrastructure may be considered the single most important factor generating it.

Landscape was not merely a collection of objects to be stilled and gathered into a frame, but rather a series of views bound one to the next by a viewer’s motion. Involvement, observation and cognition are vital perceptions in landscape design. In order to activate the potential of the road, harmoniously inserted road adds calue to the landscape. (Grazuleviciute-Vileniske & Matijosaitiene, 2010)

A road is a physical entity, what Gilpin would have called ‘an object’ in a landscape. Whether one follows it or not, a road continues to exist as an entity. Together with other roads, it forms a network. A route is an abstraction: destination-driven, it projects or records the way from A to B. it has a beginning and an end, it presents a series of directions arranged in sequence, and whether it is formulated on paper, in an oral utterance, or in a traveller’s mind, it exists only insofar that it is followed.

Britannia, Ogilby, ‘Itinerary way’ has a nationalistic aim, Originally intended to chart characteristic regional features and identify natural resources, as a collection they became a means to generate a picture of the nation as a whole. Touring the national landscape became a means of getting to know not simply one’s self as an individual, but even more importantly, as a British citizen.

Accessibility of heritage

The accessibility of heritage includes both physical ones as well as intellectual ones. The intellectual can be experienced and expressed by spatial creation. It is associated with provision of cognitive information about cultural heritage that facilitates our appreciation of heritage significance, enables our individual understanding, and reveals an opportunity for own interpretation and insight.

However, challenges come along with the question of 'What provides accessibility to cultural heritage?' Destinations and roads are not enough for the whole system. More innovative interventions generated from personal thinkings might be the initial interventions of overall improvement.

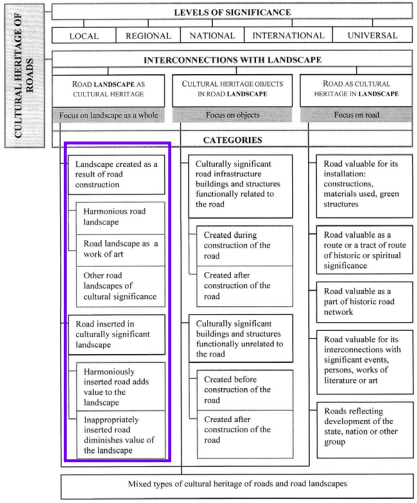


Image source: Cultural Heritage of Roads and Road Landscapes: Classification and Insights on Valuation

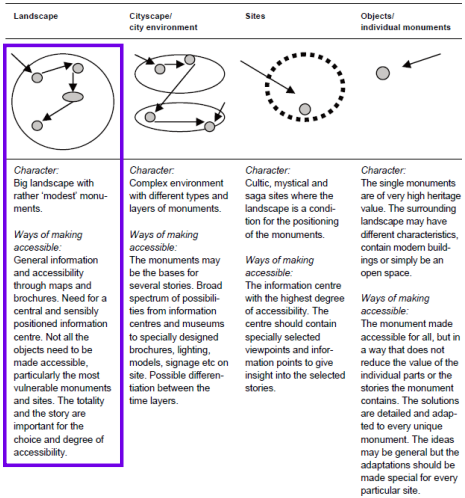


Image source: Accessibility to Cultural Heritage_Nordic Perspectives

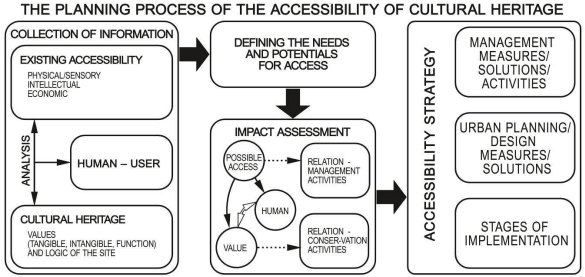


Image source: Planning steps of the accessibility of cultural heritage, Georgieva, Donika. (2020).

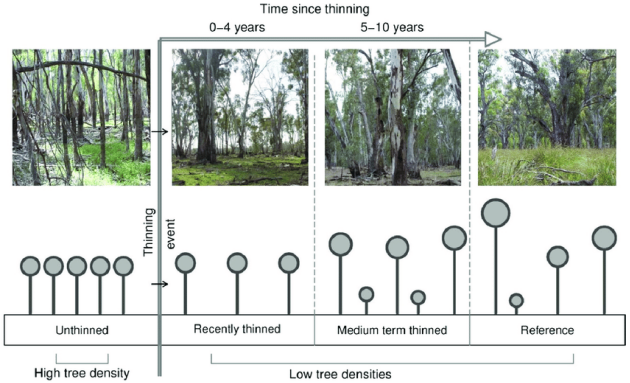
FORESTATION

From monoculture to bio-diversified forest

Developing nutrient-poor, open ecosystems and connecting these systems for exchange and reinforcement of populations of endangered species is the main reason why we need more diversified and sustainable forests. Although there has been government's plan of adding 600000 trees in 2020-2030 in Utrecht, how to diversify them and the specific approaches towards a currently monoculture forest is not sure. The history of wood production results in the poor species numbers of trees. Forests with many trees of the same species are much more vulnerable to pests and diseases. Replacing the coniferous trees with native deciduous forest is a good way.

Forest thinning

Forest thinning not necessarily means merely cutting down, but to spare space for new and young trees. Intentionally thinning the edge between forest and heathlands can help to extend the forest boundaries and encourage stronger ecological connections.



source of the image: https://www.researchgate.net/publication/302915824_Bat_communities_respond_positively_to_large-scale_thinning_of_forest_regrowth/figures?lo=1&utm_source=google&utm_medium=organicNatural heritage and cultural heritage

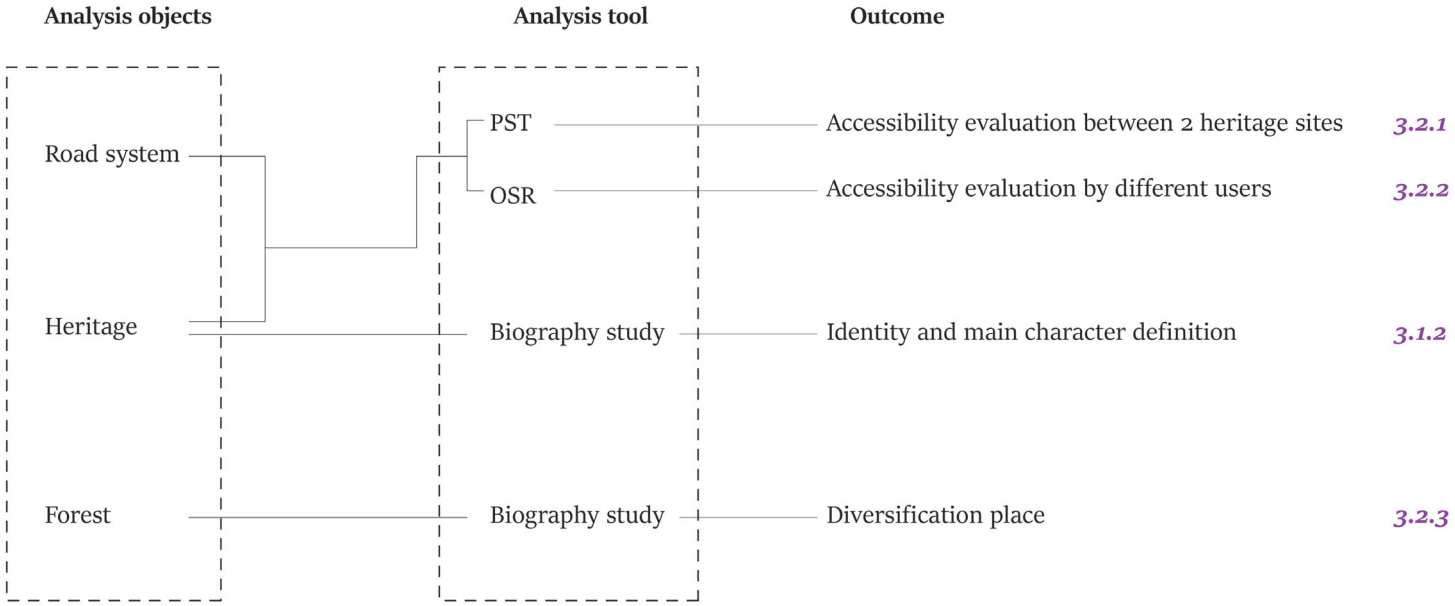
2.3 Analytical Framework

The analysis includes 3 parts.

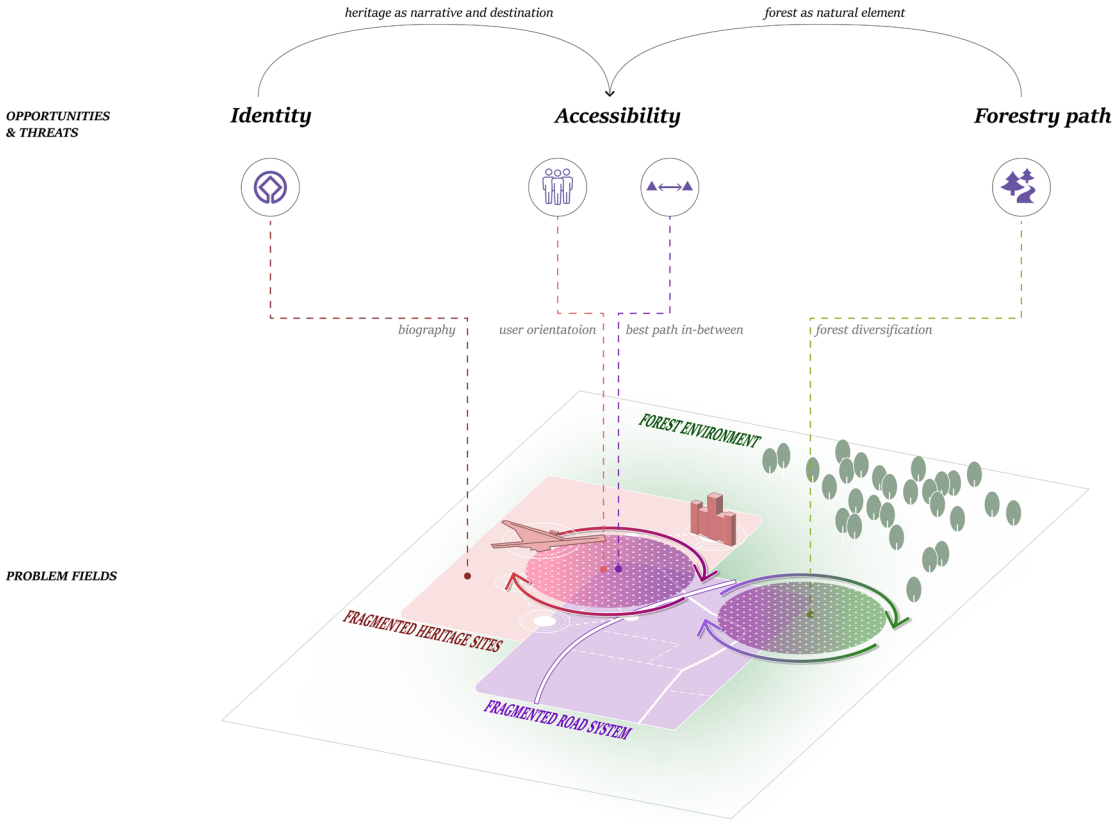
Accessibility includes 2 parts: First is the accessibility between 2 heritage sites, second is from functional city areas to heritage sites.

Heritage identity diagnosis will be carried on by biography study.

Forest evaluation includes historical forest preservation by biography study, animal crash and forest expansions.



From problem fields to analysis diagnosis



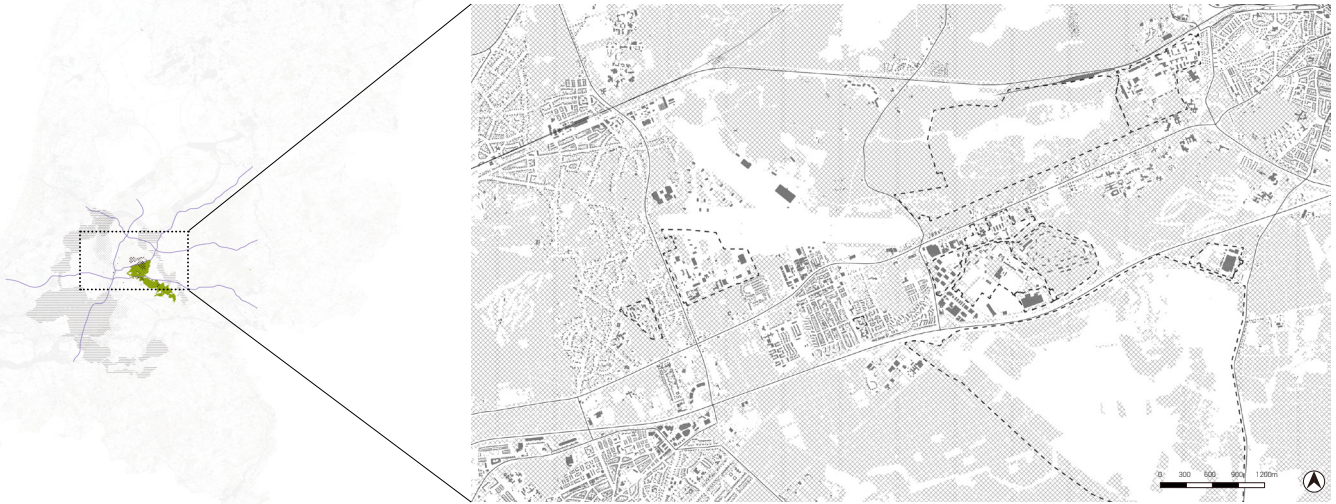
03

ANALYSIS

This chapter is about understand the site from different scales and clarify the opportunities and threats behind the elements layers. This chapter is mainly divided into 3 parts, from diagnosis of the elements by both temporal and spatial analysis, to evaluation of accessibility and richness. The conclusion of all these analysis is a general classification of the road system and military heritage sites. This classification also leads to the design scenarios and the toolbox.

There are many methods and tools applied in this analysis. The main methods are layered approach in 3 different scales. Biograaphy study is to understand the story behind the physical objects.

Besides descriptive analysis, evidential analysis involving GIS data evaluation and 3D scenario modelling is also part of this chapter.



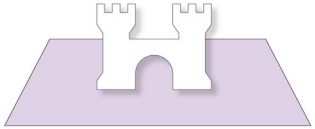
Fabrics of the in-between-city scale

drew by author, data source by OSM

3.1 Site overview

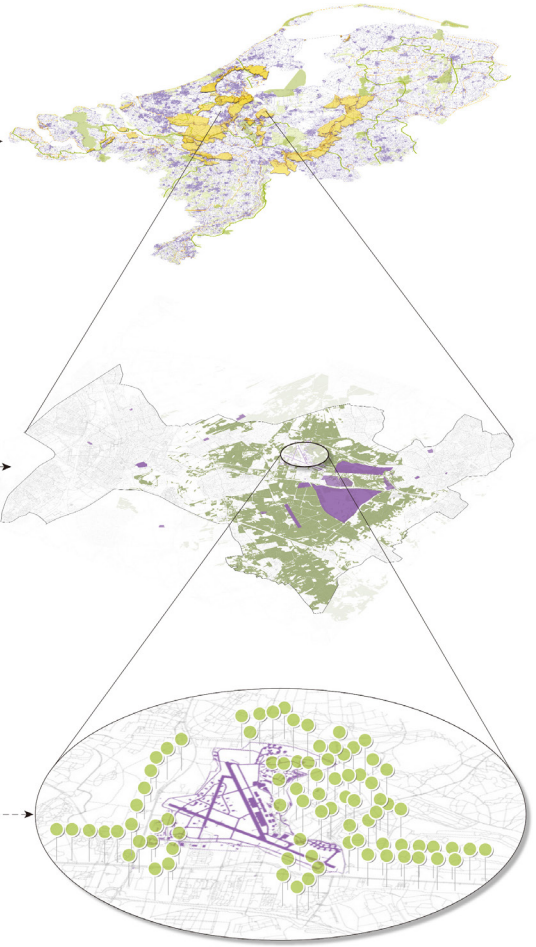
Analysis works in 3 scales, focusing on the in-between-city scale, and involves 3 topics: road systems, heritage, forest landscapes and their interrelationships.

Road system



military heritage sites

forest landscape



national scale

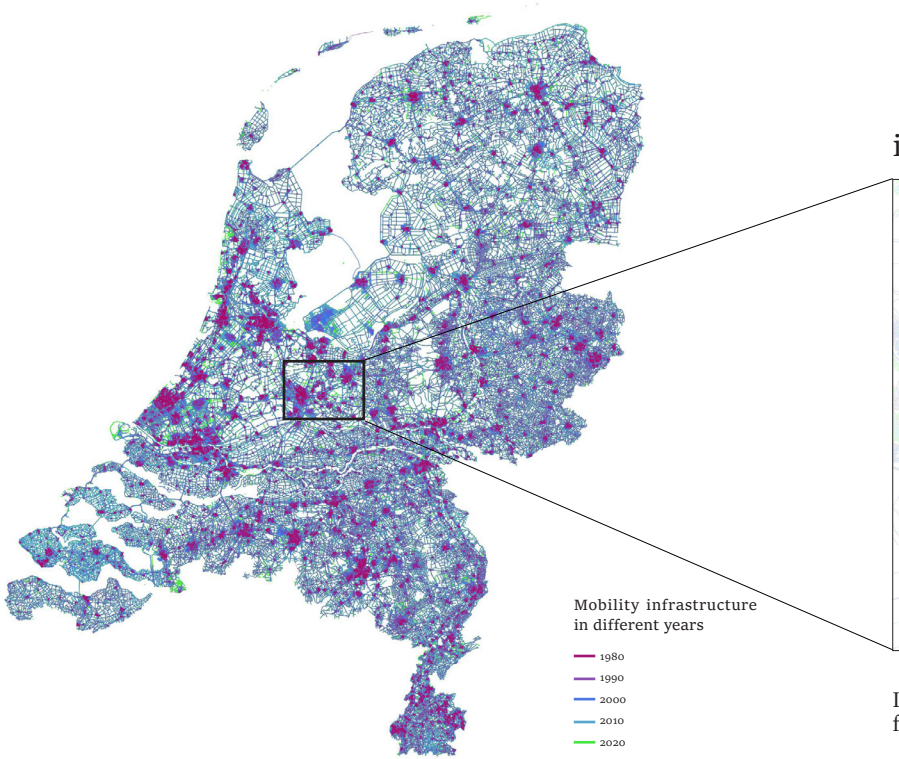
regional scale

local scale

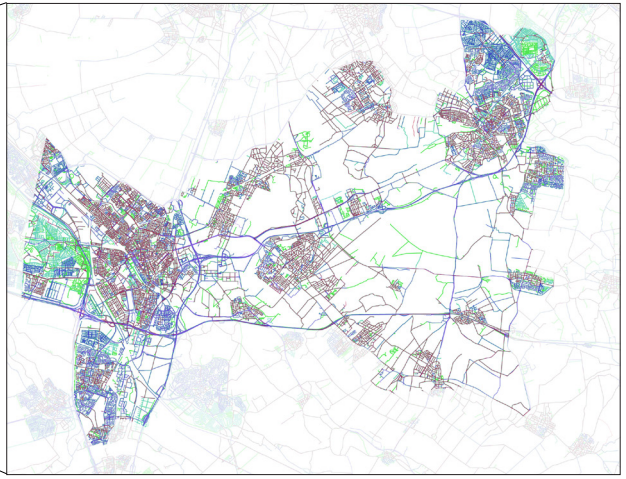
drew by author, data source by OSM

3.1.1 Road system

Urbanization trend in the Netherlands



in between cities (Utrecht and Amersfoort)



In recent years, the infrastructure network starts to stretch into forests and suburban areas.

URBAN EXPANSION PERIOD

The map series below show the mobility network development over the past 40 years, which kind of predicts the future possible trend of urban expansion. More densified roads are expanding to suburban areas in the middle and west part of the Netherlands.

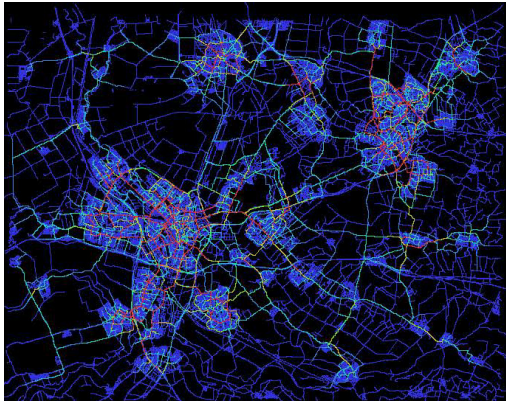
2020 2010 2000 1990 1980

data source: https://www.nationaalgeoregister.nl/geonetwork/srv/dut/catalog.search#/search?resultType=details&sortBy=relevance&any=NWB&fast=index&_content_type=json&from=1&to=50

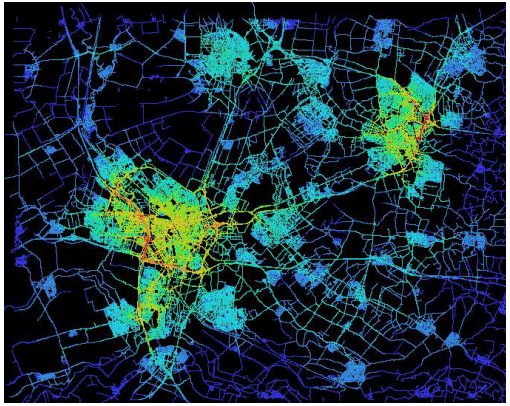
SPACE SYNTAX

Besides the two city centres, Zeist is the most integrated residential area in between. The mobility connections are structured by specific roads, which are also the potential urban expansion directions. However, A28 highway and railway are not necessarily the most integrated. Rather the Amersfoorsestraat functions as an important inter-city connection. In addition, the roads near Soesterberg bear the responsibility of connecting Zeist and the northern railway stations, which makes the accessibility higher.

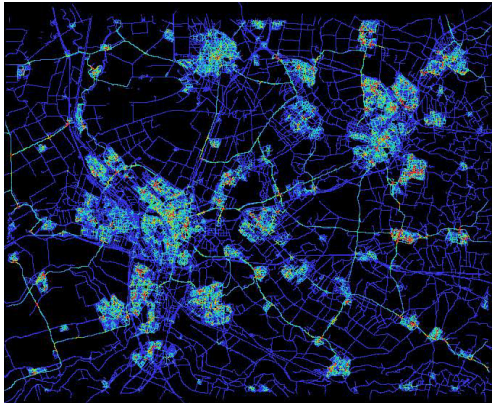
Regional choice r=5000m



Integration r=5000m

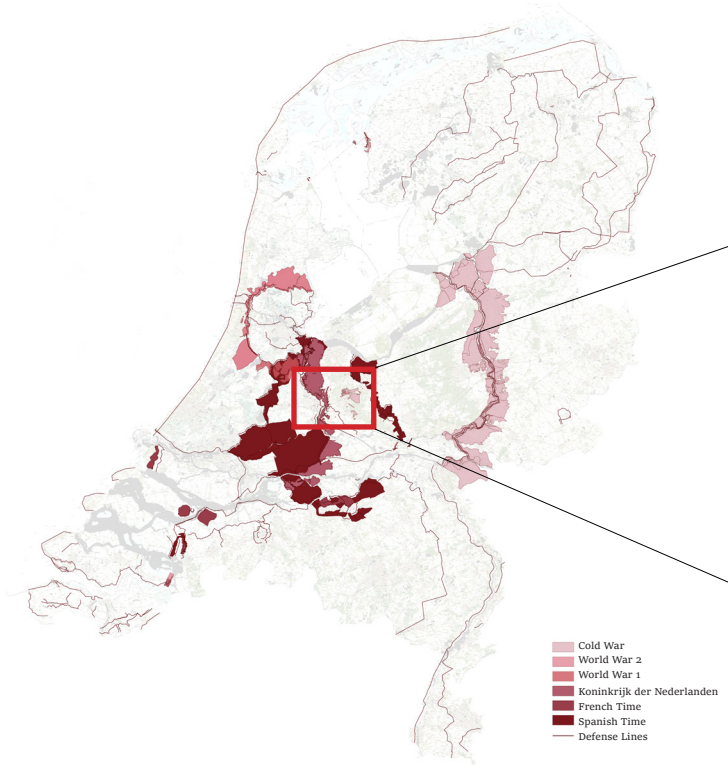


Local choice r=500m



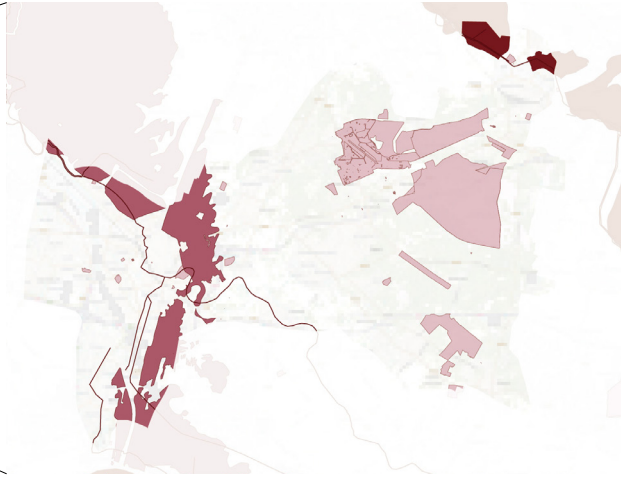
3.1.2 Military heritage sites

in the Netherlands



data source: https://rce.webgispublisher.nl/Viewer.aspx?map=militaire%5Flandschapskaart#

in between cities (Utrecht and Amersfoort)



The military heritage includes innundations and defense lines. But in cold war times and world war Ⅱ, military base and shelters were constructed as well. The diversity in times and types makes the site fragmented.

Besides the two city centres, Zeist is the most integrated residential area in between. The mobility connections are structured by specific roads, which are also the potential urban expansion directions. However, A28 highway and railway are not necessarily the most integrated. Rather the Amersfoorsestraat functions as an important inter-city connection. In addition, the roads near Soesterberg bear the responsibility of connecting Zeist and the northern railway stations, which makes the accessibility higher.

IJssel Line (Cold War)

World War 2

Defence line of Amsterdam (World War 1)

Nieuwe Nederlandse Waterlinie(1815)

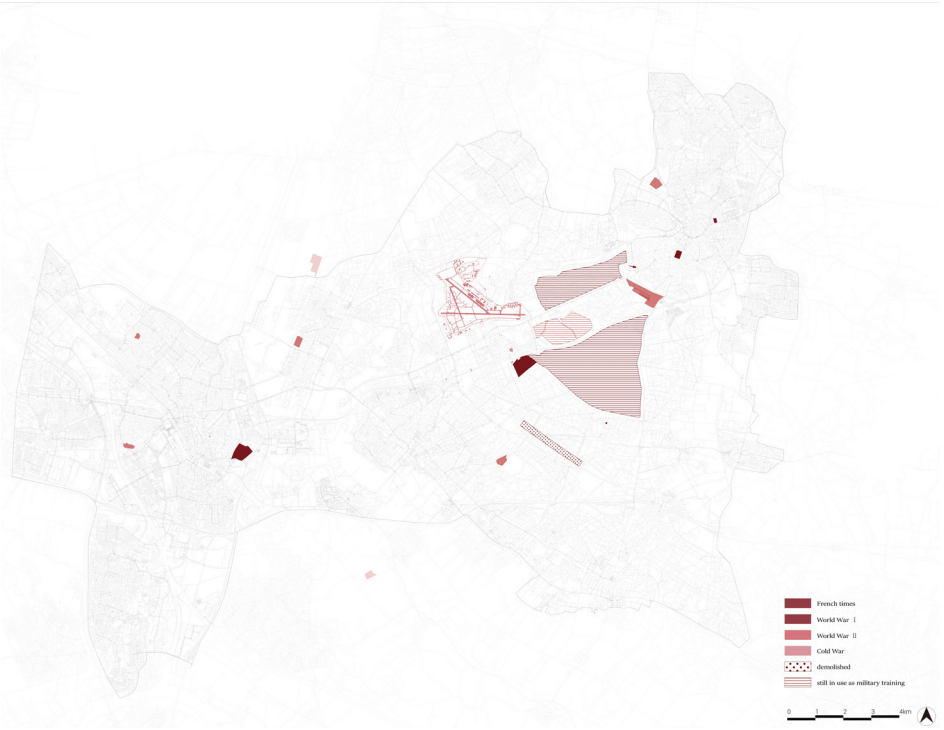
French Time

Grebbeline & Oude Nederlandse waterlinie (Spanish Time)

data source: RCE, wikipedia

Spatial distribution in the regional scale

Categorizing the different heritage sites by time periods. In addition, seperate those still function as military use with those function as relics. As is shown in the map, most sites agglomerated near Amersfoortsestraat. Large domains such as Leusderheide, Kamp Zeist are still in use, while the Soesterberg Airbase and scattered small domains are now work as educational or recreational sites.



3.1.2 Military heritage sites

Biography study

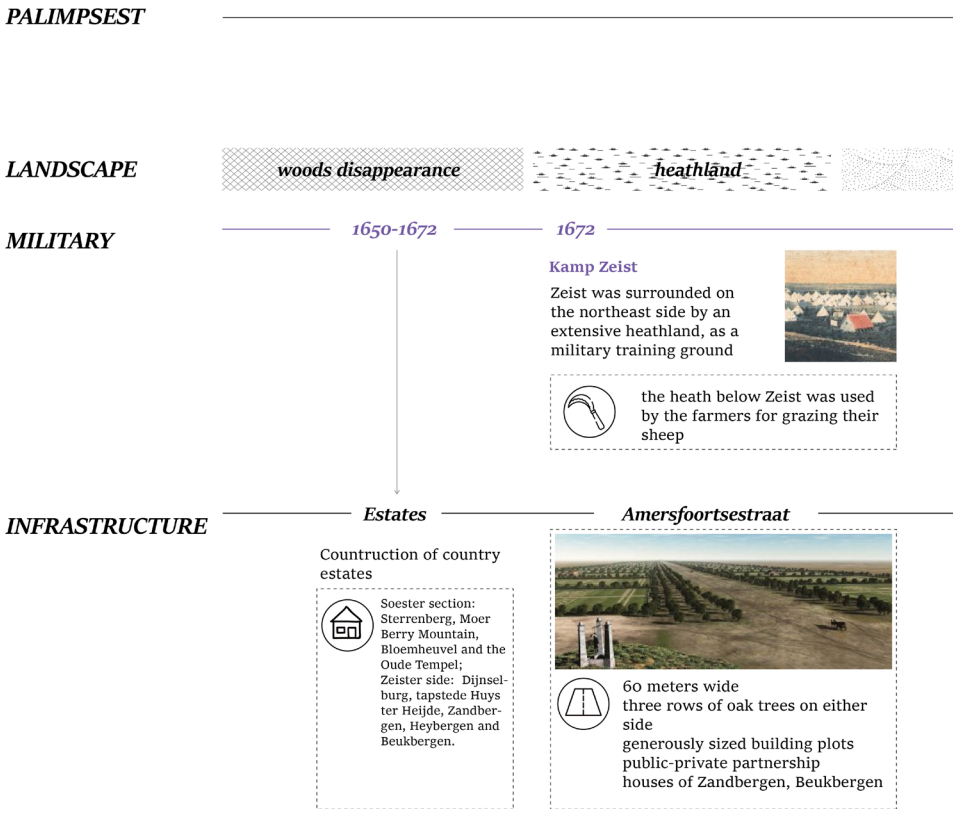
Throwing back to the very beginning, the military history influenced the landscape development as well as infrastructure development. The construction of amersfoortsestraat and the estates along it, the railway line, the forest cutting down and the airbase I observed during site visit are all the result of military changes and wars.

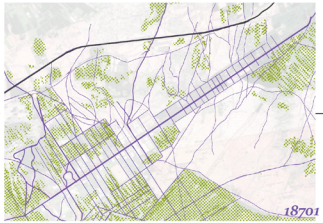
The military history can be genrally divided into 4 times: French times, World War Ⅰ, World War Ⅱ, Cold War. Each times got specific history events that modified the landscape or construct some infrastructures. These layers influence each other to form the current landscape.

Starting from totally heath, the construction of Amersfoortsestraat brought troops here to settle. The wide open heath was a great place for military training and camping. The construction of Amersfoortsestraat also included estates so agriculture activities such as grazing deforested the heath and accelerated the woods disappearance. Out of military needs, the lands kept the status of wide and sandy for a long time.

In the late 19th century, railway lines were set up in the northern part, which weakened the connection status of Amersfoortsestraat. Meanwhile, a closed military training base in Leusderheide was created. This base is still in use nowadays.

The Soesterberg Airbase was established before the WW Ⅰ but still in use in the cold war, so the memory it bears is the most complex one.





sandy moor

1787

Another troops gathered on the Leusderheide. Near Zeist, the pro-principal army set up camp

1804

Pyramide van Austerlitz

dominant and constructed by French

1818

Kamp bij Zeist

not permanent, only for training in summer

1863

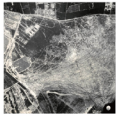
Railway

the railway line Utrecht-Amersfoort-Zwolle was put into use

1870

Leusderhei

became a closed military area



1907 | 1910 | 1914-1918 | 1944

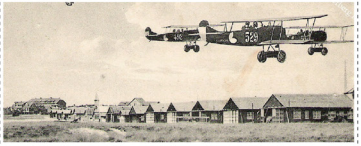
1914-1918
WW I

1944
Bombardment

Railway

a narrow-gauge railway was built, a tap at Huis ter Heide to the camp of Kamp van Zeist

Soesterberg Airfield



a crowd puller for flying demonstrations
NATO Airbase
Royal Netherlands Air Force base for a squadron of the American Air Force

Women's Village

many Belgian refugees who were housed in the Kamp van Zeist (12,000 soldiers) and Albertsdorp (their wives and children) on the Amersfoortsestraat

forest regeneration

1940-1945 — *1950* — *After 1950*

Kamp Amersfoort

Camp Amersfoort was not a concentration camp. It was a small and makeshift camp under the supervision of the Sipo/SD. More than 35,000 inmates who were imprisoned in the camp.

Mobilization Complexes

MOB complex is the name for a complex of military buildings with associated infrastructure. Most of the complexes were built between 1951 and 1961.

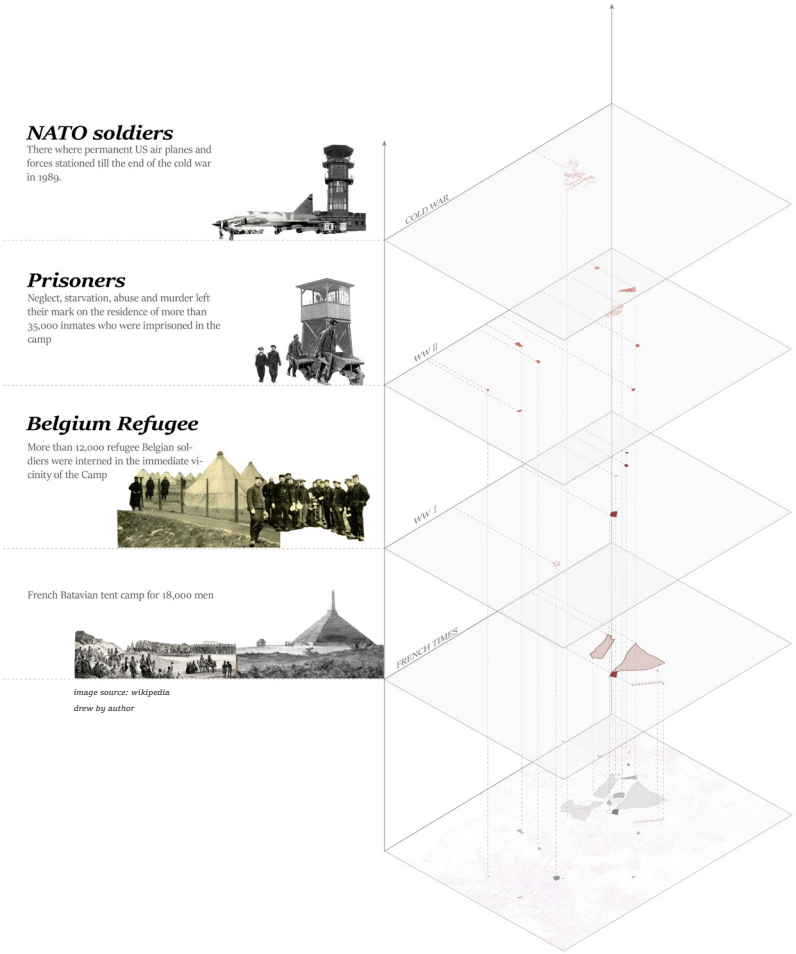
Highway A28

3.1.2 Military heritage sites

Biography conclusion

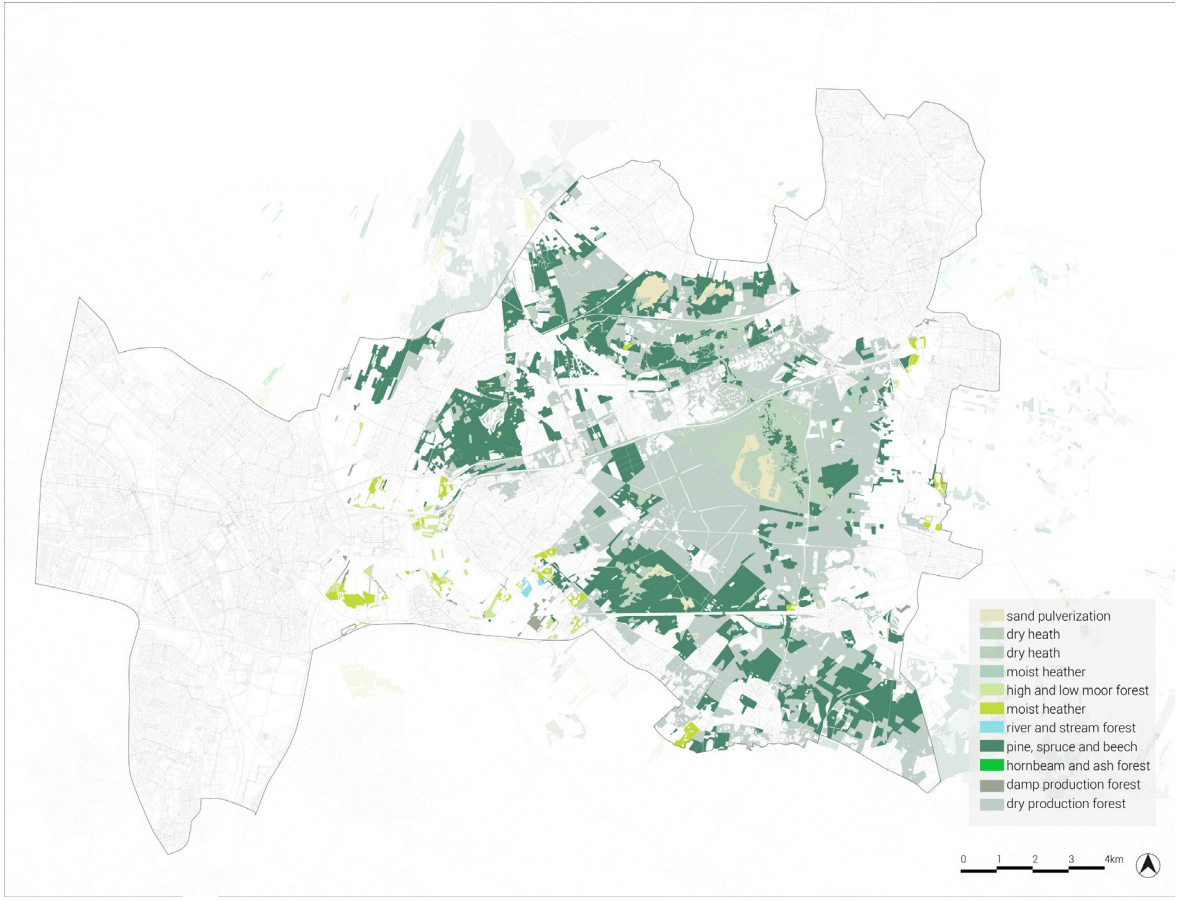
In summary, the Netherlands mainly played the role of not fighters in a war, but more shelter and these military sites play the role of documenting and sheltering.

The main roles involving in each war are different, but they share one common characteristic is that they are not Dutch people but people from other countries. The identity of these people brought different meanings to the site. For instance, Kamp Amersfoort was used as a prison but also as a justice court after the war. The prisoners there were not merely soldiers but also ministers and priests. This manifests the oblique connection between physical environment and hidden culture meanings.



3.1.3 Landscape context

Forest distribution



Until about 1970 more than half of the Dutch forests consisted of Scots pine, but their dominance has declined to 35-40% due to an increase in broadleaved species invading pine monocultures, partly resulting from changes in forest management. Also, afforestations on the fertile soils in the new polder areas were done with broad-leaved species. (Mohren, G.M.J. & Vodde, Floor. (2006). Forests and Forestry in the Netherlands. Forests and forestry in European Union Countries.)

data source: https://utrecht.maps.arcgis.com/apps/MapSeries/index.html?appid=0d8a2ac8bdbc422db6d4cd5043eb24b8
drew by author

3.1.3 Landscape context

People's activities of modifying the lands

When looking at the biography of forest, the past deforestation transits to recent afforestation also gives clear instruction to design assignment, that is to diversify the forest species to enhance the biodiversity and sustainability of the forest.

Deforestation

The deforested landscape was extraordinarily open.

Different categories of forest

Late middle ages — *1478* — *17th century* — *1714* — *end of 18th century*

only largest trees remain

Disappeared completely

Agricultural and forestry experiments started

Grazing of cattle in the Bos in Elst was banned

In 1480 one third of the forest was allowed to be cut down every year, but the largest and strongest trees had to remain, because of the cover for the game

The groves supplied coppice and bark for tannic acid extraction (for tanneries)

Hunting

The heath was seen as unproductive, fallow ground.

Afforestation ***Diversification***

: estate forest, the park forest, the production forest

19th century — *1850* — *1900* — *1930* — *20th century*

Forestry area — **Wood factory** — **Deciduous forest** — **Spontaneous forest**

Large scale planting

Expansion of railway

Pests and diseases

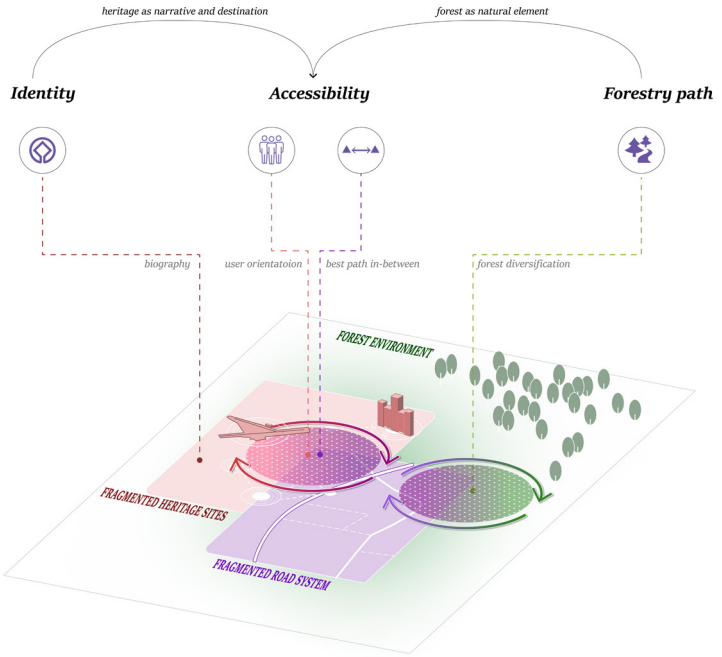
3.2 Opportunities and threats

From problem fields to further understanding of opportunities and threats

As illustrated before in the problem statement, there are 3 main objects in the analytical framework: roadway, heritage sites and forest. Each of them are intensely related with another. This part put the forest fabric as the natural base for the road layer and the heritage layer. And the accessibility improvement becomes the main design assignment.

OPPORTUNITIES & THREATS

PROBLEM FIELDS



drew by author

3.2.1 Accessibility

Rules of accessibility evaluation

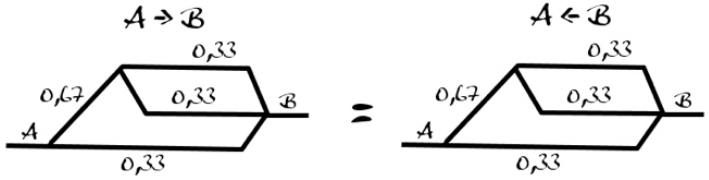


Image source: PST documentation by KTH School of architecture

ATTRACTION BETWEENNESS

Which roads are the most likely to be taken between specific sites and locations?

Each attraction point (or if polygons or lines are used, their centroid resp. midpoint) is assigned to the closest line (see section 2, point 3, for more details) in the network, and selected data is transferred from the point to the line. The collected scores on each line are then used as weight in the same way as length is used as weight in Network Betweenness (length weight).

Tools: PST with QGIS

1. set the radius as 2000m.
2. set destinations as 2 sites in the same time period.
3. calculate the roads scoring the possibilities to be taken between these 2 sites. The more dark the color is, the higher accessibility the roads bear.

3.2.1 Accessibility

Military heritage sites accessibility evaluation

The high accessible roads are mainly clustered around Amersfoortsestraat, while the low accessible roads are mainly distributed in forests.

The entrance to Soesterberg Airbase close to Amersfoortsestraat is with high accessibility while other heritage sites far away is hard to approach.

Cold war

World War Ⅱ

World War Ⅰ

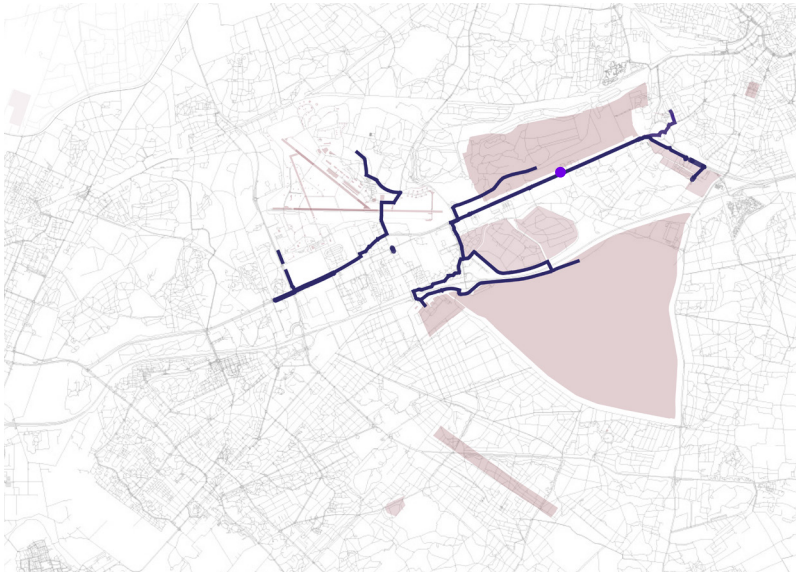
French Times

3.2.1 Accessibility

Accessibility conclusion

High

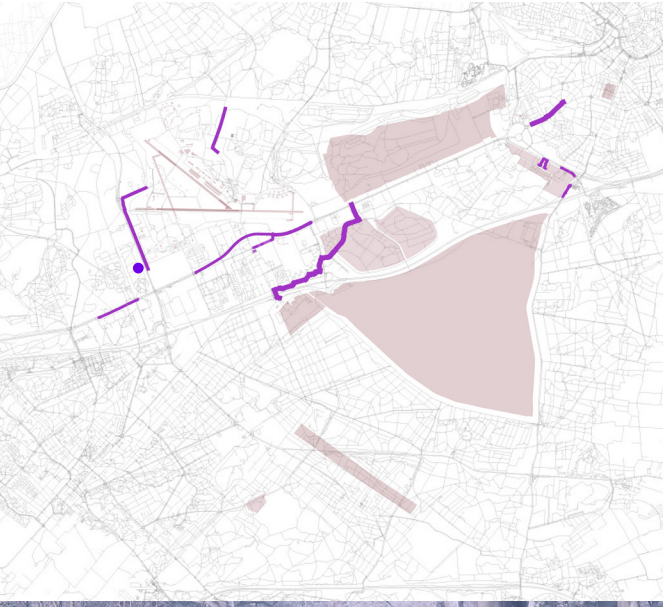
The **high** accessible roads are clustered in the centre area, surrounding the amersfoortsestraat. They are composed mainly of car lanes, usually wide and accompanied with cycling paths and footpaths.



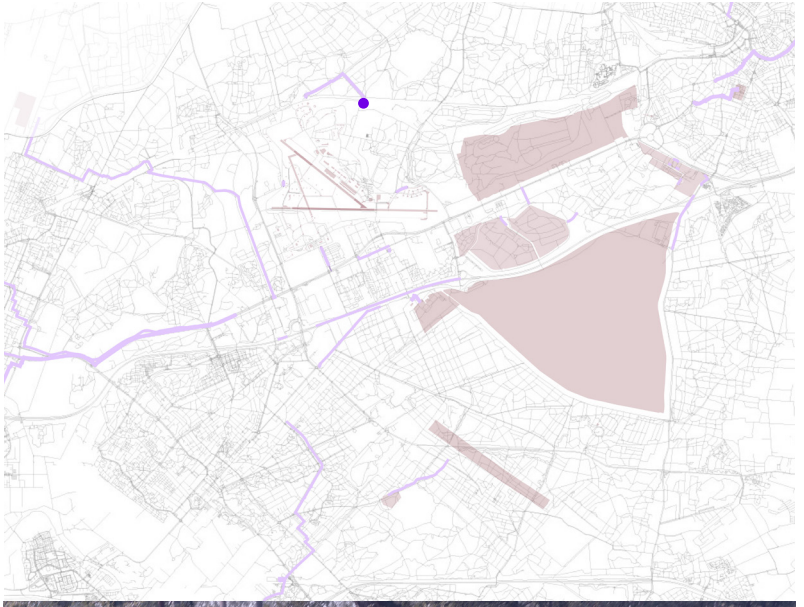
The **medium** accessible roads are sub entrance instead of main entrance of heritage sites, they also have carlanes, but much more narrow.

The **low** accessible roads are distributed inside forests, usually function as cycling paths and footpaths.

Medium



Low



3.2.2 User orientation

Accessible for whom?

Different groups of people defines their starting point of the routes. Since in this area, the functional area are mainly composed with residential buildings, parks and companies, the below classification of people is generated.

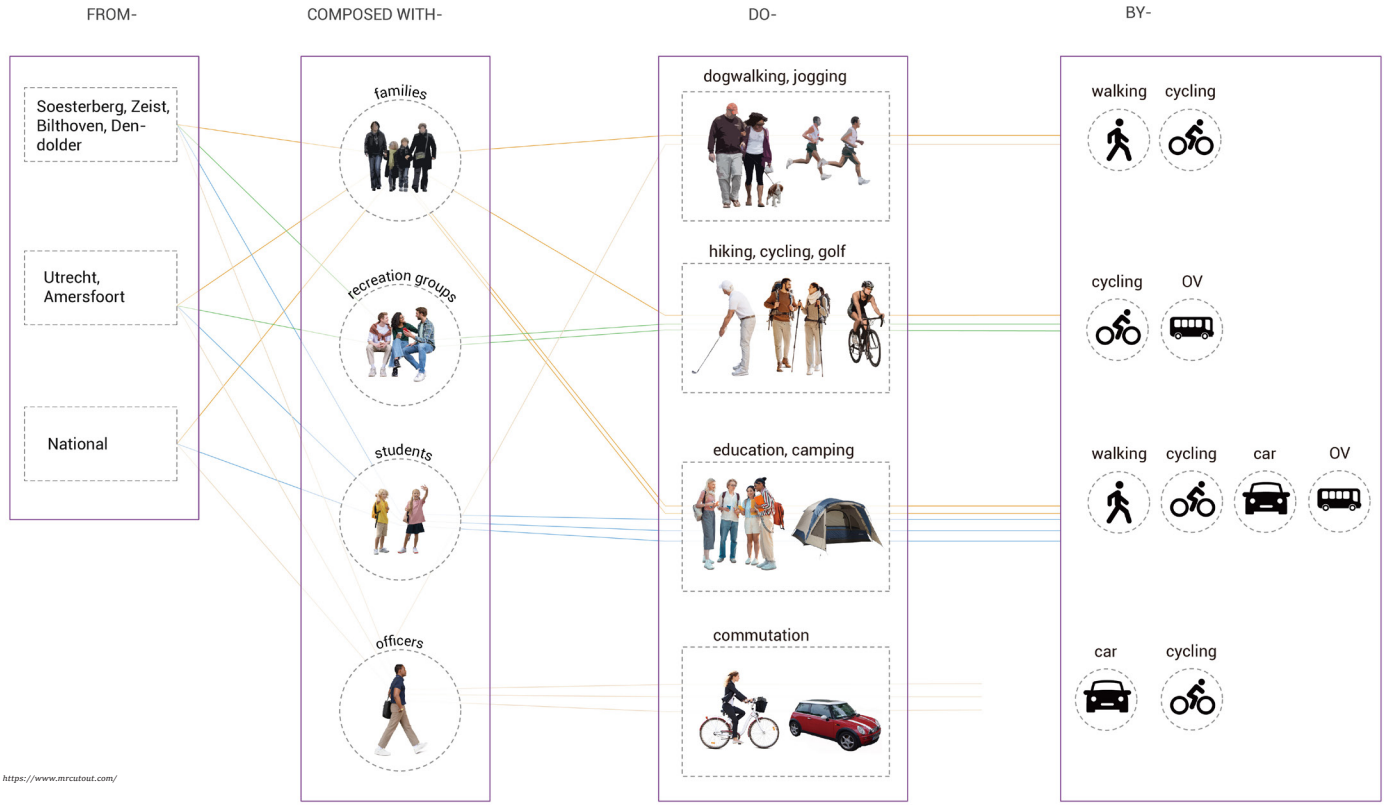


Image source: https://www.mrcutout.com/

Analysis tool: ORS

Which roads are the FASTEST/SHORTEST way to take between two locations?

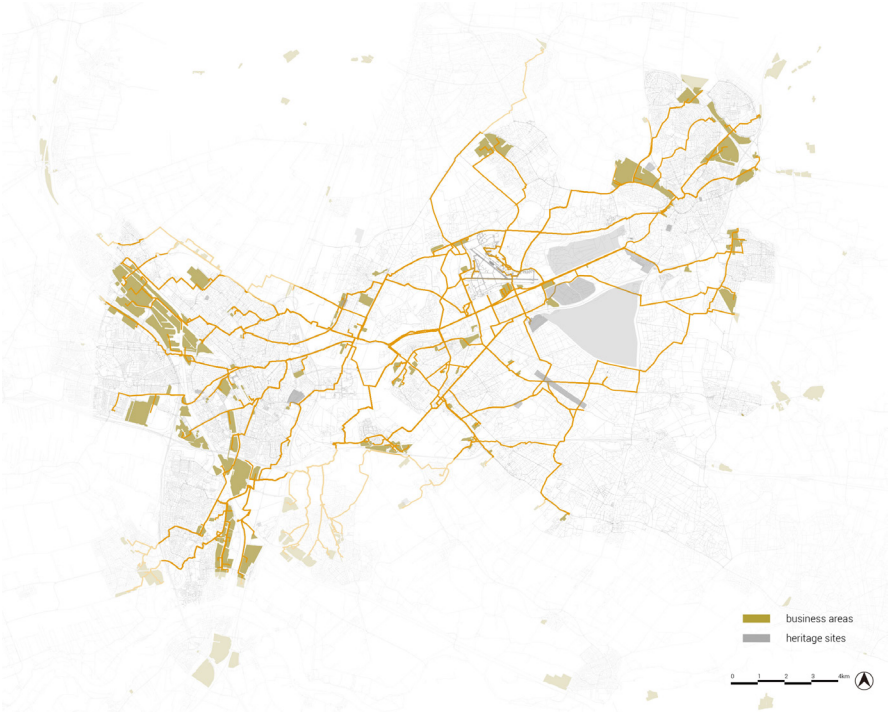
By setting the heritage sites as destination layers and the desired location(schools, residential buildings and recreation spots) as starting point layer, ORS can calculate the fastest way travelling between two locations under specific mobility mode. All the mobility networks analyzed are from Openstreetmap datasource.

3.2.2 User orientation

families from residential areas & people from business areas

The families travel from residential areas and officers commuting between home and office are distributed across the communities. These networks are more even except the military boundaries.

cycling



driving

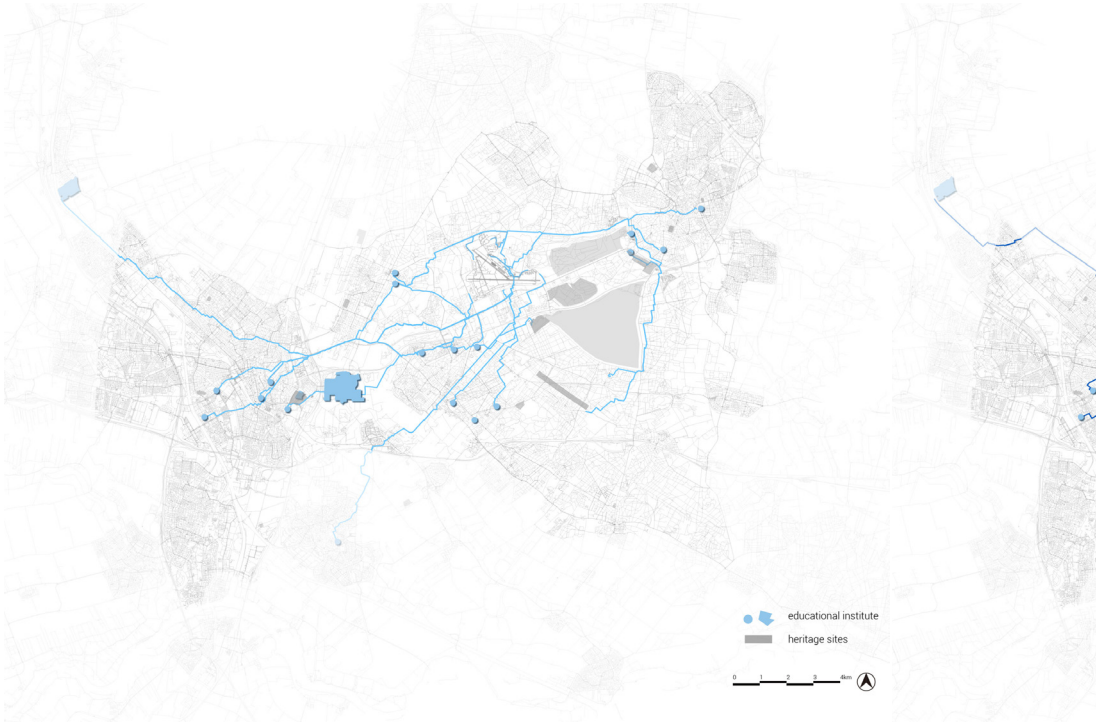
3.2.2 User orientation

students from educational institutions

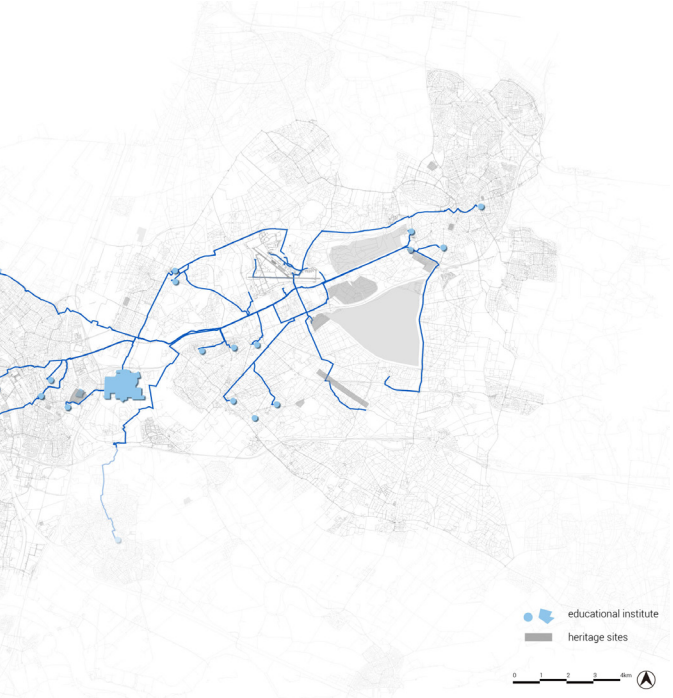
The educational institutions/schools are mainly located in urban areas of Utrecht, Zeist and Amersfoort. It is more likely for students or teachers to travel from schools by cycling since the longest distance is no longer than 5km. What's more, the walking paths and driving lanes also function as vital transportations for the schools close to the military sites.

The most preferred cycling paths is in two directions including the north-south way of Soesterberg and the west-east way of Amersfoort. The area that these cycling paths cross are mainly composed with forests.

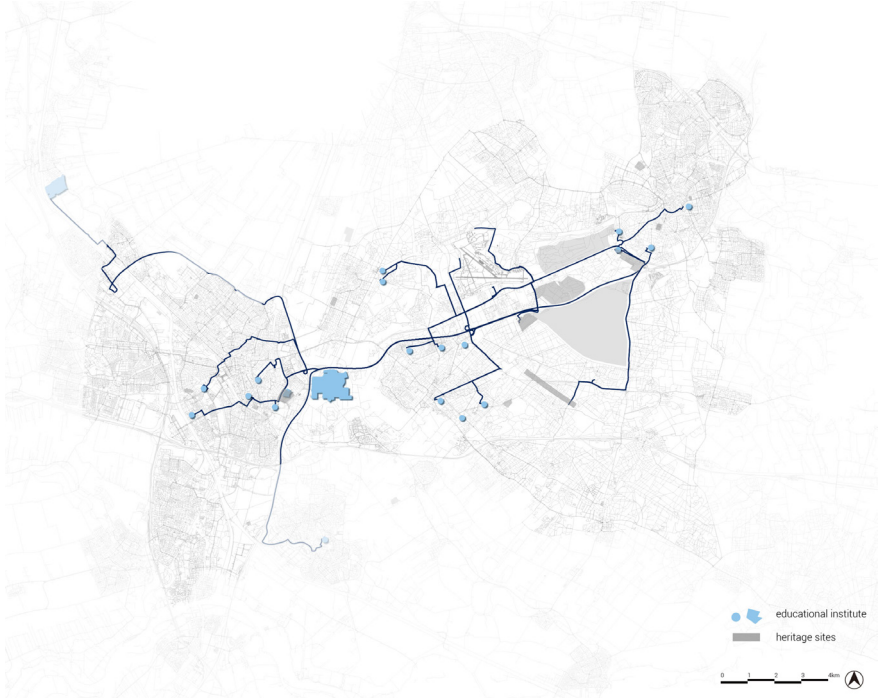
on foot



cycling



driving



3.2.2 User orientation

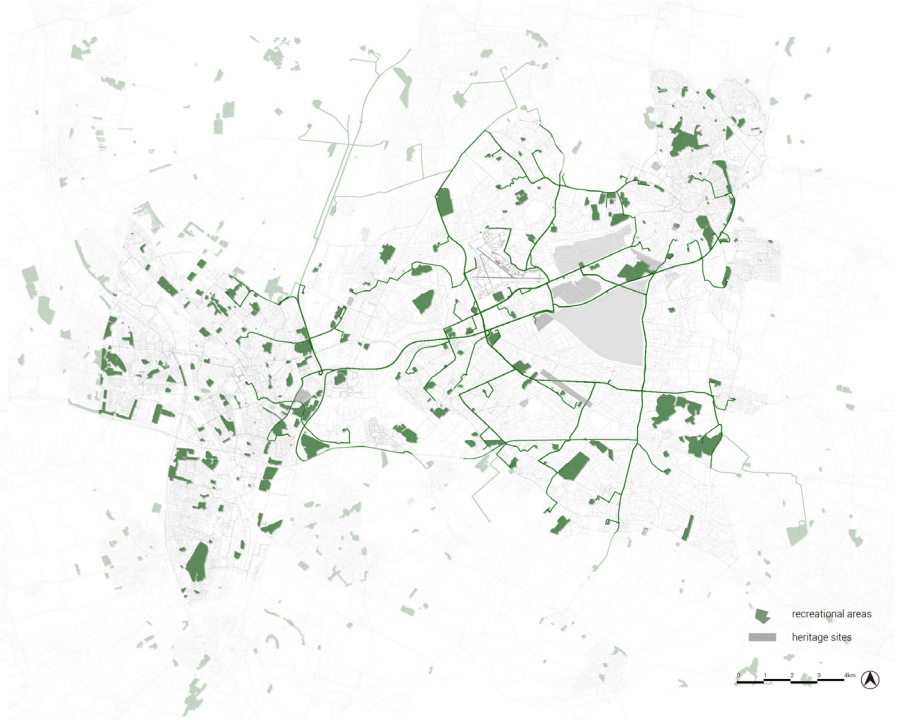
people from nearby recreational spots

For the people coming from nearby recreational spots(city parks, sports fields, public spaces, etc) travelling to the military heritage sites, the walking routes are mainly clustered around the entrance to Soesterberg Airbase, while the preferred cycling paths and driving lanes are distributed around the Amersfoortsestraat.

on foot

cycling

driving



3.2.2 User orientation

Socio-needs road system conclusion

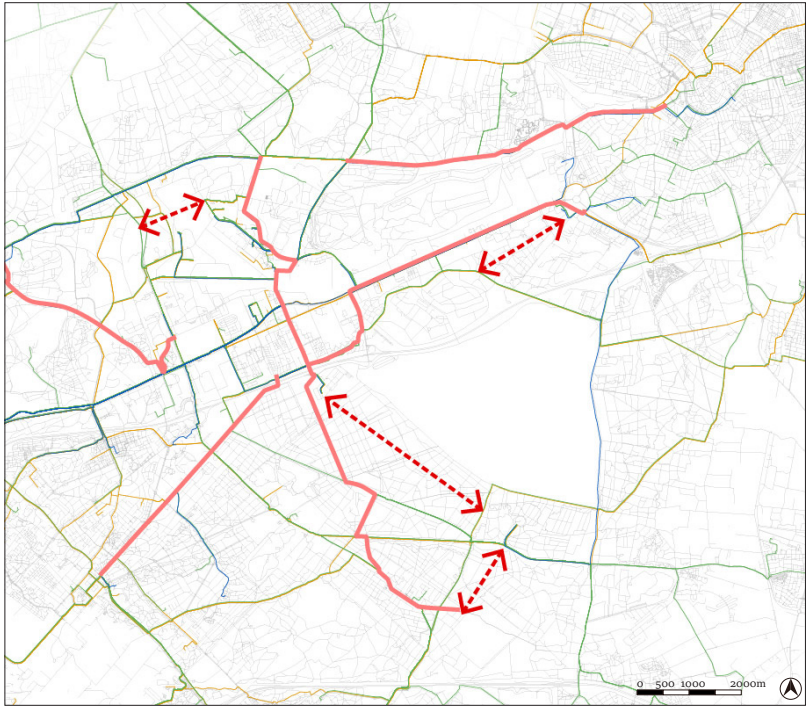
There are some gaps between social choices cycling routes to arrive at the heritage sites. So design approaches **need new connections** between these routes for better accessibility.

On the other hand, the most overlapped lines represent the most chosen routes preferred by users, which **need more diversities** to enrich the experience.

The end of these car lanes **need more car parkings** to orient the road.

Cycling lanes

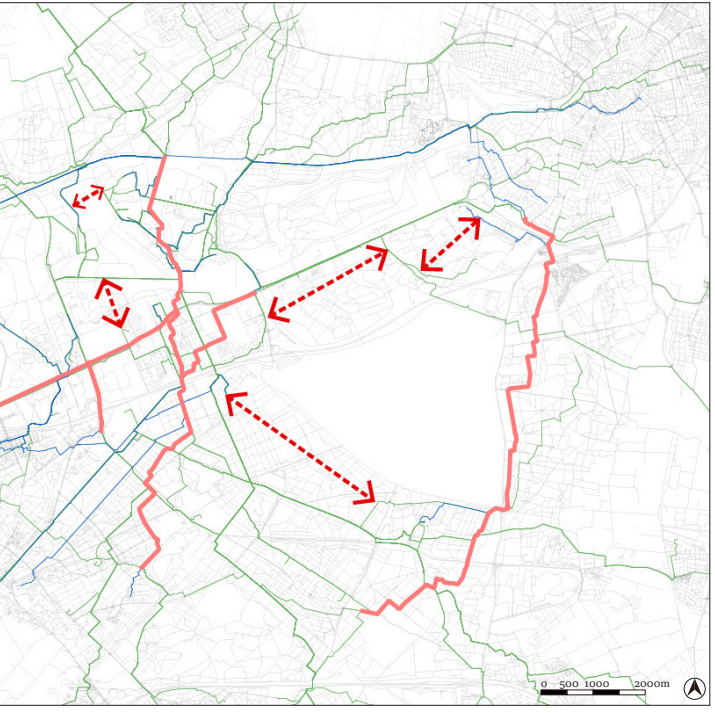
The most preferred cycling lanes is the one cross Amersfoortsestraat and connect the north Soesterberg Airbase with the south Heuvelrug forest park. The connections are needed in the area parrallel to the Amersfoortsestraat and in the forest.



The walki
paths that

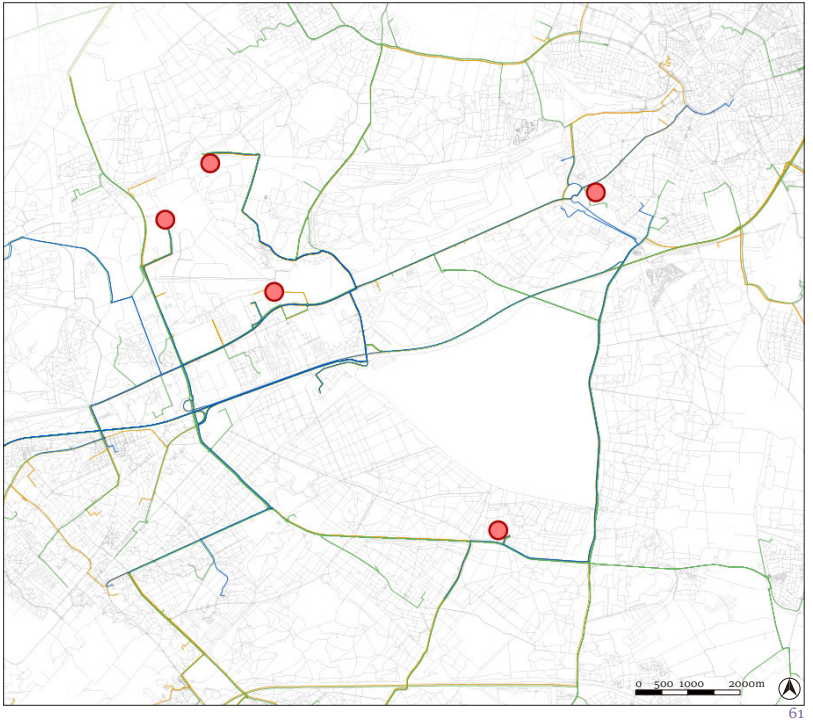
Walking paths

ing paths need more connections also between some dead ends and distant t are vacant in between.



Driving lanes

For driving lanes, it is obvious to see the most preferred entrance to heritage sites by driving. So there is social needs to set some car parking functions.



3.2.3 Forest and roads

a. Diversify the monocultural forest

Utrechtse Heuvelrug now owns large areas of coniferous trees, which were for wood production. Since the monocultural forests are more vulnerable defending diseases and pests, the mission is to turn some of these native old trees into deciduous forest. This can be realized by replacing some spruce trees with oak and birch to create open mixed forest, but on the other hand, it is also necessary to preserve the old historic or monumental trees.

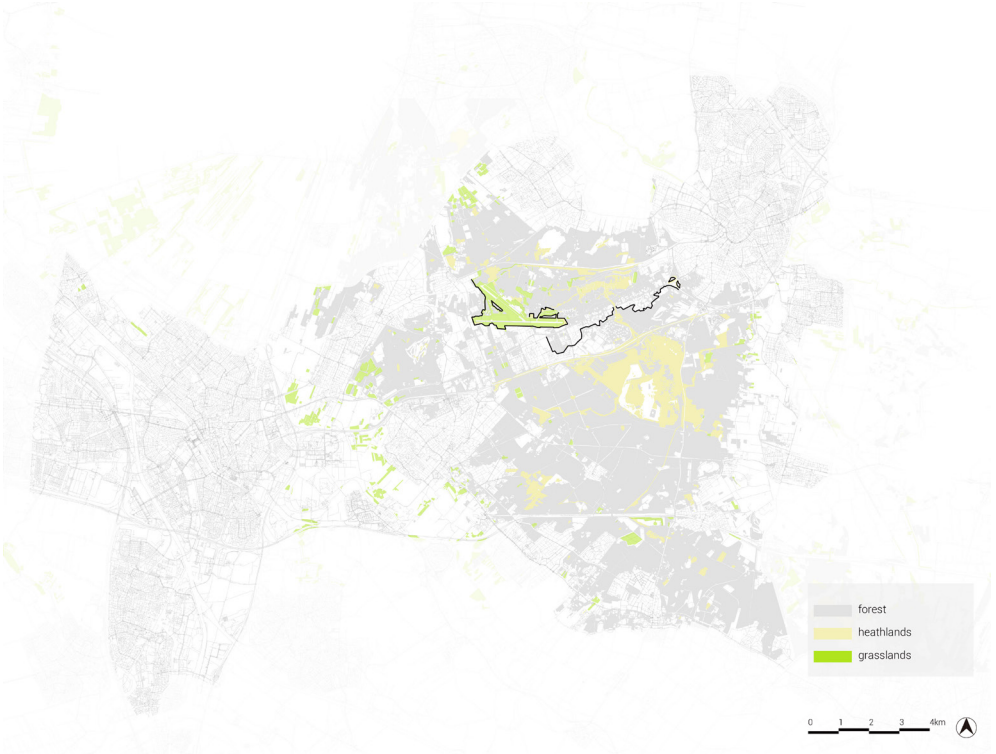
Forest to preserve and to be thinned

b. More decidous trees

Also, it is the government's plan of adding 600000 trees in 2020-2030. The most preferrable places to plant more trees are agricultural farms, and in an urban environment, the fringe between forests and urban infrastructures gap could also be a choice.

More trees planted could be decidous trees of oak and birch.

Potential forest expansion areas



c. threats behind the diverse forest environment

animal crash

The Ree is the smallest naturally occurring deer in the Netherlands. With its 90 centimeters height at the withers, it is smaller than the fallow deer and the red deer, which are also found in the Netherlands.
Since the 1930s, the deer has increased in numbers and is now found in all provinces. Before that time, it actually only occurred in the Veluwe and the border provinces.
It is estimated that there are more than 10,000 collisions with Ree in the Netherlands every year.

Roads with hotspots	cause	Solution
N227	Circulation of the deer around the game grid	Extend grid, possibly in combination with an active wildlife warning system
N226	Two cluttered turns	Place grid
	Habitat improvement by afforestation	Active speed signaling and crash signing
N225	Not clear	
N234	obscure bend	Speed limiting measures
	Out of the woods	Place grid
	Get out of the woods	Place grid
N413	Dense verges	Placing grid and vegetation management
N416	obscure bend	Speed limiting measures
A12	Forest plot across the road	Place grid

Table 9

https://www.wildaanrijding.nl/Fauna

picture source: 2011-12-15-Eindrapport-Onderzoek-Valwild

risk of animal crash hotspots

overgrown roadsides verges

the missing grid around the turn

drew by author, data source: 2011-12-15-Eindrapport-Onderzoek-Valwild

3.2.3 Forest and roads

Forest diversification: preservation and thinning

Forest diversification can be realized by forest thinning in spruce forest first, cutting down some trees and replace them with new decidous trees not noly helps strengthen the defence, but also allows more programs.

Fores

In order
plant mor
areas.

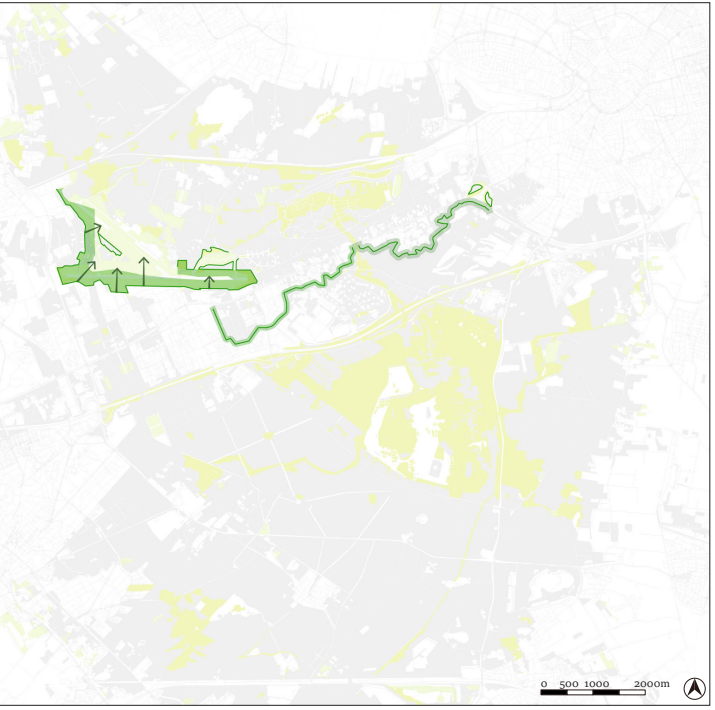
Forest thinning area.
More oak or birch trees could be planted there.
Open forest floor allows more activities

Forestry roadside on the forest fringe

The animal crashes on the roads requires not all the roadsides can be forestry, some driving lanes needs to be oriental and visually clear so grids are needed on the verges.

st expansion: tree plantings on the fringe

to finish the task of trees planting numbers, the most probable place to re trees in this area is on the forest edge with grasslands and urban public



Animal crash: overgrown verges and grids

In order to preserve the species rich forests, more programs can be added in these areas. However, it is also important to avoid the hotspots across the roads to reduce animal collisions.

3.3 Design assignments

Heritage recognition

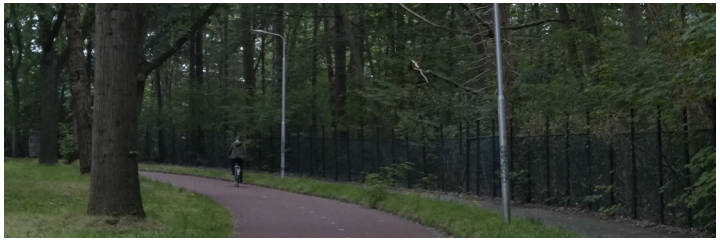
heritage recognition lies in the understanding of the story behind the heritage, or to be prepared when approaching the destination. It is a process that people perceive, feel and transfer the emotions into mental awareness of heritage instead of arriving there without recognition.

Social accessible

Roads serve different groups of people because they bear different social roles and coming with different interest and purposes, which set the requirements for creating activities spots. Seperating the users generally as families, students and recreators helps to better define which roads they prefer most and which ones are missing.

Forest diversification

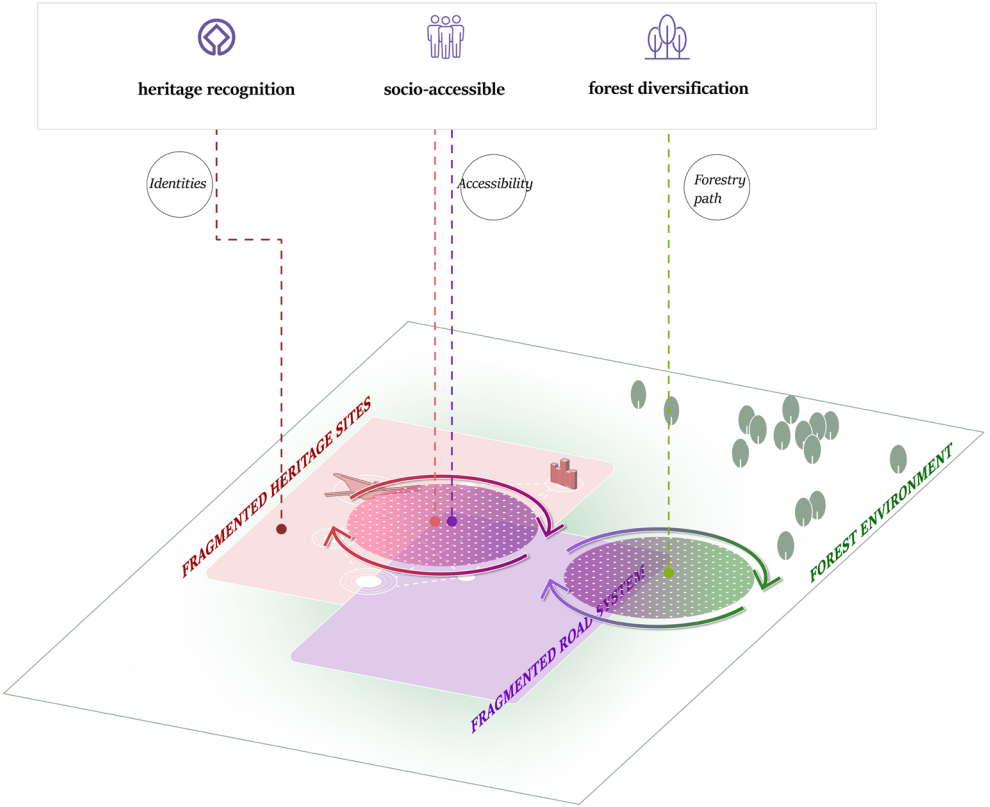
The task of forest diversification set the rule of the forest could be thinned firstly which allows more programs on the forest ground. On the other hand, the overgrown roads and potential animal crash hotspots are to be avoided in the future network expansion.



DESIGN ASSIGNMENTS

ANALYSIS

PROBLEM FIELDS



04

DESIGN STRATEGY

The design strategies are derived from design assignments spatial conclusions. Since each assignment have layered requirements, each of them can be oriented by different strategies: 'Connect' is mainly to build new connections that are missing currently.

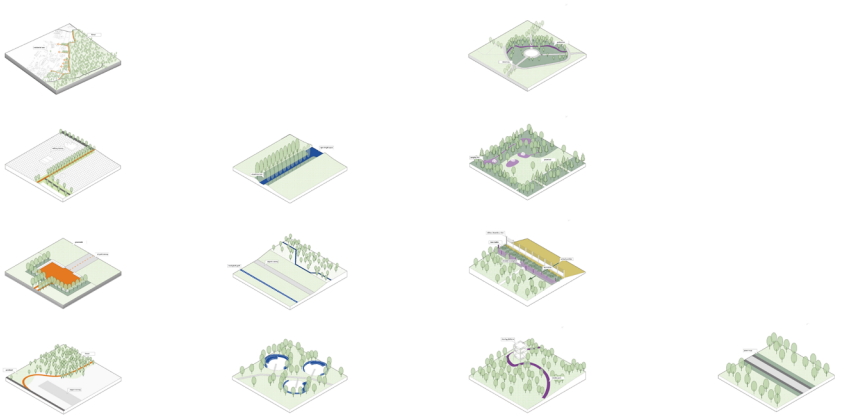
'Reuse' is to make use of the special patterns or spots that have special meanings.

'Diversify' is to create programs, installations and perception spots to make the experience vivid.

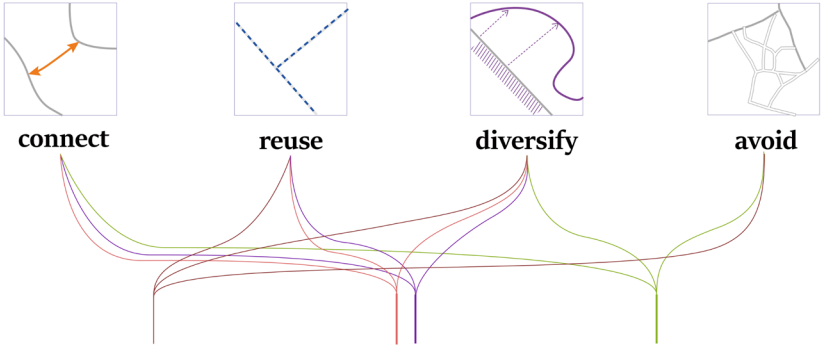
'Avoid' is to remove the roadways or paths that can be threats to animals.

The spatial expressions represents the more specific performance of the strategies and can be coped with the masterplan.

SPATIAL EXPRESSIONS



DESIGN STRATEGIES



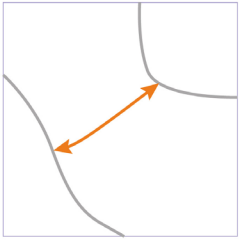
DESIGN ASSIGNMENTS

4.1 Strategy framework

heritage recognition		-	identified heritage roads or spots
socio-accessible — road system		between high accessible roads & low accessible roads	high accessible roads
socio-accessible — user		social users need more connections	social users most preferred roads
forest diversification		afforestation at forest fringe	-

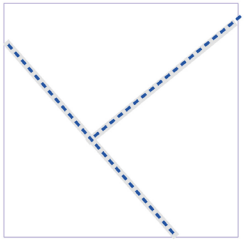
DESIGN STRATEGIES

CONNECT



connect cycling paths/pedestrians between now socio-needed roads;
add new roads in the fringe and afforestate along the paths;
make low accessible roads more **oriental** to the entrance

REUSE

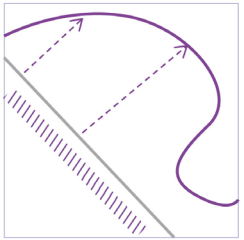


Transform th
previous mili
recreation or
for people to
understand

	military training boundaries		military training boundaries
	high accessible roads		-
	between the most preferred roads		-
	forest thinning: more programs on the forest floor		animal crash spots

e function of
tary-use spots into
education spots
involve and
the site.

DIVERSIFY



sequence the experience by making use of the terrains or create more activities;
symbolizes the charateristics of the heritage;
Visual connections to make sure the **continuity** of experience

AVOID

reduce some human activity areas and overgrown verges to reserve more space for ree;
add some grids to seperate

4.2 Historical materials extraction

Cold war

NATO soldiers

There where permanent US air planes and forces stationed till the end of the cold war in 1989.

World War Ⅱ

Prisoners

Neglect, starvation, abuse and murder left their mark on the residence of more than 35,000 inmates who were imprisoned in the camp

World War Ⅰ

Belgium Refugee

More than 12,000 refugee Belgian soldiers were interned in the immediate vicinity of the Camp

French times

French Batavian tent camp for 18,000 men

Material extraction from historic

Aircrafts in the airbase

https://www.flickr.com/photos/nucleus7/49081121608

Aircrafts in the airbase

https://www.thunderstreaks.com/airshows/soesterberg-air-base-nl-open-day-june-17th-1967/#prettyPhoto[slides]/12/

Kamp Amersfoort wire frames

https://historiek.net/kamp-amersfoort-concentratiekamp/71713/

“Palestina Express”

https://nl.wikipedia.org/wiki/Kamp_Amersfoort#/media/Bestand:Kampgevangenen_Vught_graafwerkzaamheden_in_Amersfoort.jpg

Houses made of woods

https://www.wereldoorlog1418.nl/lezingvluchtelingen/sld082.htm

Belgium refugee monument

https://www.tijdvooramersfoort.nl/nl/locaties/1855438937/belgenmonument

Austerlitz Pyramid

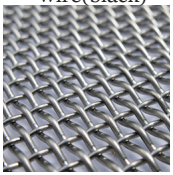
https://www.rijksmuseum.nl/en/collection/RP-P-OB-86.860

Materials(colors)

installation

steel

wire(black)

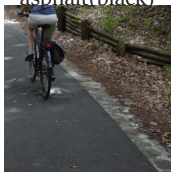


bricks(red)

https://www.dreamstime.com/shaped-red-brick-park-seat-aged-deteriorating-spalling-weathered-material-quarter-circle-public-terracotta-color-image194678477

pavement

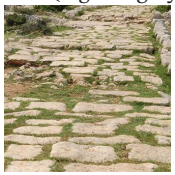
asphalt(black)



cinder(black and grey)

wood plank

stone(big and grey)



Forms

roadway	cinder path		
	wooden plank		
	stone path		
	asphalt cycling path		
installation	seat	red brick	wood seat
	fence	wire fence	
	symbol/sign	arrayed wood/steel stick	
	watchout tower		

4.3 Forest thinning

The forest thinning should better start with dry production forest with pine and spruce. However, leave large spruce trees for birds of prey and other birds of coniferous forest. What's more, it is also important to keep the wonderful monumental trees because they are natural heritage and can function as visual connecting points.

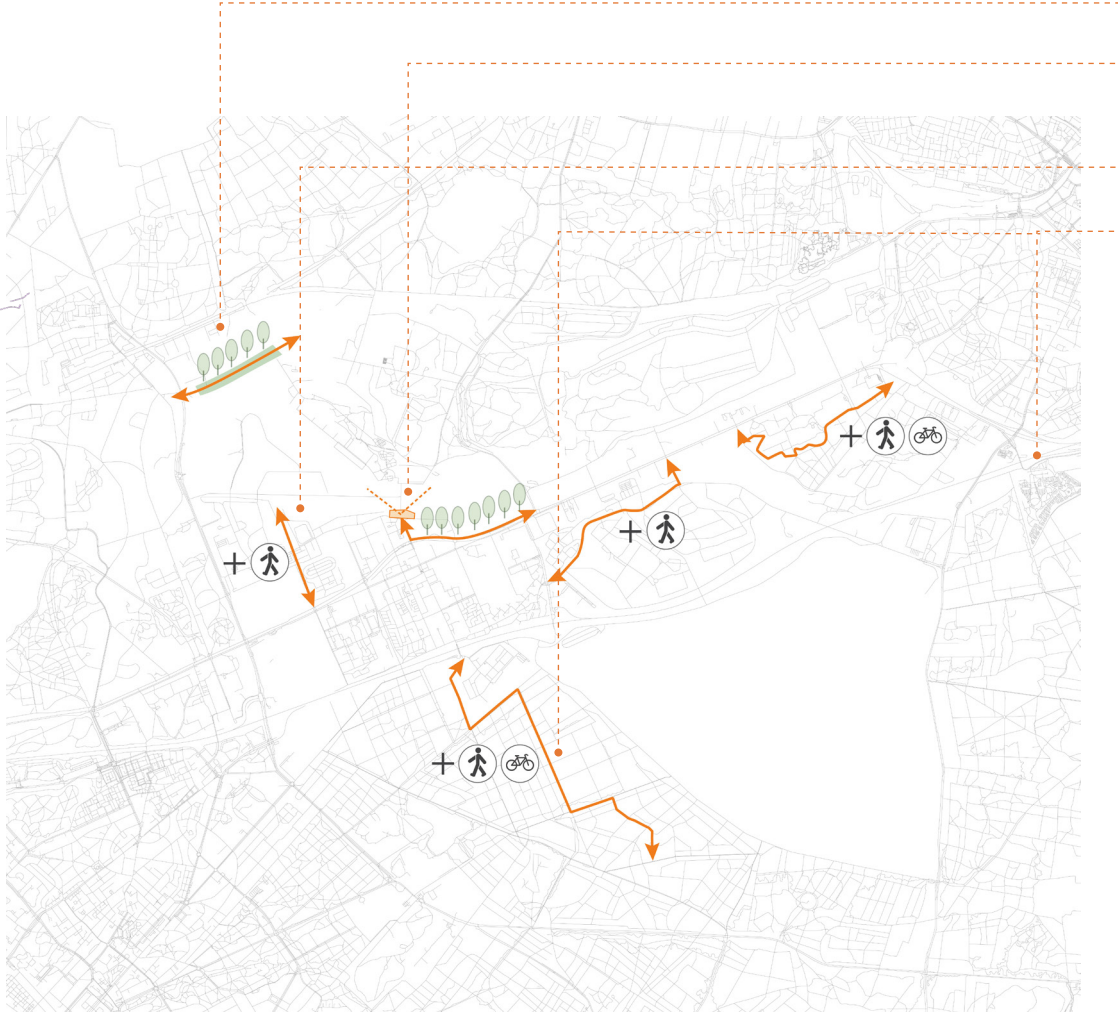
4.4 Strategic design

Connect

between high accessible roads & low accessible roads

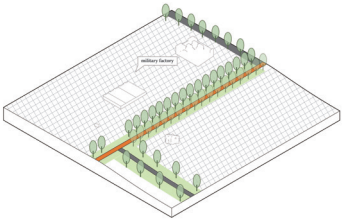
social users need more connections

afforestation in forest fringe area



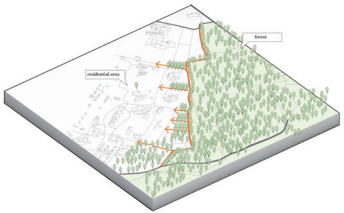
add connecting cycling paths/ pedestrians

in urban environment(M)

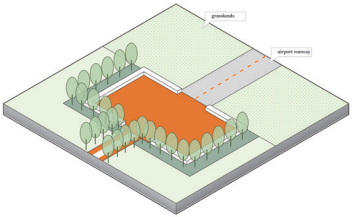


add connecting cycling paths/ pedestrians

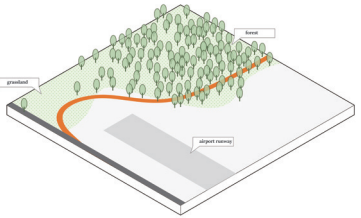
in forest(L)



open entrance with oriental paths(S)



forest-grassland landscapes paths(M)

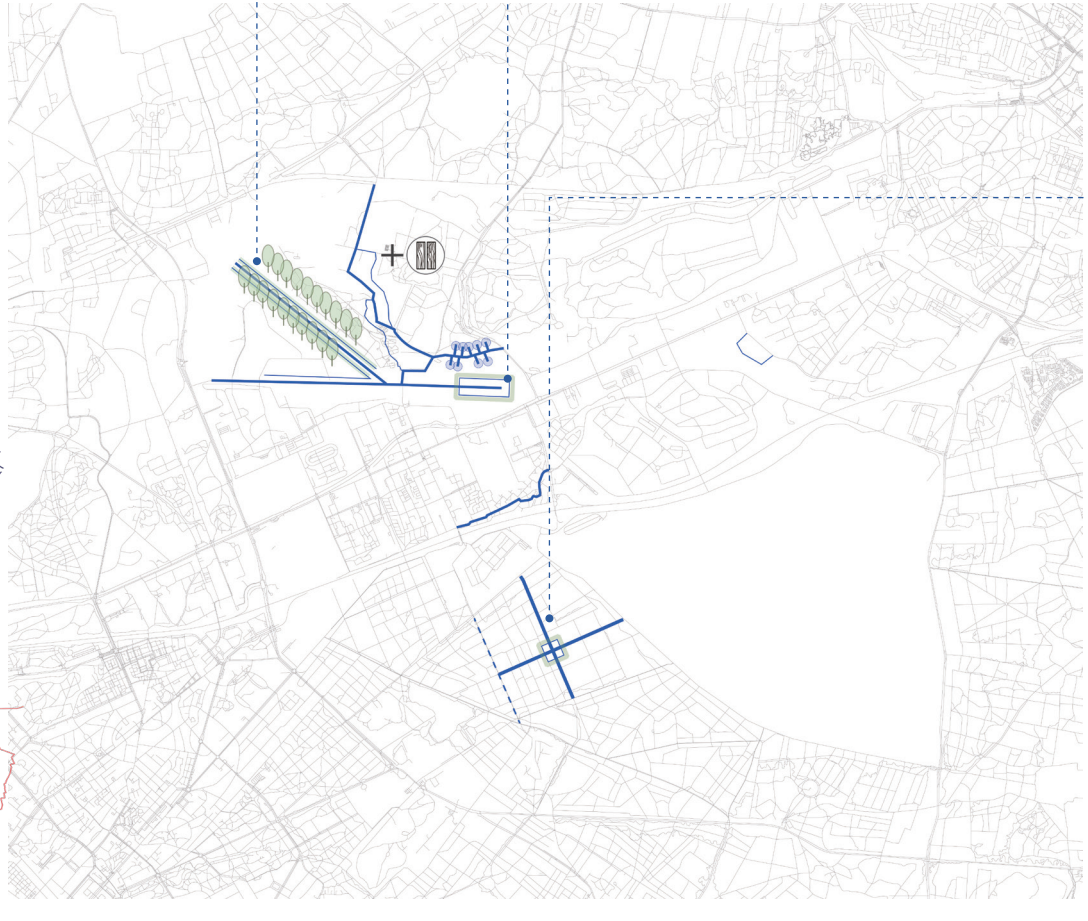


Reuse

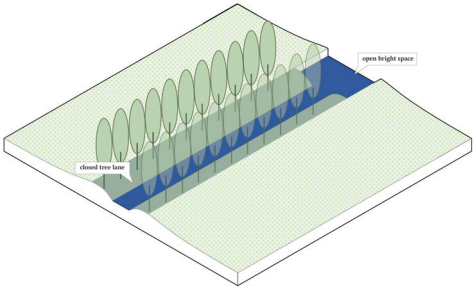
identified heritage roads or spots

high accessible roads

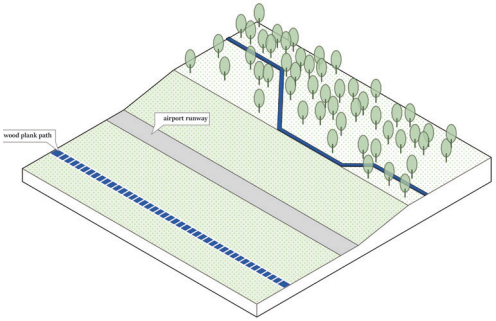
social users most preferred roads



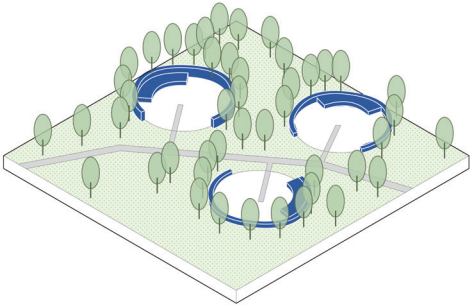
monumental avenue(S)



parrallel wood planks paths
(medium accessibility, pedestrians only)(M)



education square(M)



Diversify

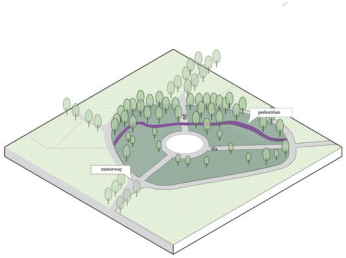
military training boundaries

high & medium accessible roads

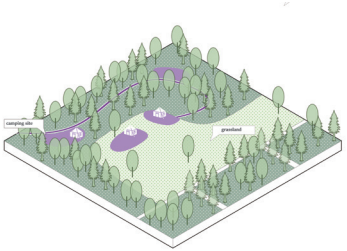
between the most preferred roads

forest thinning, afforestation at forest fringe

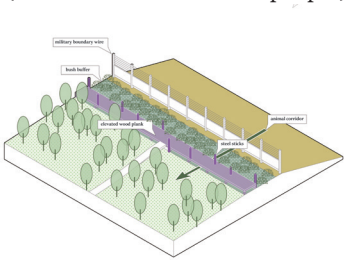
forestry infrastructure parks



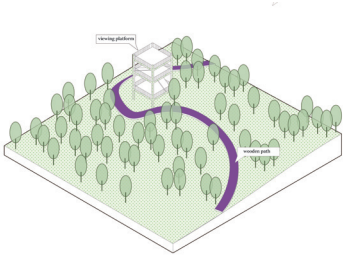
mixed-forest camping park



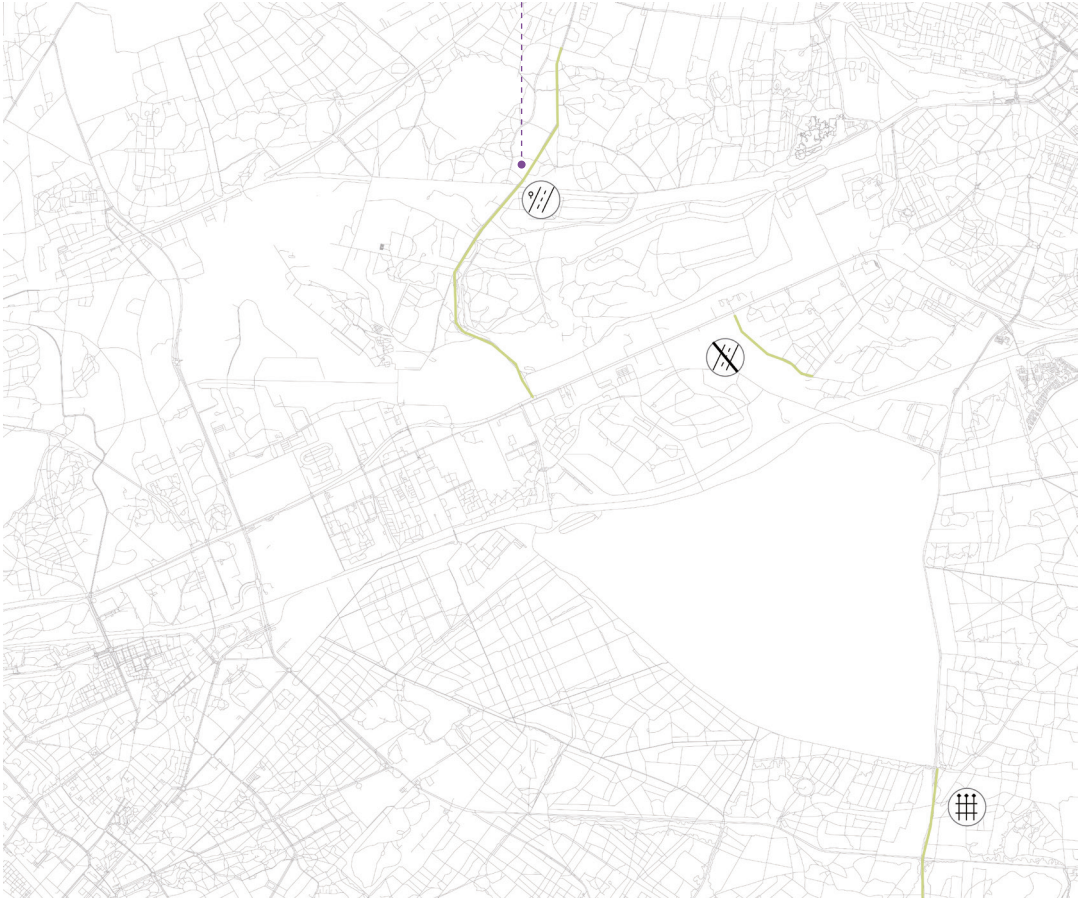
symbolic installations along boundary
(allow animal access not people)



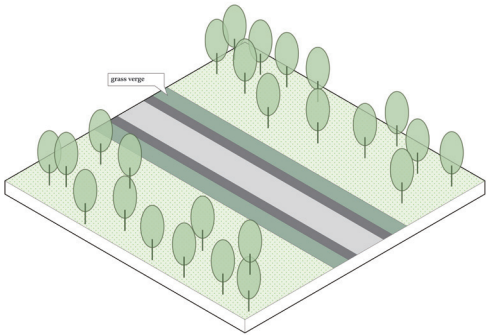
visual connections(viewing platform)



Avoid



removal of overgrown plantings on the verge



05

IMPLEMENTATION

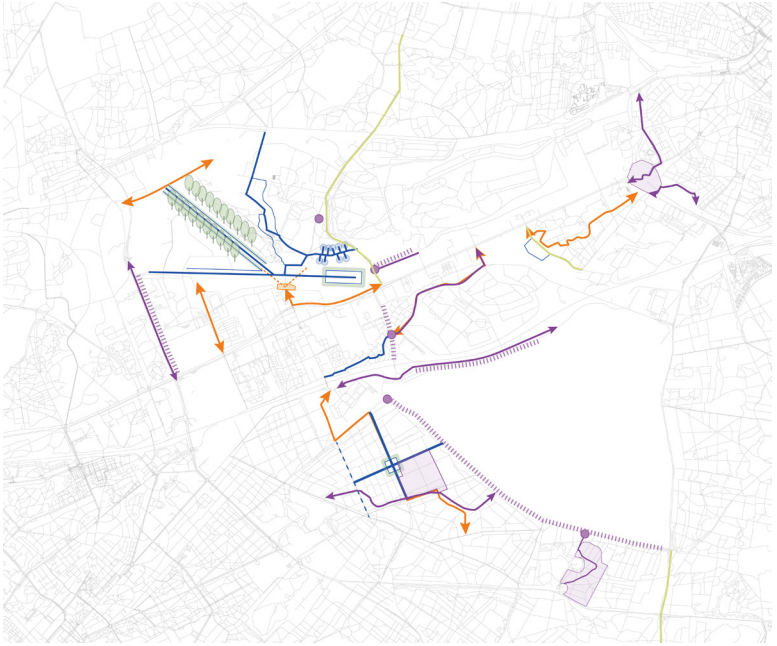
The design explorations follows the conclusion classification and focus on the first 3 types. Each types are intervented with 2 main aproaches, one in infrastructure innovation, the other with landscape. Expected outcomes are the toolbox with spatial design locally.

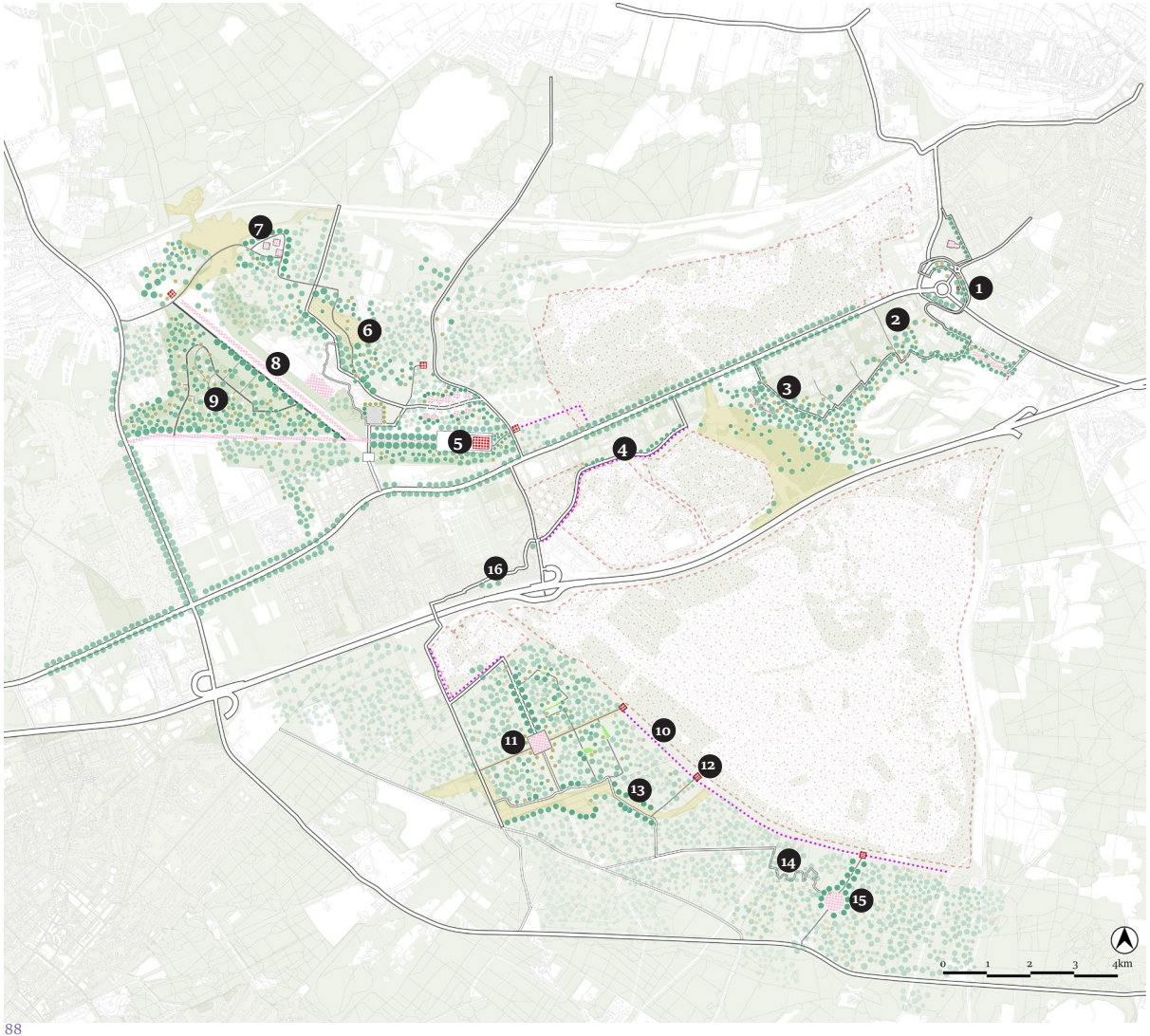
5.1 Regional vision

Connect Reuse Diversify Avoid

By overlapping the above 4 strategies on the plan, the conceptual structure on the regional scale is easy to tell.

The connections are mainly in the area between Vliegbasis Soesterberg and in the dominant forest center. The connections overlap with diversify in some places as well to set up new experiential routes. The reuse of the runway and special topography in previous military training areas in Soesterberg brings opportunities in designing new programs and activities.





1. infrastructure park
2. monumental installation
3. Oude kamp seat
4. military boundary walkway
5. monumental square
6. pit trail
7. MOB park under the hill
8. airport runway
9. shelter cluster
10. boundary path
11. Wallenberg square
12. watchout tower
13. elevated heath path
14. twisted hilled cycling path
15. pyramid
16. community park walkway

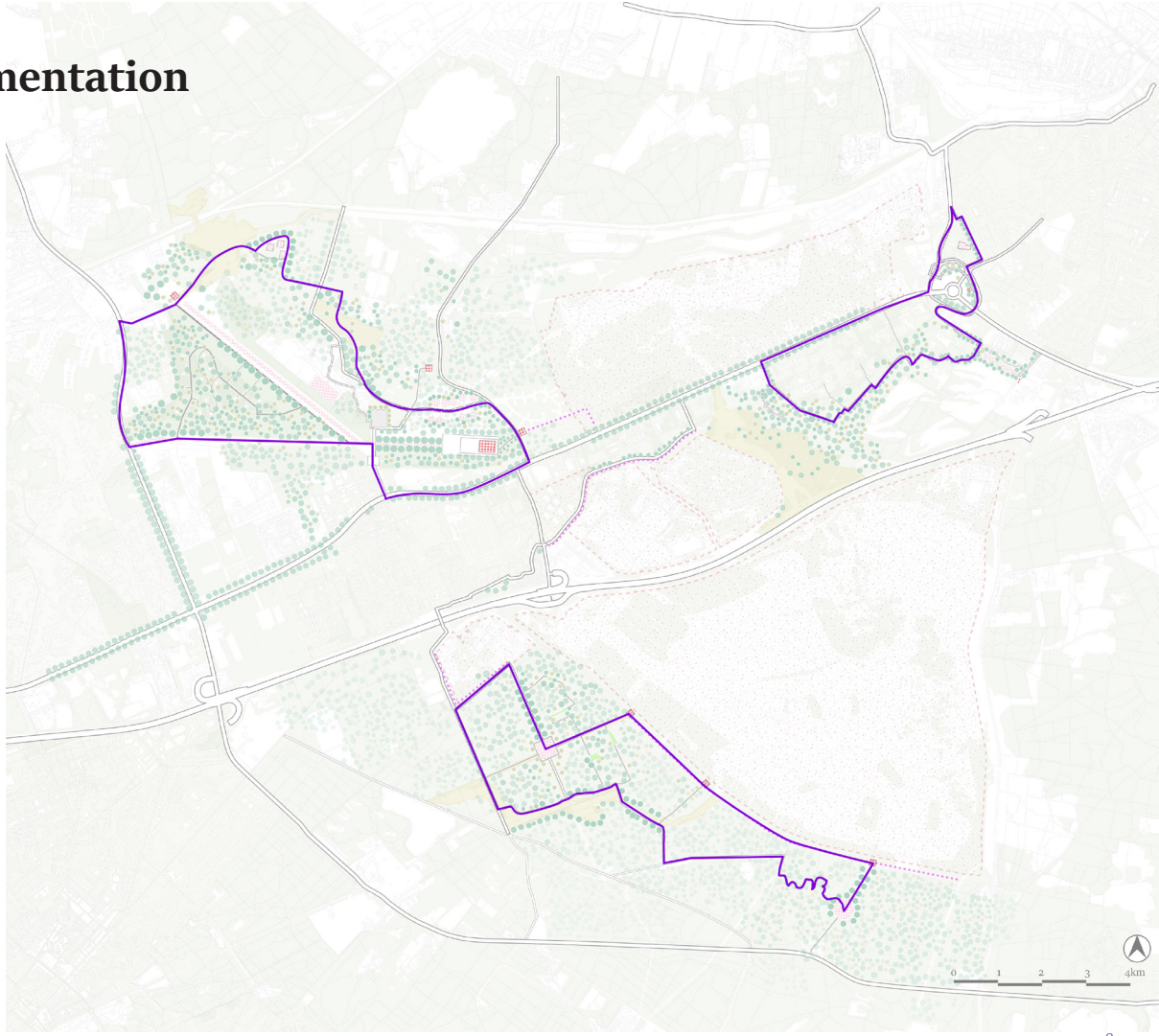
5.2 Local implementation

5.2.1 loops division

As the masterplan shows, the scale of this area is large and people can hardly cover the whole in one loop, so the division on the regional scale to zoom in to the local scale is made.

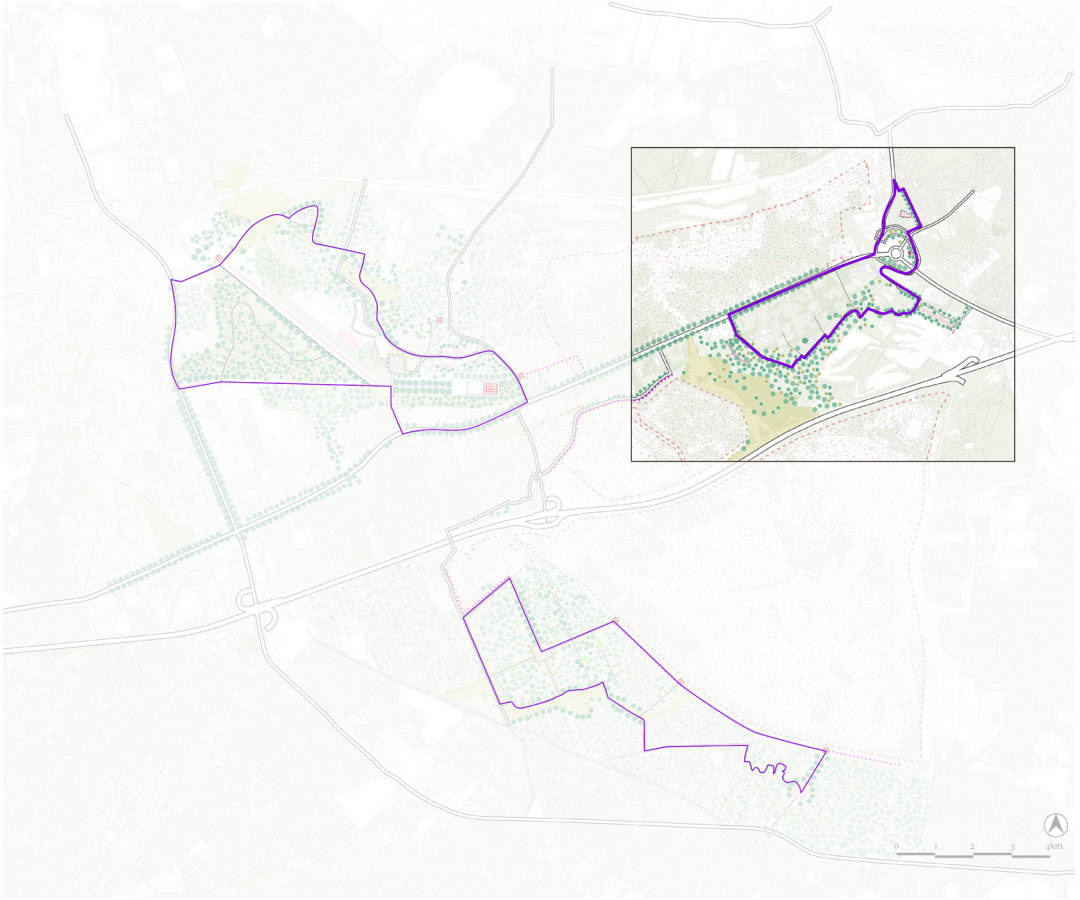
3 general loops with own identified themes(because of the heritage identities in each loop):
loop1 is WW1 and WW2 relics
loop2 is Cold war
loop3 is French times

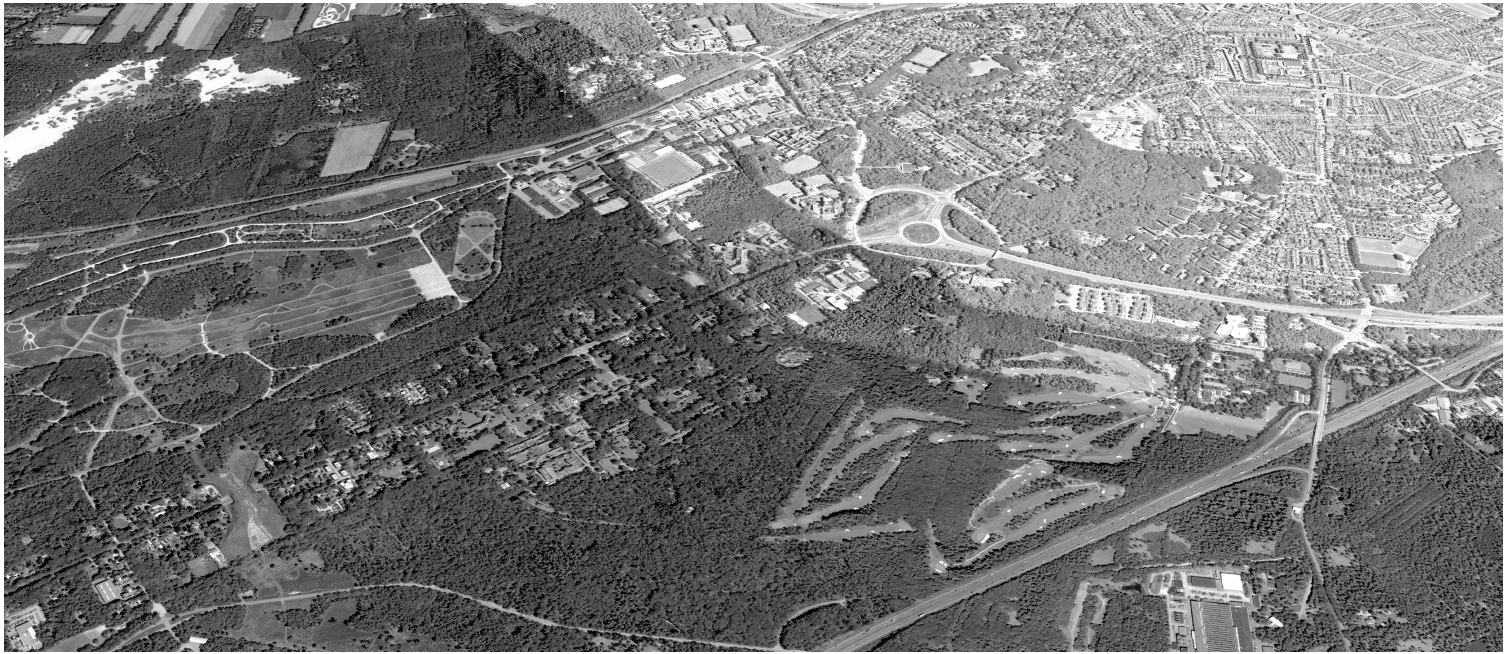
This division does not mean their themes are not communitative with each other. Conversely, each loop has heritage sites from different times but with one dominant.



5.2.2 loop-scale design plan

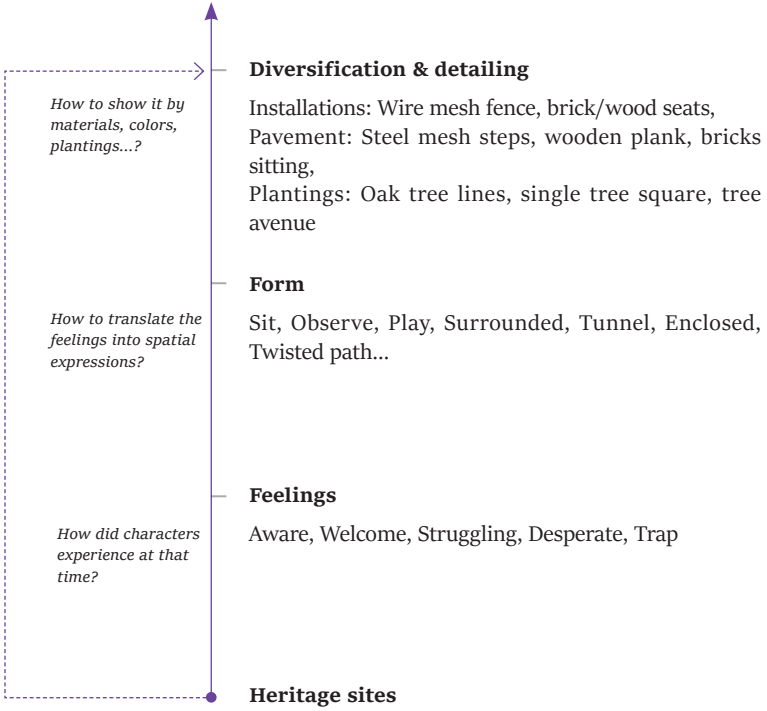
loop 1





heritage-needs
as narrative and source

Heritage is considered to be the source providing historical evidence for the experience. In that sense, the conclusion drawn before from biography can be further translated into the emotional atmosphere, which can be felt in the specific place. This is the process of understanding and presentation of heritage.

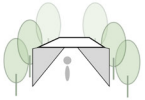


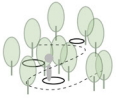
Feelings & Form

Aware - Sit/Observe/Play

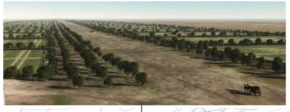
Welcome - Sit/Surrounded

Struggling/Desperate/Trap - Tunnel/Enclosed/Twisted path





Oude Kamp



Amersfoortsestraat

Belgium Monument

Shooting range &
mass grave

Kamp Amersfoort

https://www.kvdz.net/de-stenen-man/

socio-needs

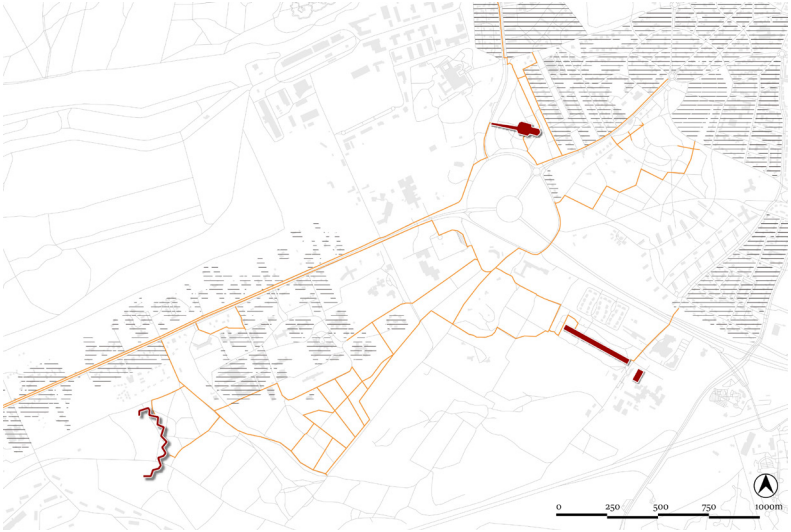
Families

Students

Recreators

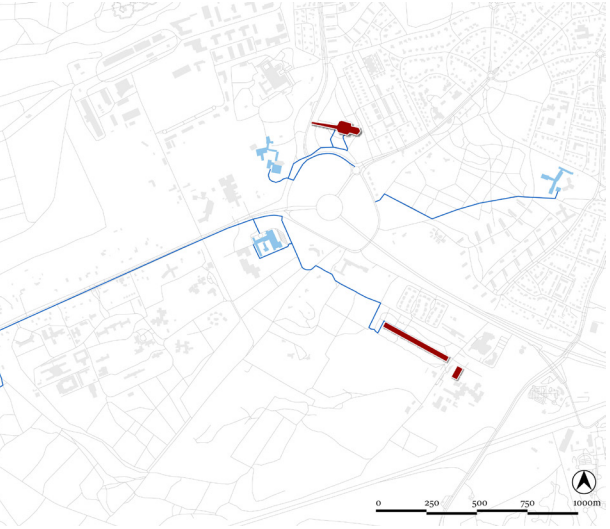
By analyzing the socio-needs in the local scale helps better define what routes to implement on.

families coming from residential areas by foot or cycle

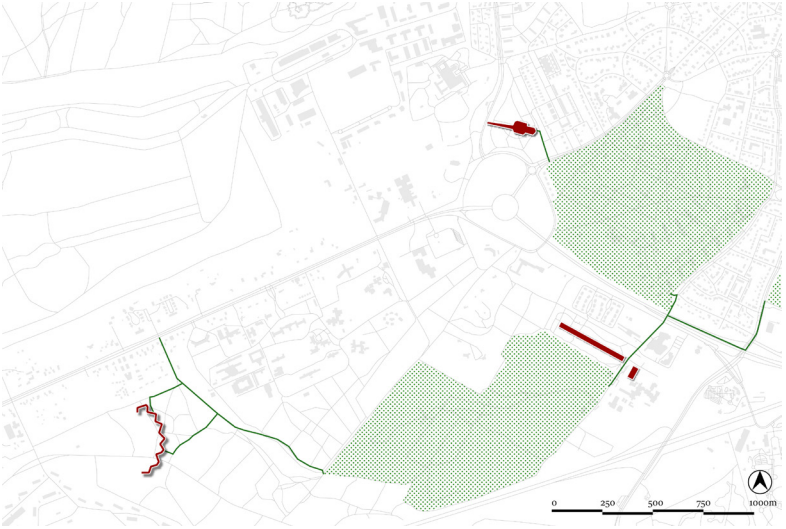


stu

dents from schools by foot or cycle

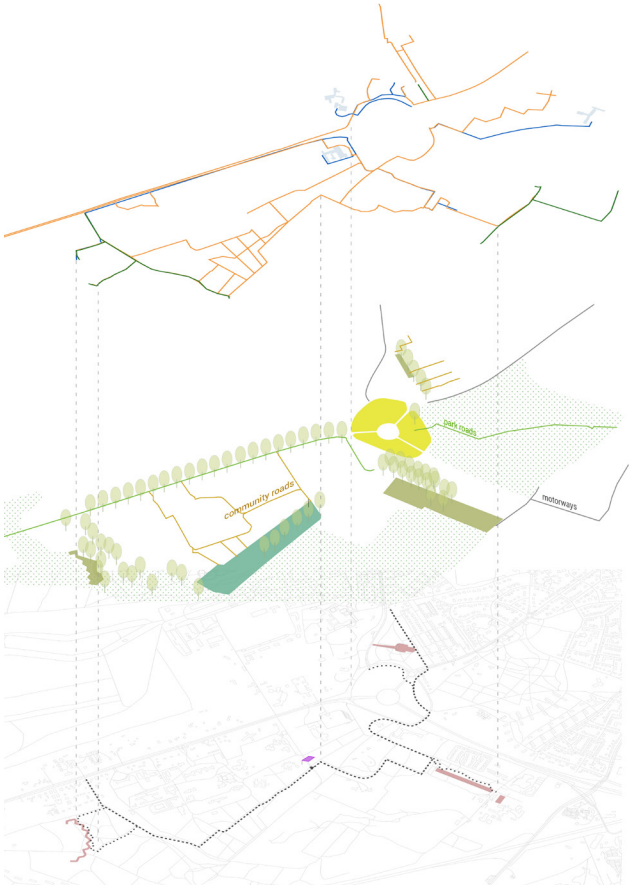


recreation nearby



masterplan

The local-scale strategy is to set a major route with branches stretching into the functional areas, including residential areas, schools and sports parks. So when people coming from nearby on foot or by bicycle, it is easy for them to recognize and follow the route to get to the destination.
The regional approaches are adaptive to the local implementations by planting schemes, pavement design and small topography creatings.



Social-requirements overlap

- residents-choice
- recreation-choice
- education-choice

Green functions

- infrastructure park
- heritage theme park
- community park
- current recreation park

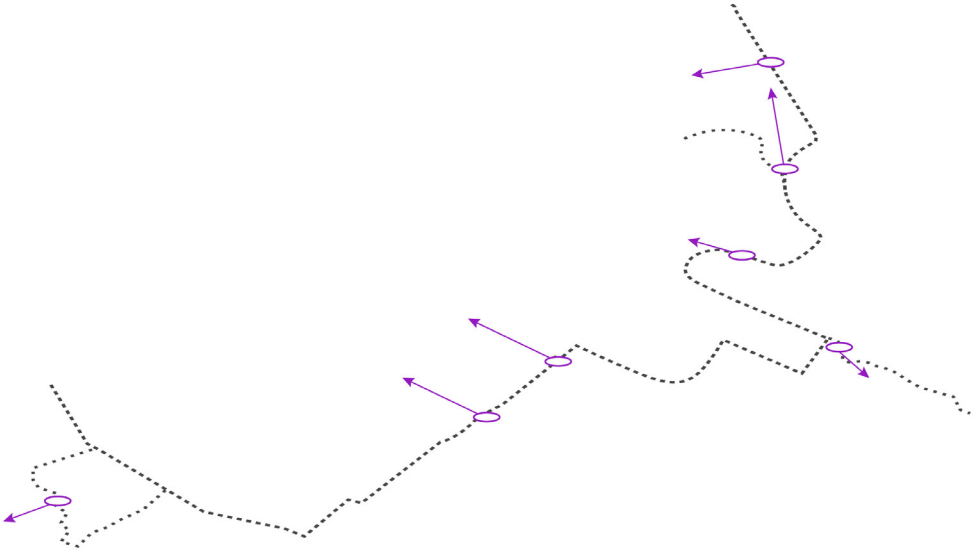
Main routing after interventions


1 Belgium monument garden entrance
2 Pedestrian bridge to view the Belgium monument
3 Tunnel in the woods
4 Clink paths and stone seat in forest
5 Monumental installation
6 Viewing platform
7 Wooden path and sandy pitch in Oude Kamp
A Belgium monument
B De Stenen Man
C Kamp Amersfoort
C Oude Kamp
0
250
500
750
1000m

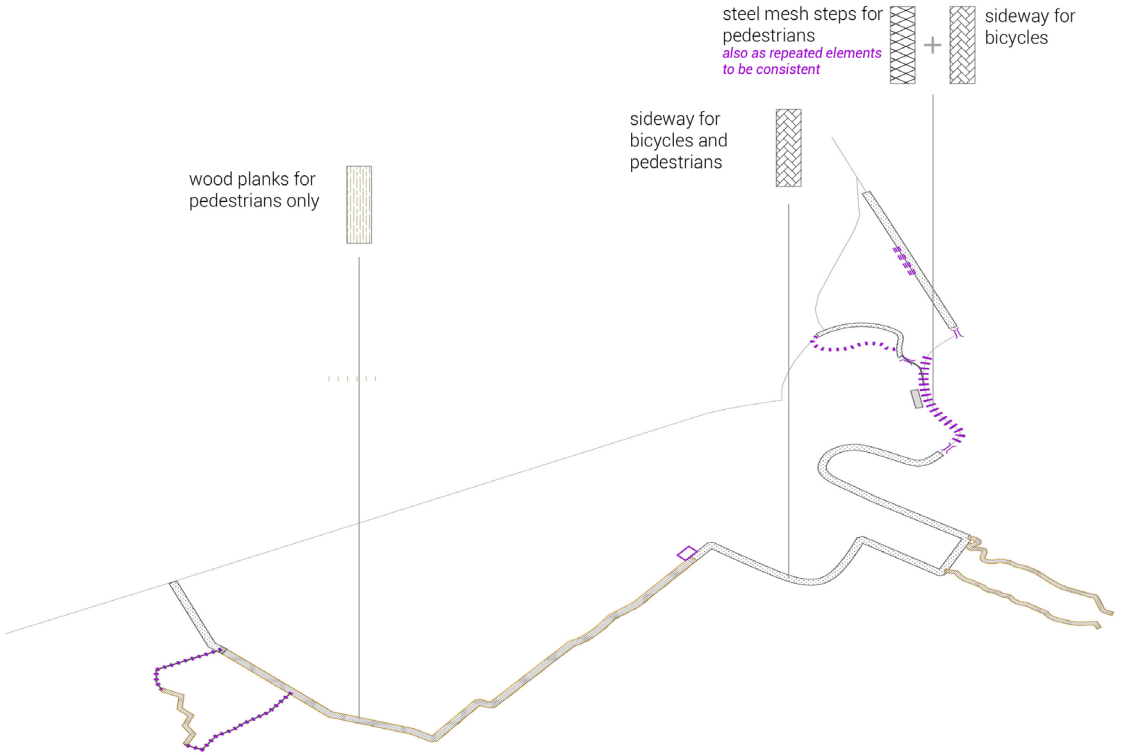
5.2.3 nodes+lines

NODES(7)

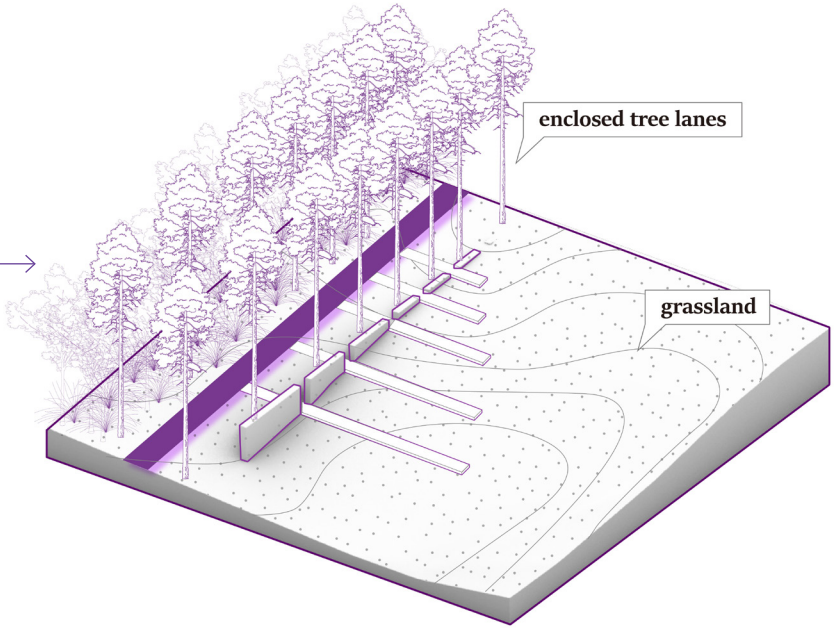
topography interventions + visual connections + planting schemes

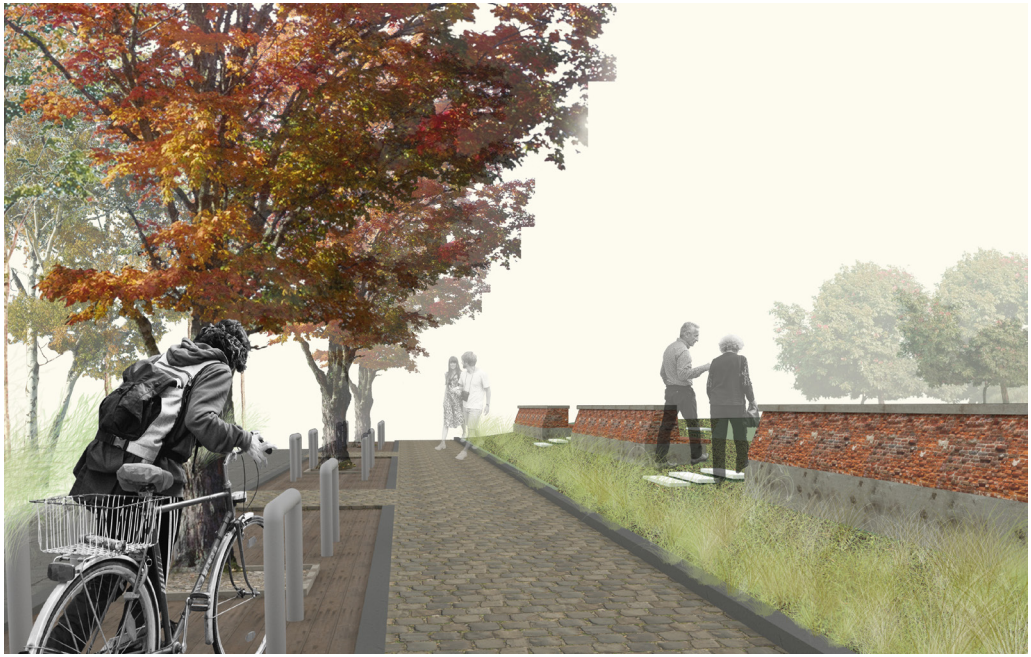


LINES(4)


steel mesh steps for pedestrians
also as repeated elements to be consistent
+
sideway for bicycles
sideway for bicycles and pedestrians
wood planks for pedestrians only

NODE01 Belgium monument garden entrance

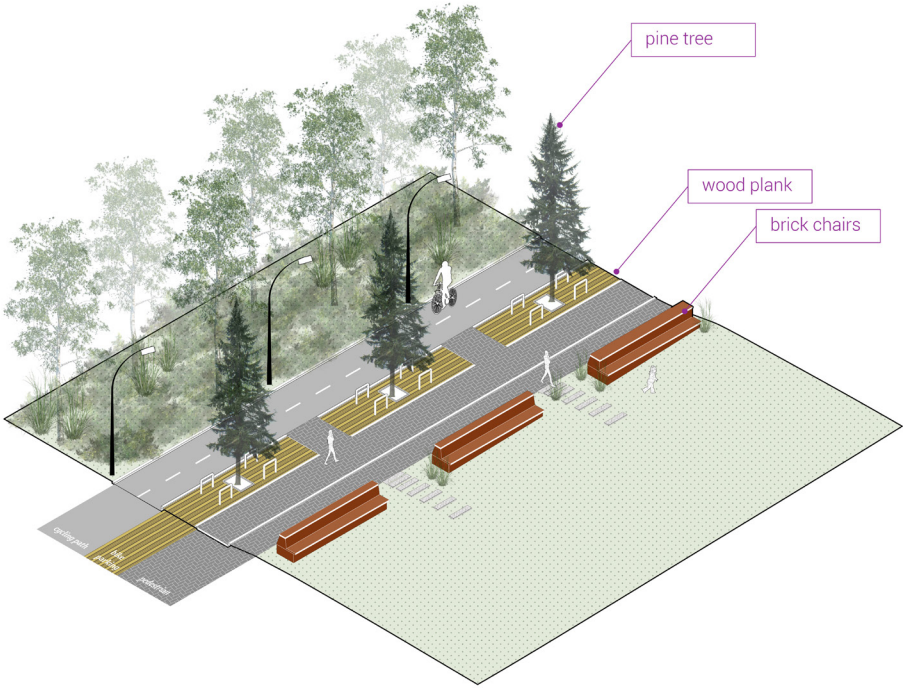




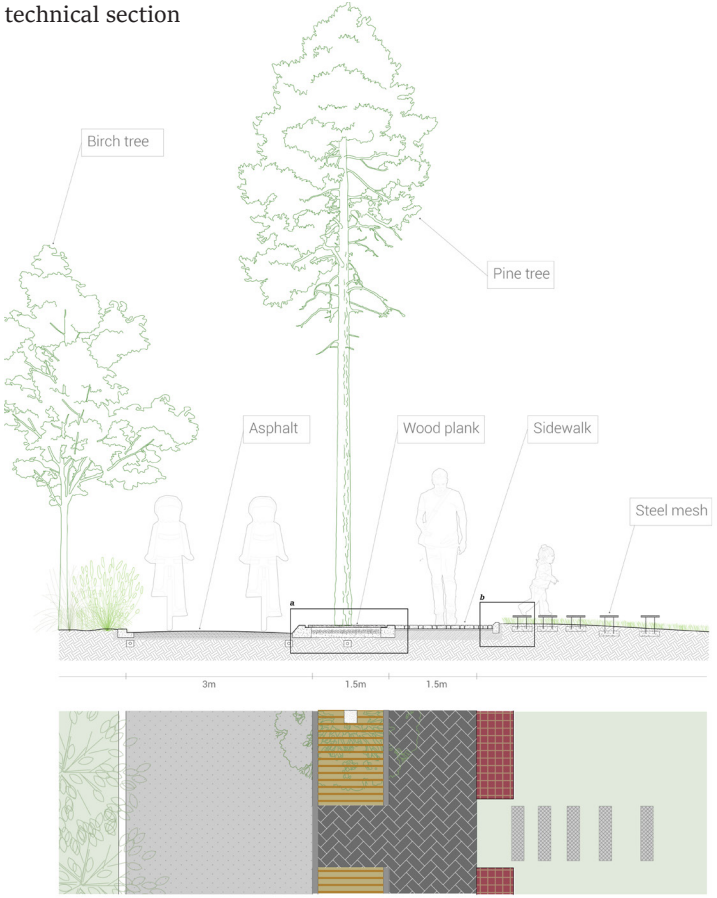
The entrance to the Belgium refugee monument is expected to be inviting and welcome, since the story behind is Dutch people warmly welcomed and sheltered the refugees. In that sense, creating dark and bright contrast by densified tree lanes and bushes on one side of the road and open space on the other can realize that effect.

LINE01 sidewalk - wood plank - steel mesh steps

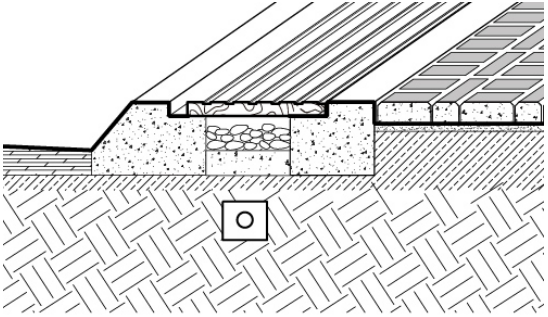
The materials used on line1 are sidewalk, red bricks and steel mesh. The red bricks are meant to bring memories of the Belgian refugees to the site. What's more, it also functions as a reponse to the Belgian monument architecture which was built with bricks. This pavement combination also accomodate parking spots for bikes between the cycling path and pedestrian so that people can get access to the entrance of the park no wonder what kind of transportation they choose. The steel mesh steps are consistent along the way as a repeated element in the whole route to remind people following the track.



technical section

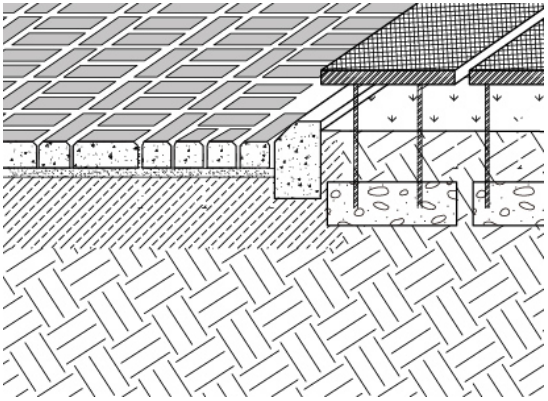


a



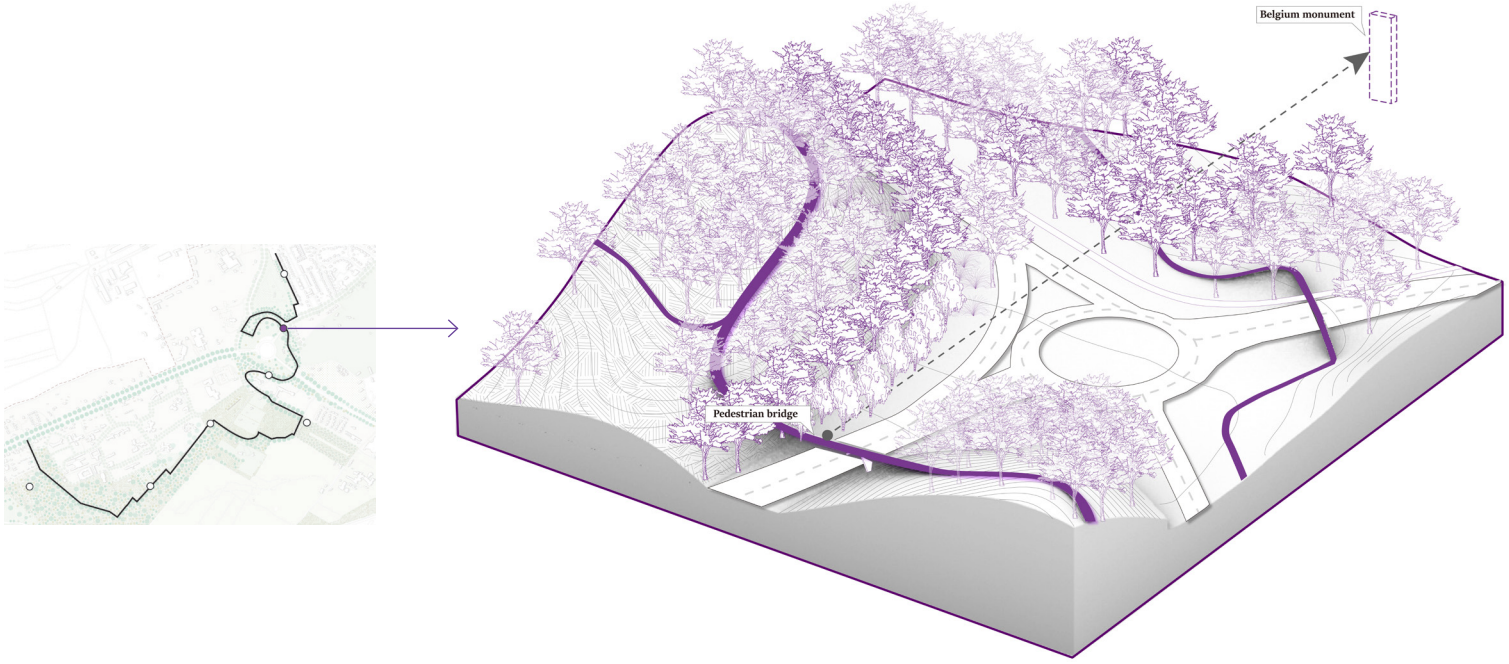
The wooden plank are made with rough patterns on top of it to make sure the bicycle parking place won't be slippery on rainy days. The underneath gravel layer allows water to penetrate into the ground.

b



The steel mesh material will repeat along the route. The steps here are pinned on grass with concrete base to stablize it.

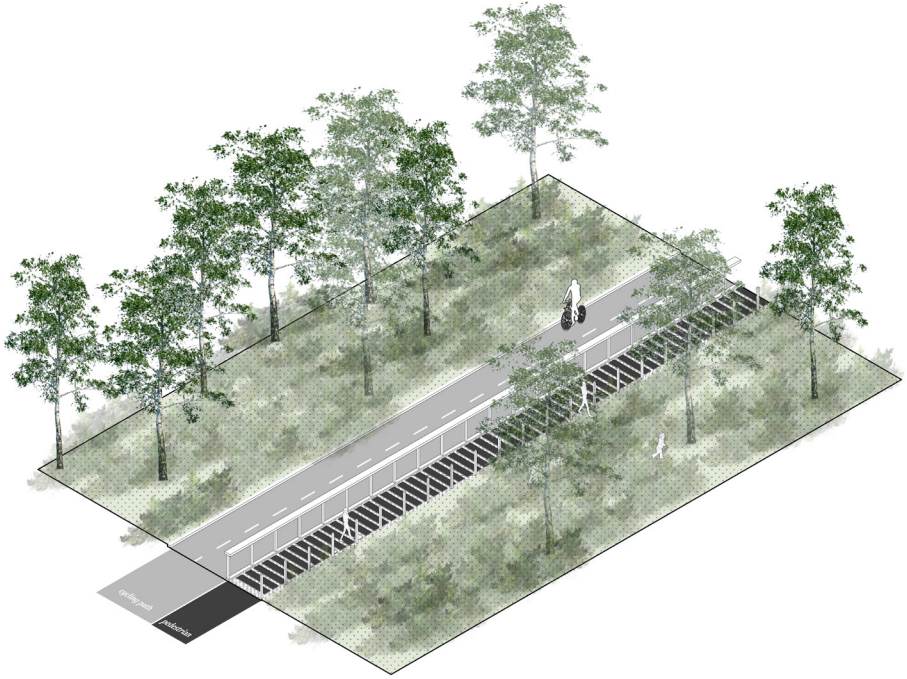
NODE02 Pedestrian bridge to view the Belgium monument



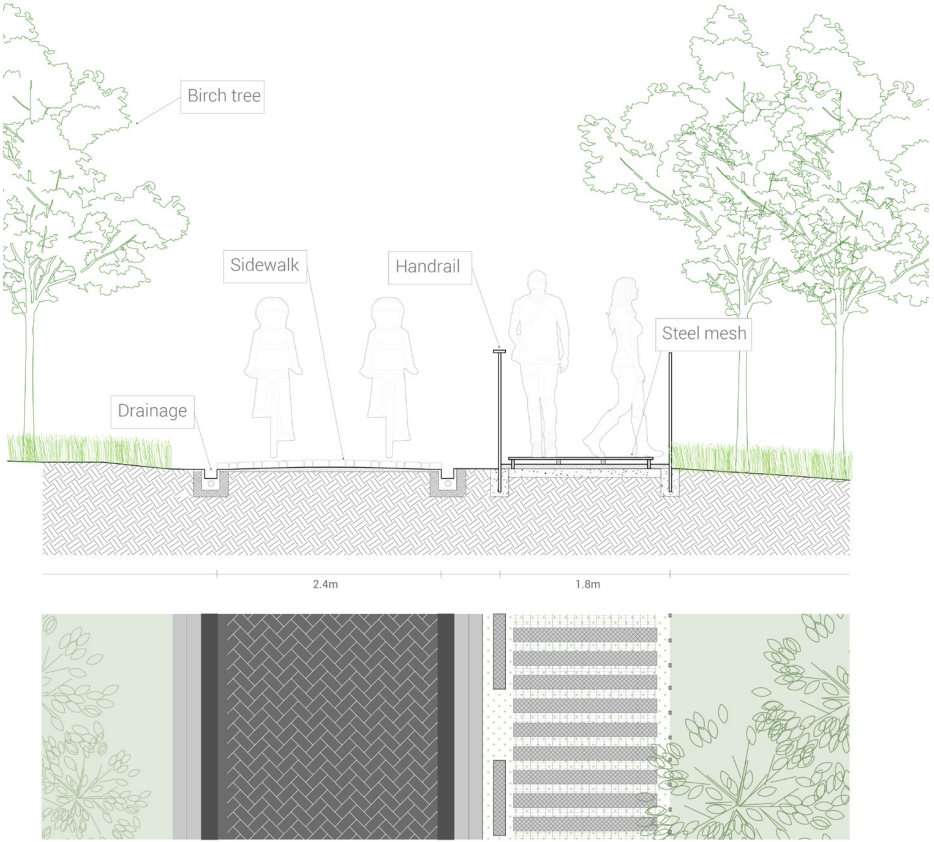
Setting a new trail across the infrastructure park allows people to view the Belgium memorial monument from a new perspective. Trees in the front forms a narrow eyesight corridor for people to take a look at the hidden monument behind.

LINE02 steel mesh as a repeated element(pavement)

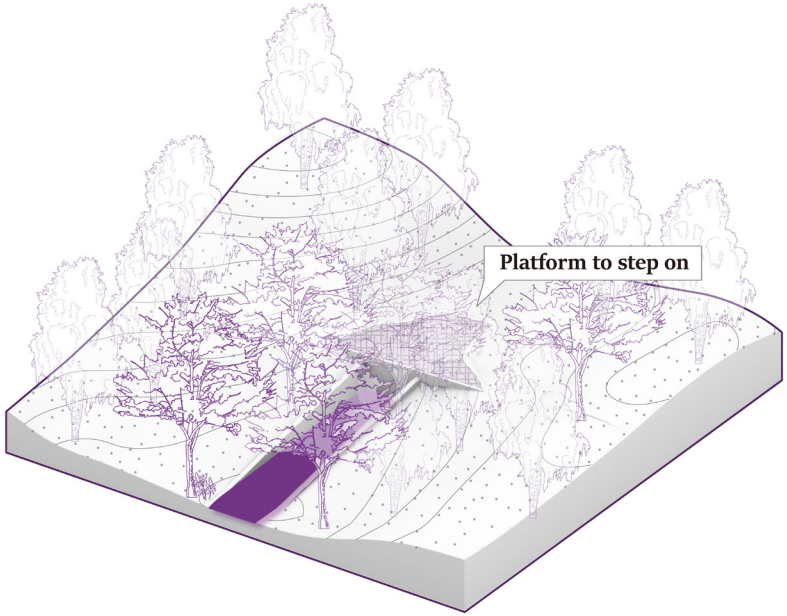
The steel mesh material is also applied on the handrails of the pedestrians, and the steel steps(black) is to keep the consistency with the line01. What's more, the walking path have easy accessibility to the forest on one side because of the unclosed boundary.

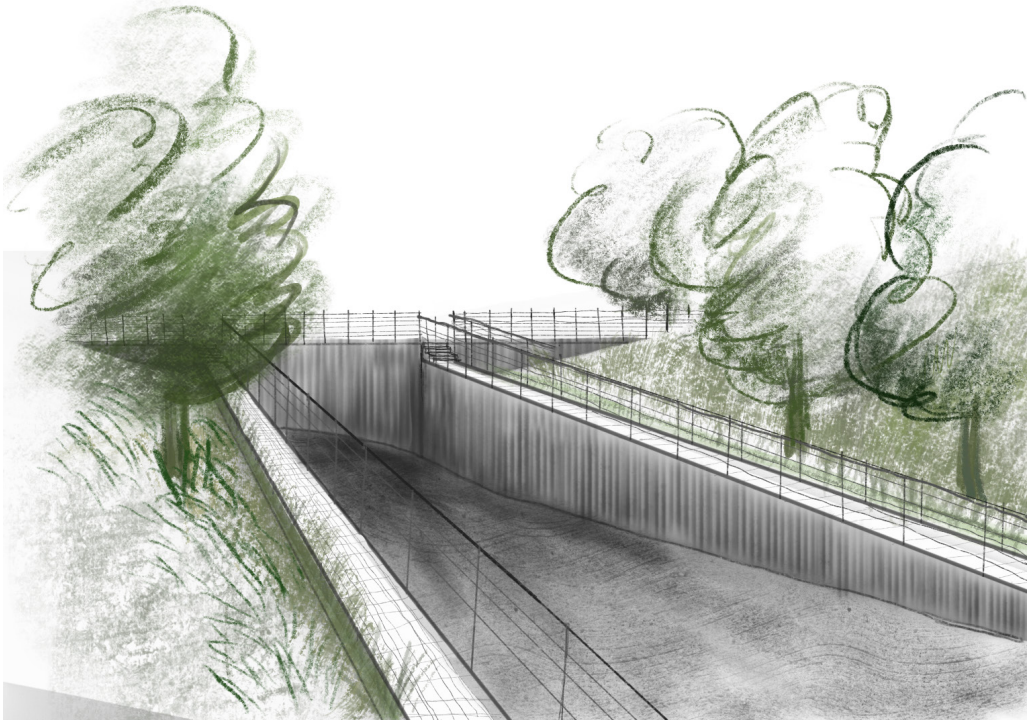


technical section



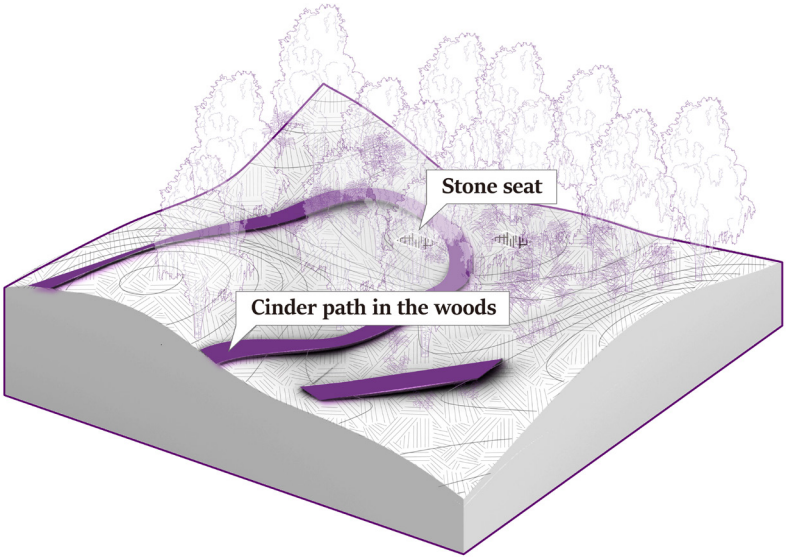
NODE03 Tunnel in the woods





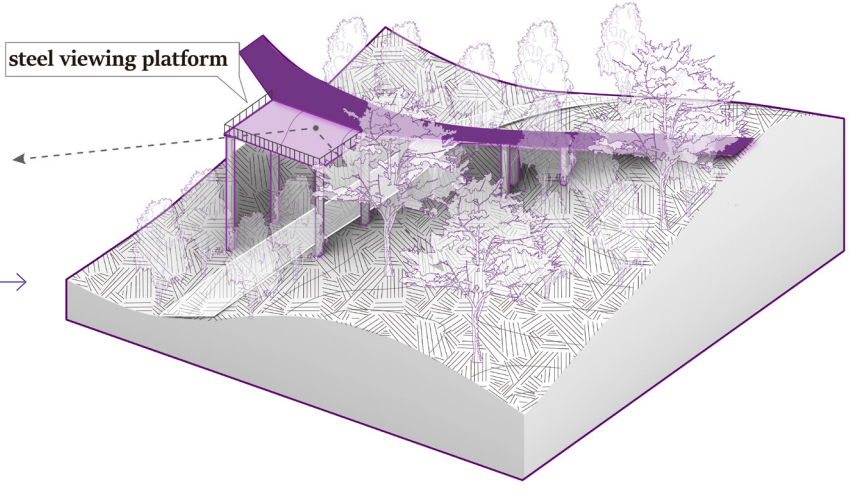
Leaving the park and stepping on the way approaching Kamp Amersfoort, the tunnel not only release the pressure of the steep slope, but also creates the atmosphere of trapping and darkness. This kind of feeling makes people mentally prepared for the miserable history happened here.

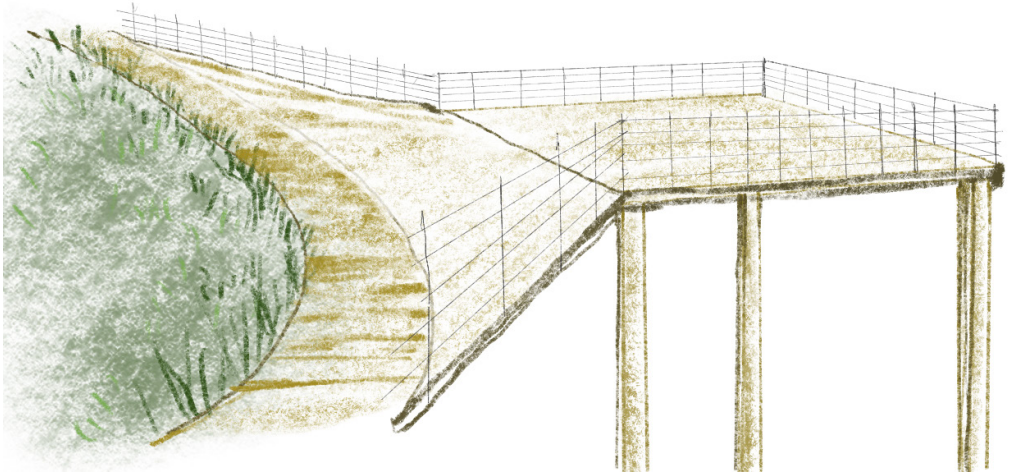
NODE04 Clink paths and stone seat in forest



The symbolic clinkers and stones materials used here represent the prisoners activities in Kamp Amersfoort during war times, that is to transport stones and dig the grave. The ups-and-downs of pedestrians in the woods strengthen the feeling of trap and struggling and make the emotions consistent as the routing continues.

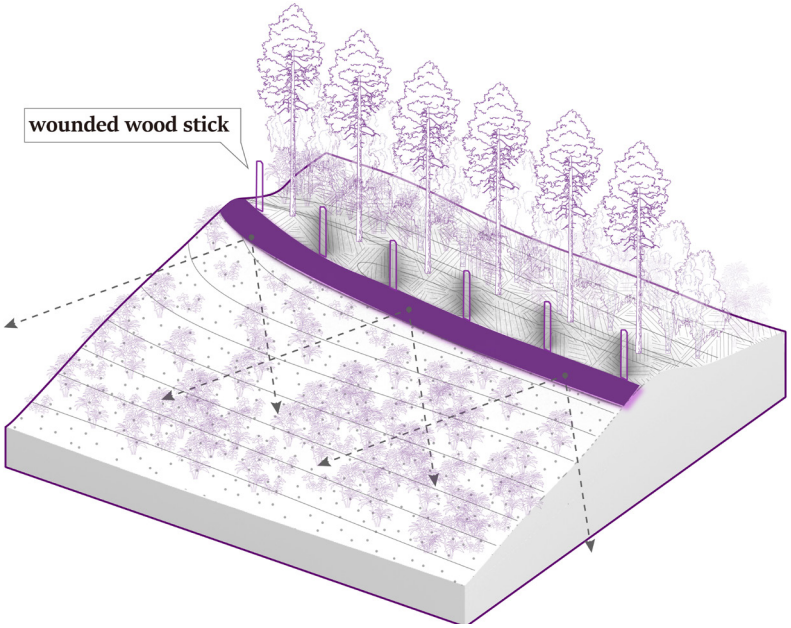
NODE05 Viewing platform towards Amersfoortsestraat





This is another approach to perceive and it allows people to stay for a longer time.

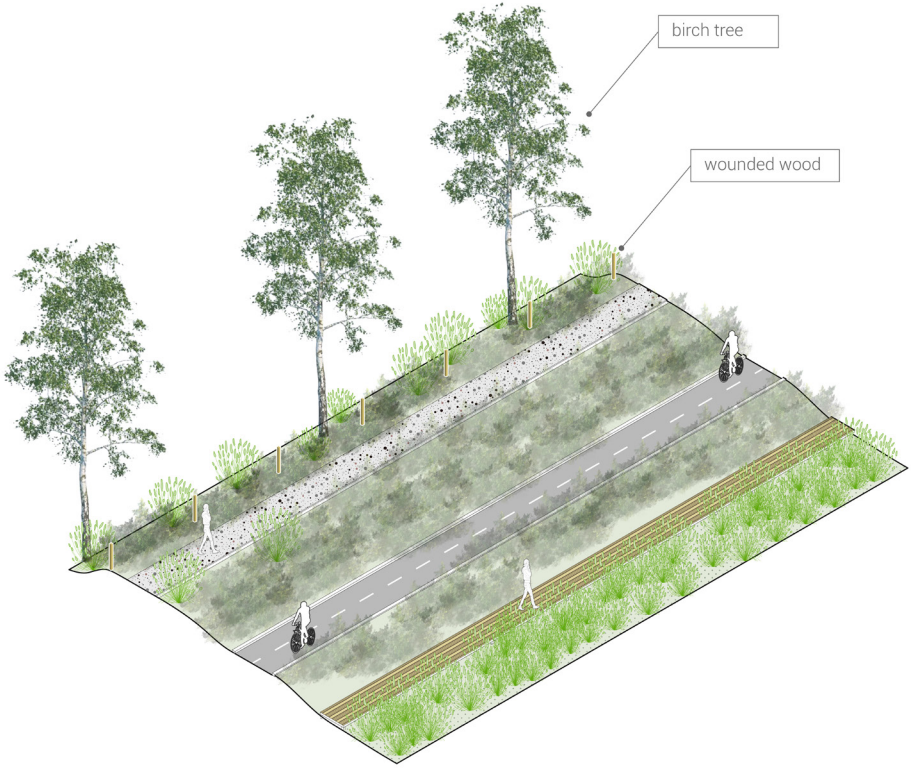
NODE06 Lifted path to have an overview of Amersfoortsestraat



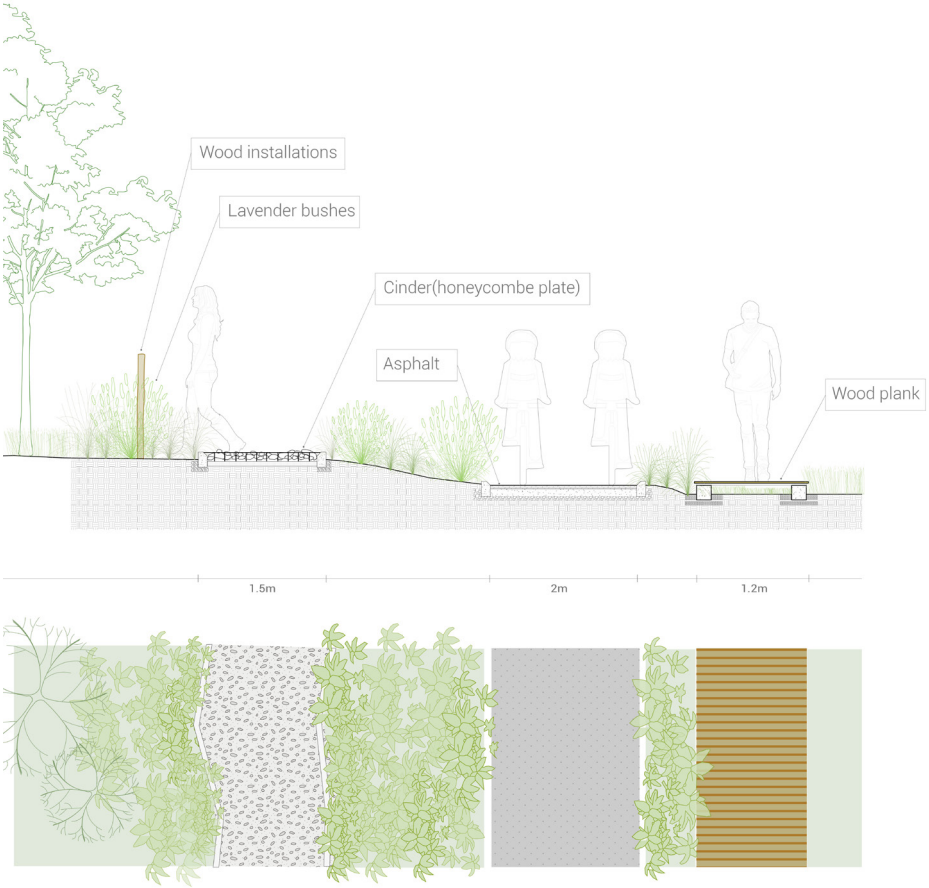
When cycling or walking in Amersfoortsestraat, it is difficult for people to perceive that it is a straight road connecting 2 cities directly. By raising the path using the current terrains, people can have an overview of the special patterns surrounding Amersfoortsestraat to recognize the heritage.

LINE03 gravel - asphalt - wooden path

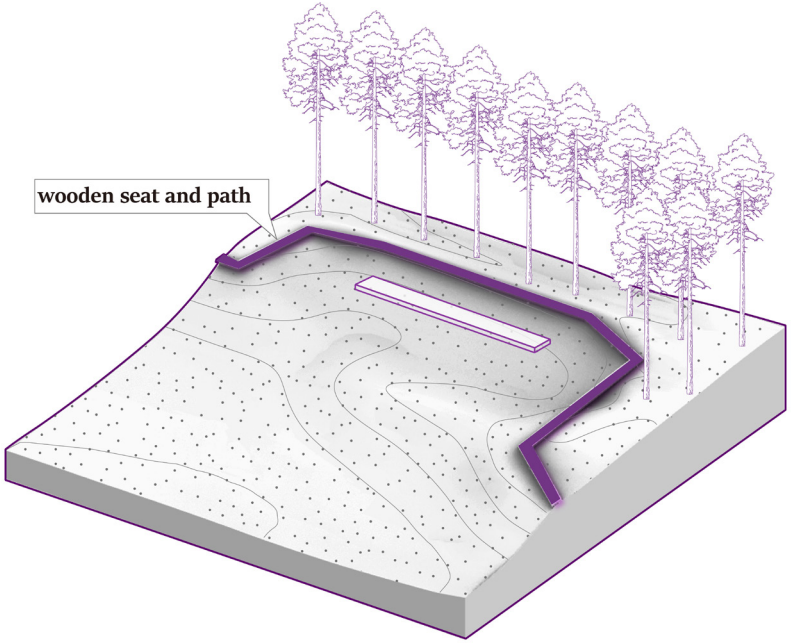
The path pavement here with gravels is to keep the material consistency with the stone pavement before entering the Kamp Amersfoort. The parrallel cycling path is paved with flat asphalt and the wooden plank on the lowest height is connected with some branches paths in communities.

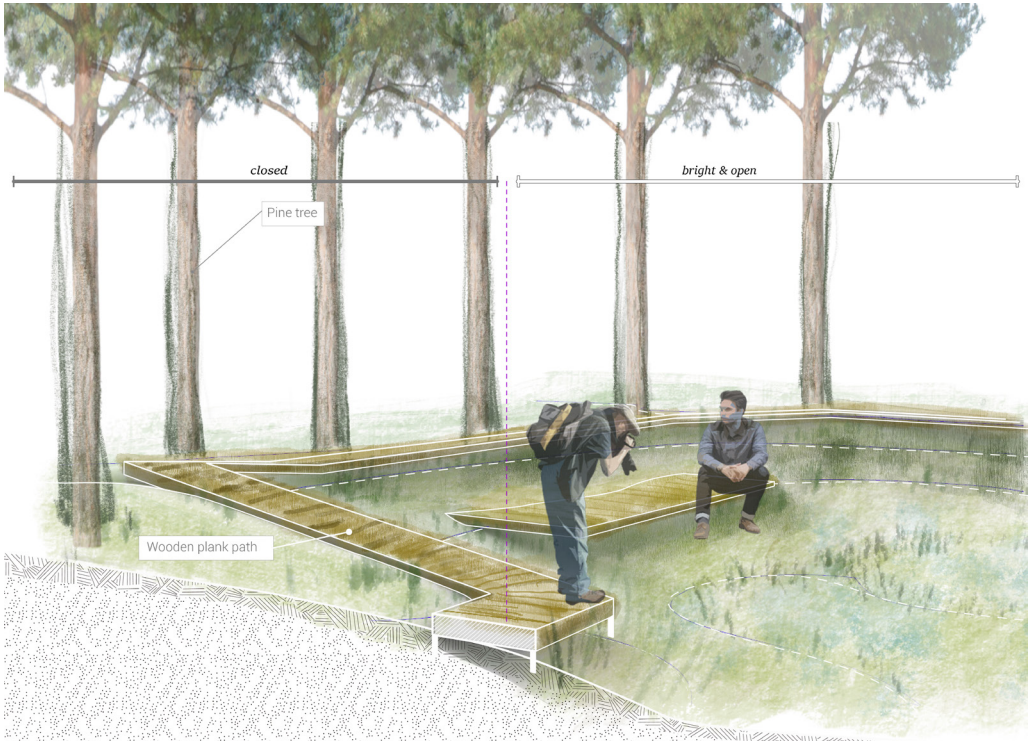


technical section



NODE07 Wooden path and sandy pitch in Oude Kamp



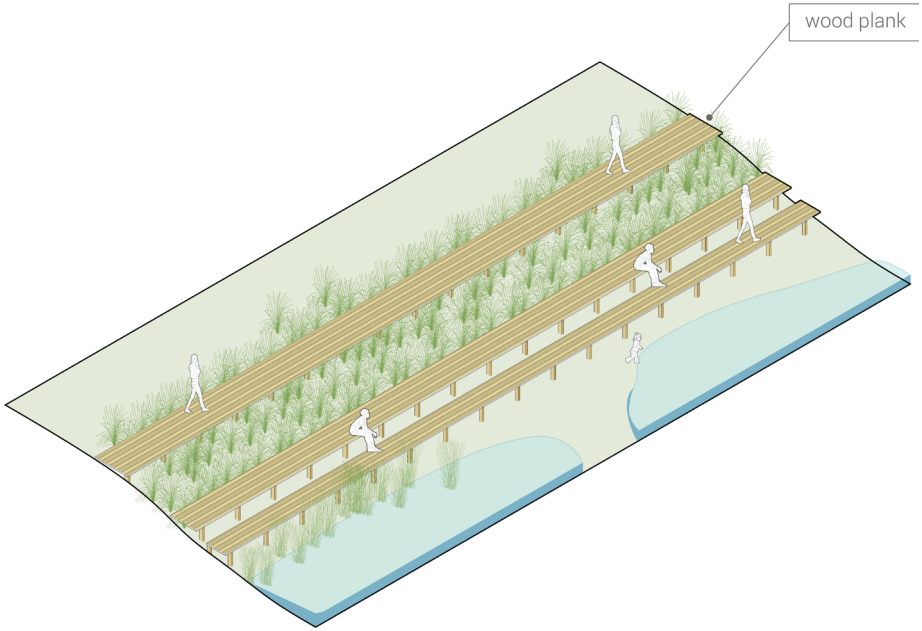


This pit has special topography due to the military training history before. So the llifted wooden path and a wooden plank seat on the bank of the slope emphasize the uniqueness of this place so that people can be reminded of the heritage. Walking, seating and jumping are freely encourged in the pit.

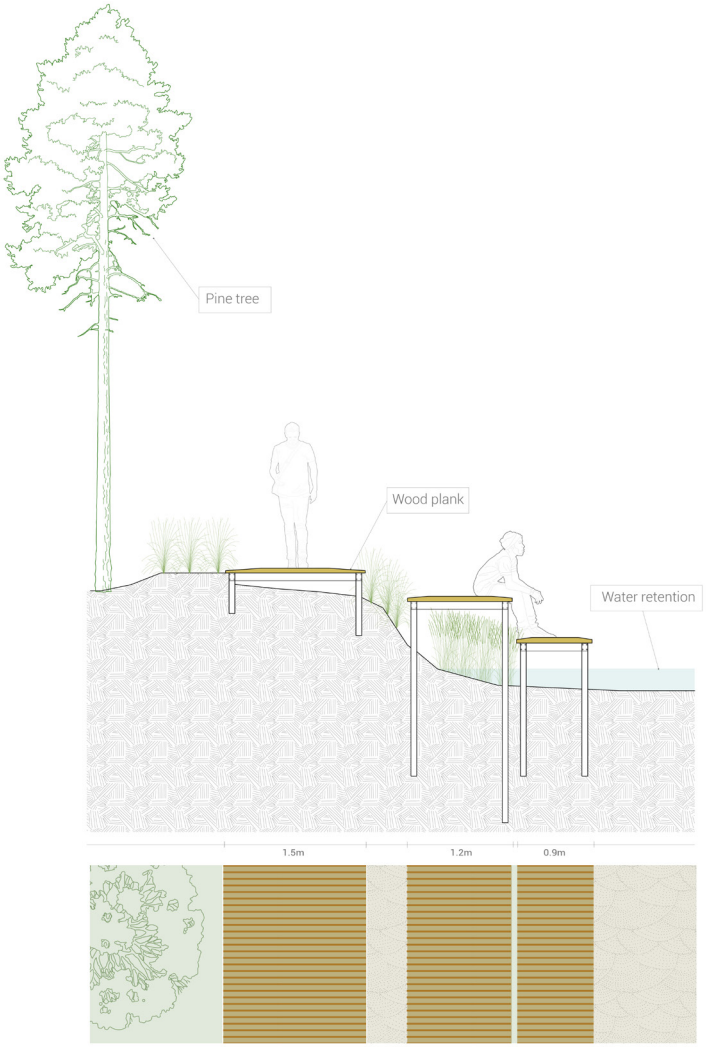
LINE04 lifted wooden path

The wooden path are for different eye height to view the historic pit pattern which was shaped due to the military training history. The oude kamp site could also functions as a water retention pond during winter, so the programs there differ during different seasons. All these 3 heights are for pedestrians only.

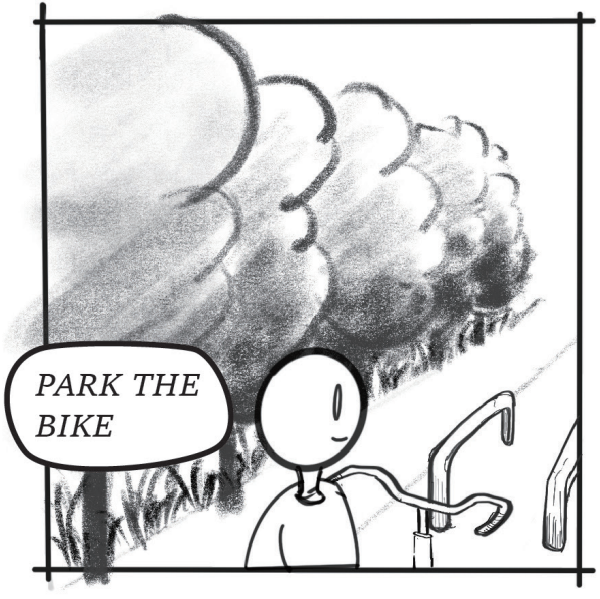
The top layer of the wooden path will have a general overview of the whole site.
The second and third layers are for sitting and observation.

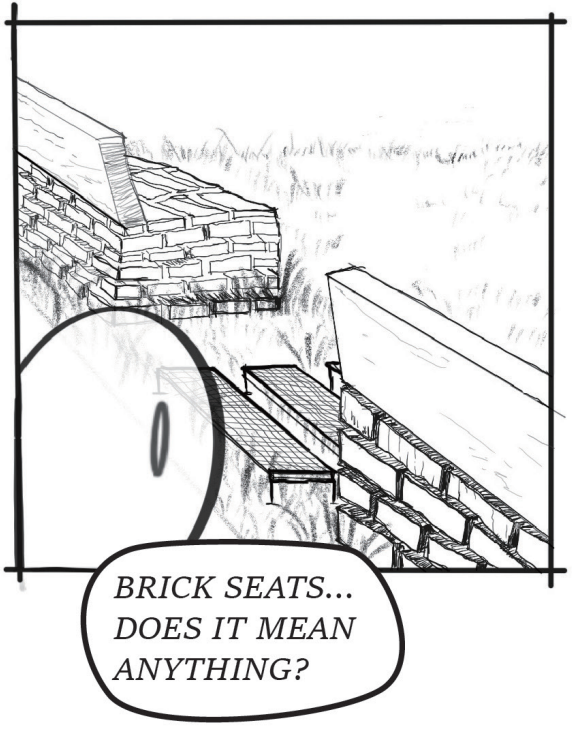


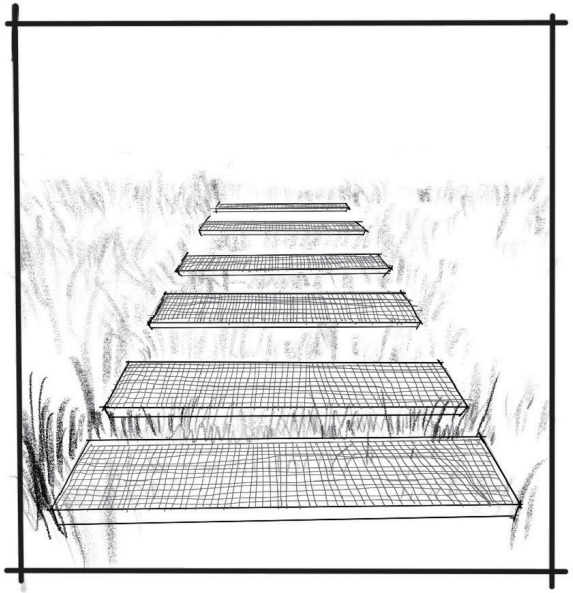
technical section

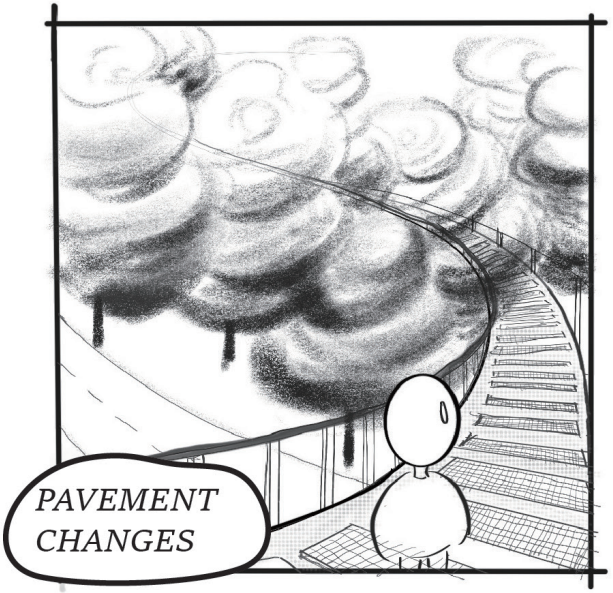


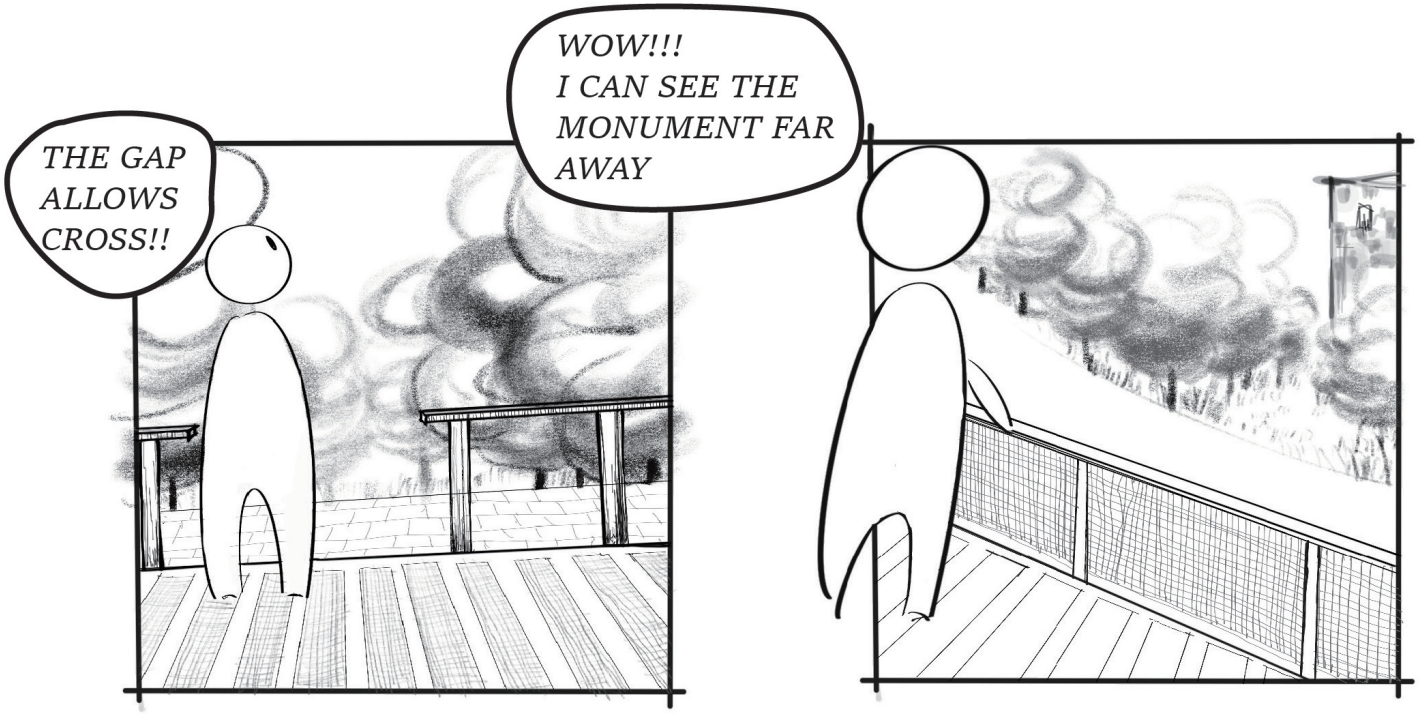
5.2.4 sequential perspective comics

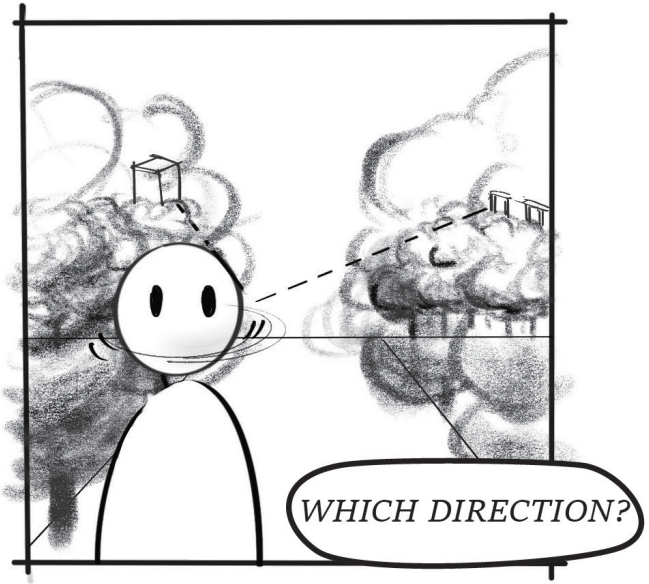


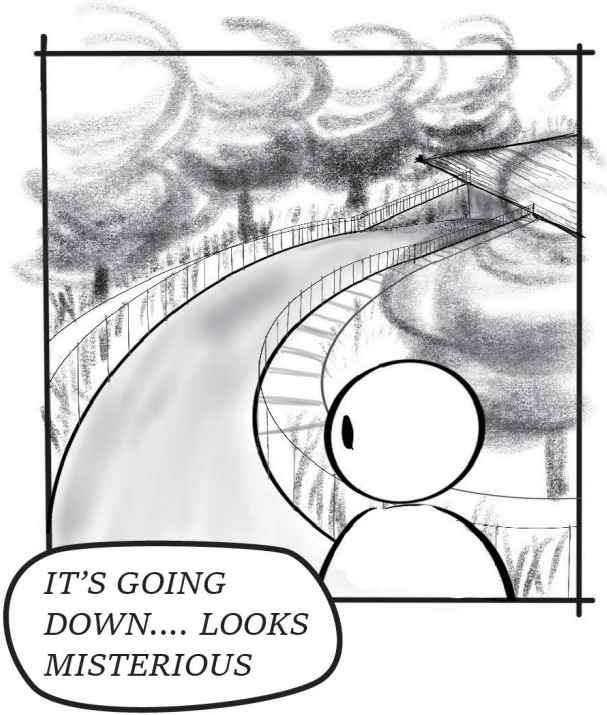


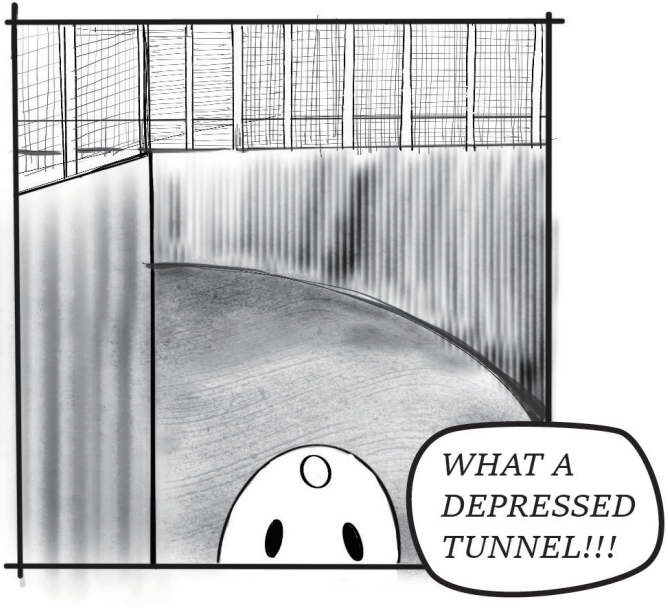


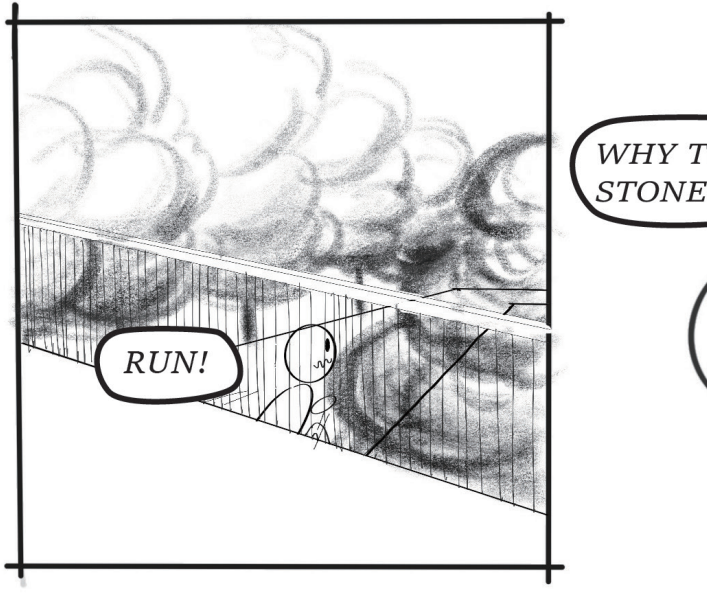

PAVEMENT
CHANGES


THE GAP ALLOWS CROSS!!
WOW!!! I CAN SEE THE MONUMENT FAR AWAY


WHICH DIRECTION?

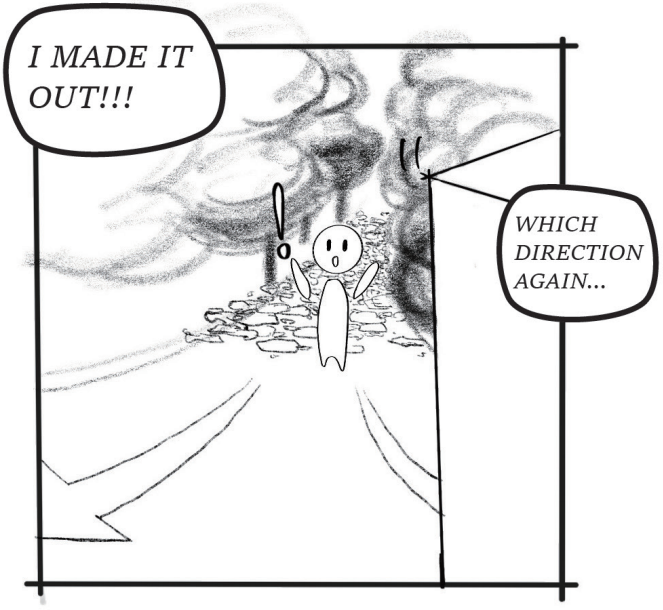

IT'S GOING DOWN.... LOOKS MISTERIOUS

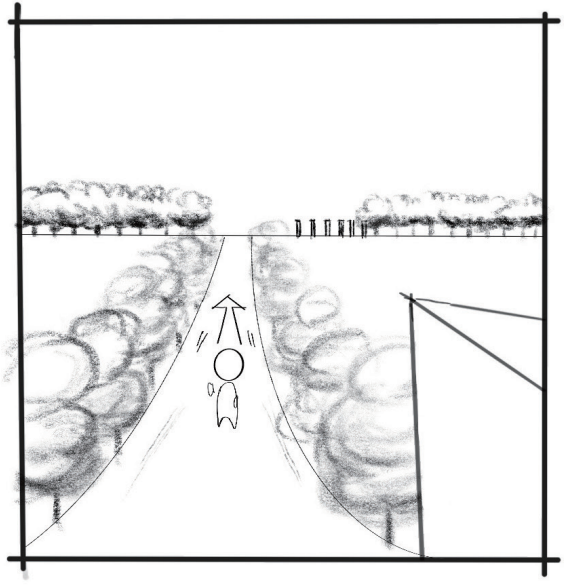

WHAT A DEPRESSED TUNNEL!!!

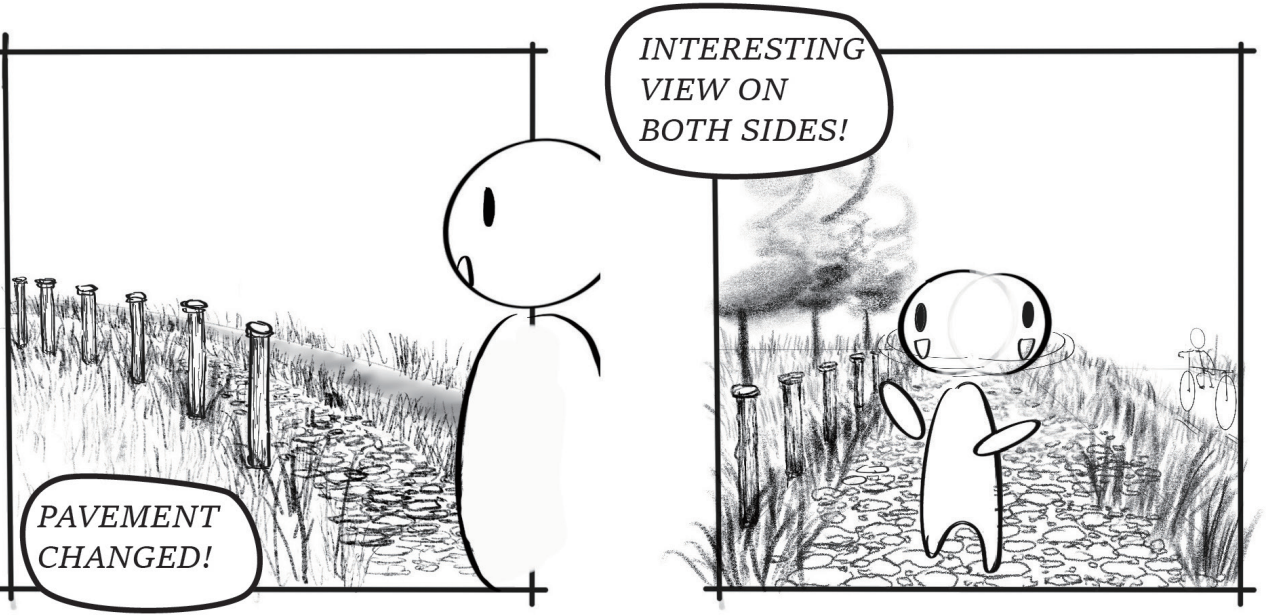

RUN!
WHY T
STONE

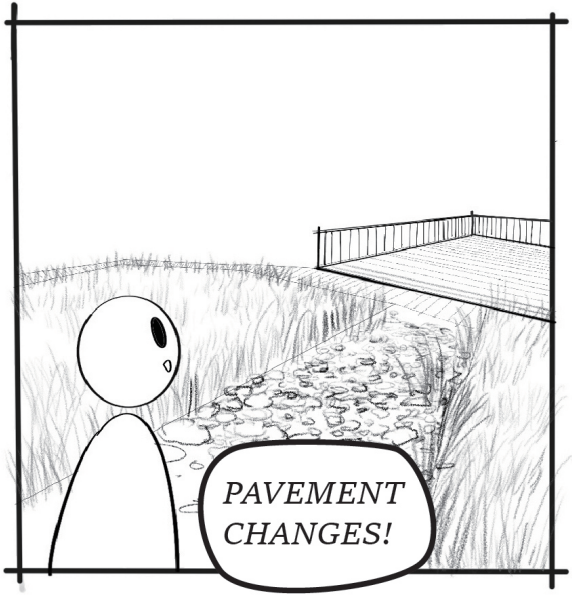

HESE
S?

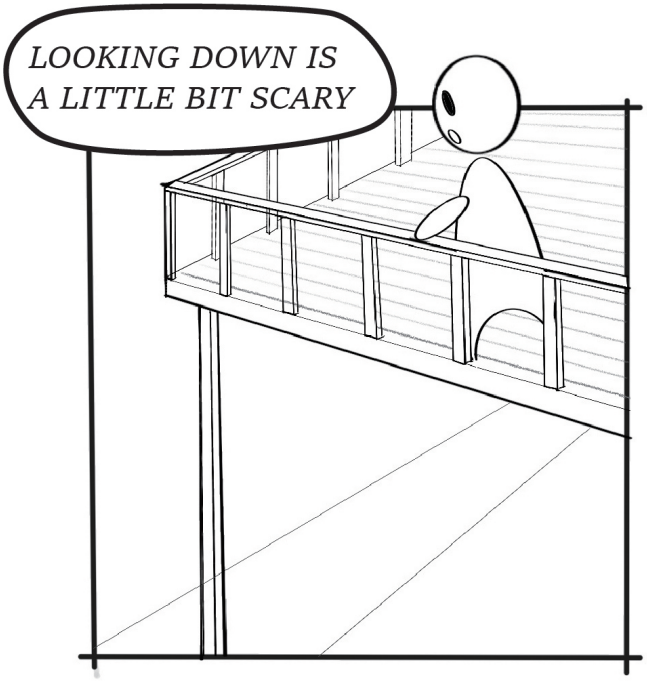

NOW I GOT
SOME PLACE
TO REST!


I MADE IT OUT!!!
WHICH DIRECTION AGAIN...



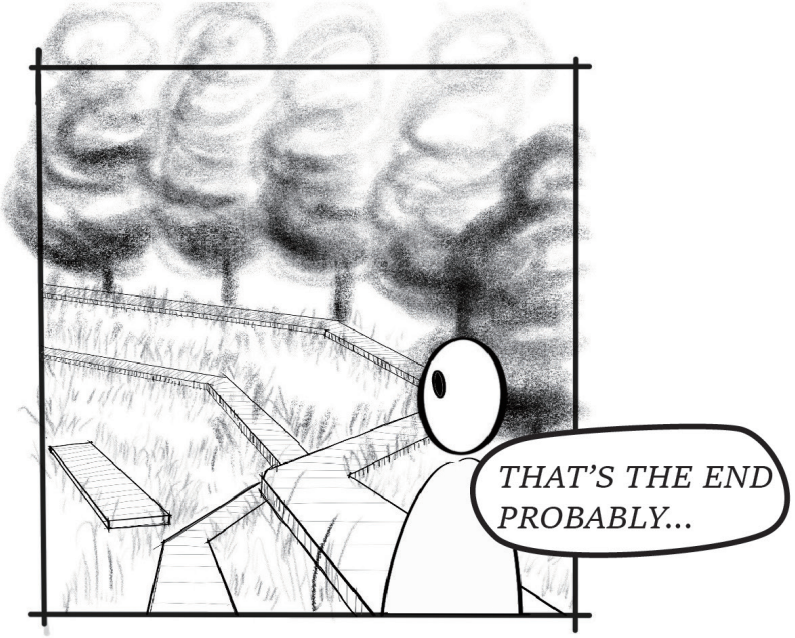

PAVEMENT CHANGED!
INTERESTING VIEW ON BOTH SIDES!


PAVEMENT CHANGES!


LOOKING DOWN IS A LITTLE BIT SCARY


HI! W
YOU
FROM


VHERE ARE
COMING
M?


THAT'S THE END
PROBABLY...

06

CONCLUSION& REFLECTION

The design explorations follows the conclusion classification and focus on the first 3 types. Each types are intervented with 2 main aproaches, one in infrastructure innovation, the other with landscape. Expected outcomes are the toolbox with spatial design locally.

Conclusion

What is the definition of heritage accessibility, both spatially and cognitively?
How to increase the accessibility in different mobility systems?

Heritage accessibility is includes spatial access, which means mobility modes and routes, and cognitive access, which means intellectual understanding. The physical access needs to be presented by feelings, vision, hearings and so on, while cognitive access boost people's knowledge, experience and intuitions. In Soesterberg, the accessibility of heritage includes 2 kinds. One is people can perceive and involve, the other one is the military training boundaries that refuse physical access. No matter what kind of accessibility the destination shows, the heritage access is composed by accessible environment and accessible information.
The strategies I applied in the design are 4: connect, reuse, diversify and avoid. Connect fills the gap in the network. Diversified road systems provide more perspectives to perceive heritage. Reuse helps to manifest the identity of site. All these strategies contribute to the spatial accessibility and cognitive accessibility.

What is the natural approach to diversify the monoculture forest?

Forest thinning firstly on spruce and pine trees. This main approach creates opportunities of diversifying the forest ground and create more biotopes.

How can people understand the story behind by perceiving and involving in the landscape?

There is a conversion between people's understanding and heritage. As landscape designer, what I expect to convert is the spatial expressions extracted from heritage characters. So the spatial atmosphere created can give participants the intuitions to be prepared for what expected to be seen.

What are the principles of presenting a heritage landscape?

The general principle is to extract special characters out of the heritage and to pick up the history skeleton. Integrating what the characters feel with how the current people consider about this history together forms the initial principle of design. Here are some specific principles applied in my thesis:
Symbolism: using the representative materials or shapes to remind people of the story;
Sensing: interventions on visual, touch and other sensual activities to interact with environment.

Reflection

The whole research process of exploring the possibility in improving the accessibility of military heritage in Soesterberg is composed with defining, analyzing and creating.

Relationship between research and design

The relationship between research and design is interwoven during the whole period. This work leads by Research by Design strategy, which means I can develop design principles by searching supportive evidence, as well as fill the theory framework by exploring design possibilities. This method allows me to always look back to reflect and refill.
To answer the question of how to improve the accessibility in Soesterberg area, the main research approach I applied in the design is defining and specifying, and the main theory I applied is 'Heritage as sector, factor and vector'. I tried to answer the research questions by defining further the nouns of 'accessibility', 'heritage' and 'understandability'. By recognizing the fact that accessibility not only means physical roadway connections, but also mental awareness of the destination, the design approaches emphasize the importance of experiential design. In that sense, research conclusions of landscape biography, symbolism landscape and experiential landscape by senses are transformed into spatial expressions.

Challenges in the research

The research process of biography study could be the first and biggest challenge I met during the whole process. I come from a different culture outside Netherlands and Europe, so I hold a different perspective towards wars happened on this continent. It is a challenge for me to understand the history 400 years ago and the complexity between different countries. I tried to separate different war times and picked the most struggling character in each of them to clarify the war influences on the currency. Also, in order to better understand people's feelings about different wars, interviews were conducted not only on my mentors, but also on my classmates and friends who came from Europe. This kind of communication between different cultures towards the same historical period of the same time inspires me in creating the diversities in my design.

Generalization of the result

Another issue also related to the methodology is the synthetic generalization of the design strategies. The initial orientation of my topics are heritage, urbanization and forest landscape, so the implementations are conducted in different scales using these elements to make it consistent.

Graduation studio and lab

The Flowscape Graduation Studio in landscape track aims to explore the identities of landscape in living environment and my project corresponds with the 'landscape as infrastructure'. The typical layered approach in landscape design is more specified in my work by splitting the geography layer, mobility layer and cultural heritage layer. In addition, the proposed solutions are landscape-based and the routing design explains how the 'flow' works on the landscape context.
Being in the lab of Urban Fabric, it is a transdisciplinary cooperation with urbanist to look more into societal needs of landscape. Fragmentation problems in my project not only trigger threats in nature fields, but also social development and recognitions. Understanding the spatial configuration as well as social-driven purposes helps me better generating the toolkit.

Transferability of the result

Scientific relevance

Accelerating the shift to sustainable and smart mobility, innovative mobility development in future and the relevance with other subjects such as transportation, civil engineering. How the pedestrians interact with cycling paths could be more studied in the professional fields of engineering. Materials I applied in the detailing chapters could also be further explained by connection knots in between.

Societal relevance

Heritage topic is related to everyone on this planet because it is the welfare of the total human being. Meanwhile, what I want to emphasize in this project is the military heritage that reminds people about past, current and future. Some of the past stories are still continuous nowadays or their influences impact on current living. The issue lies in the potential relationship between every individual with war even though it is not our willingness. And the awareness of that can be raised by design the approaching process to understand the wounded story behind the physical elements.

Reflection about my role

As a designer and participant

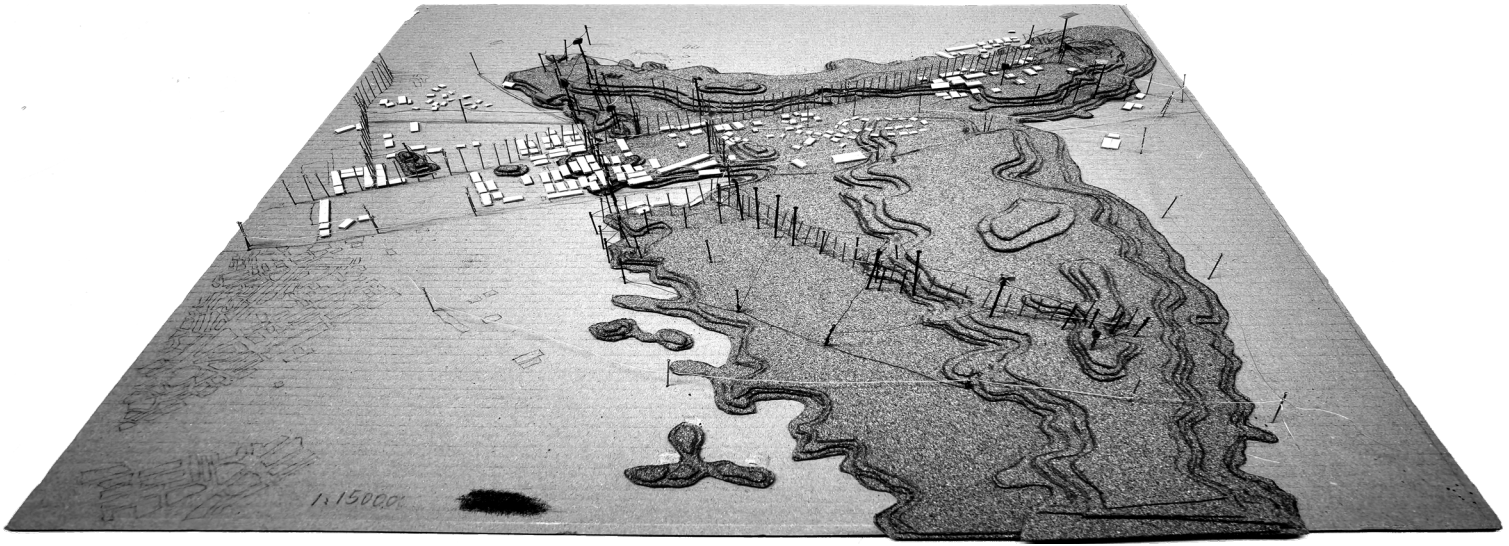
The last historical design element translation makes me realize that the participant experience may not turn into what the designer wants. That means, there are lots of uncontrolled randomness in the conversion of design proposal. So as a designer, what I can do is to express what I feel about the history and site, and express it in the design. Trying to make the atmosphere more straightforward for the participant so that the understanding can be more easily got.

As a landscaper and an urbanist

I may not always play the singular identity in the project. Since I got the urban planning background during the past education years, sometimes I need to jump out of the landscape frame and perform as an urbanist to look into what is right for me, personally. Over this year, it becomes more clear for me that not to limit myself in one role, but positively and actively change the ground I stand greatly broadens my view and helps me understand different perspectives. Chaos occurs of course, but it brings discussions, reflections and inspirations.

APPENDIX

process modelling photo



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