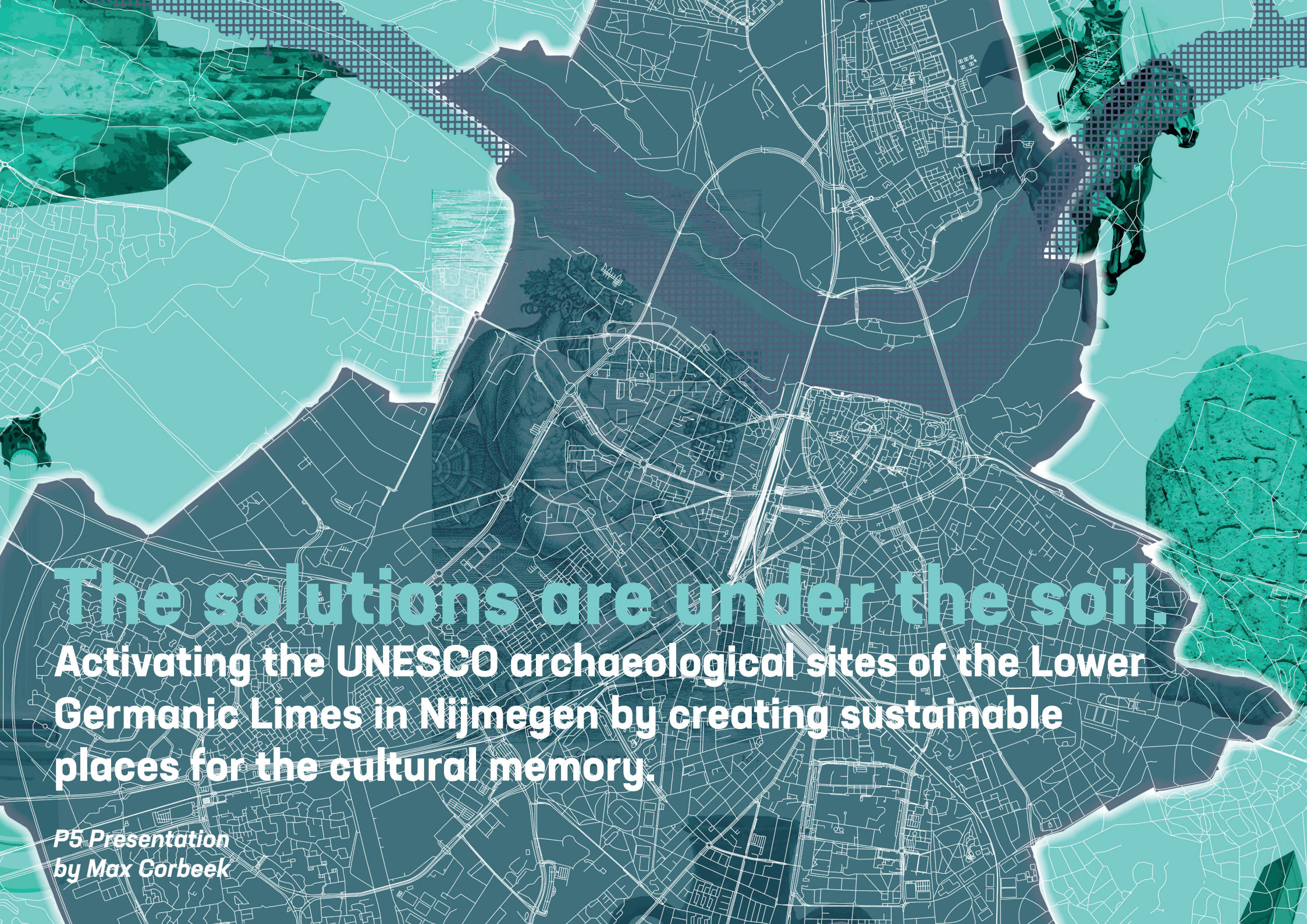




The solutions are under the soil.

Activating the UNESCO archaeological sites of the Lower Germanic Limes in Nijmegen by creating sustainable places for the cultural memory.

*P5 Presentation
by Max Corbeek*

CONTENTS

Background

- 1. Introduction*
- 2. Methodology*
- 3. Palimpsest*

Analysis

- 4. Occupation layer*
- 5. Network layer*
- 6. Substratum layer*
- 7. Coherence*

Cultural layer + Designs

- 8. Engagement*
- 9. Conclusions*

01.

INTRODUCTION

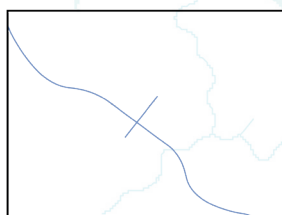
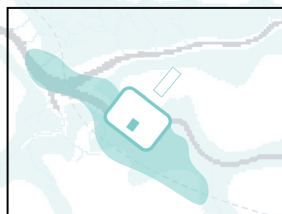
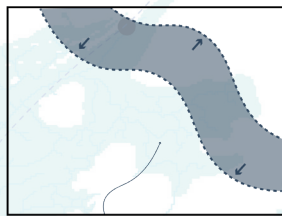
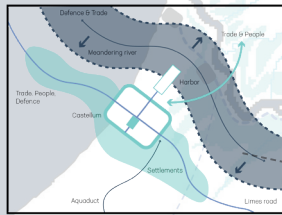
History, urgency, research location

Introducing the Limes



- = Battle of Teutoburg Forest
- = Frontier of the Roman Empire 100AD
- - - - = The Lower German Limes
- = Roman Empire

Elements of the Limes



- = Limes road
- ◆ = Castellum
- = Flood plain
- = Water
- = Cities

100AD

The large Rhine as the fortified frontier. (based on Rijksdienst voor het Cultureel Erfgoed, 2019)

Development of the line

- = Limes road
- = Castellum
- = Flood plain
- = Water
- = Cities

800

The Rhine flows south due to sedimentation. (based on Rijksdienst voor het Cultureel Erfgoed, 2019)

Development of the line

- = Limes road
- = Castellum
- = Flood plain
- = Water
- = Cities

1500

The old Rhine is cut off with dikes to prevent flooding. (based on Rijksdienst voor het Cultureel Erfgoed, 2019)

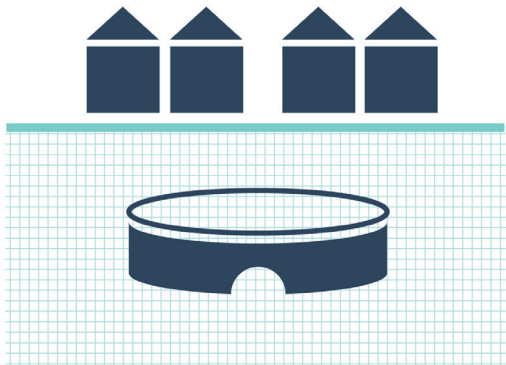
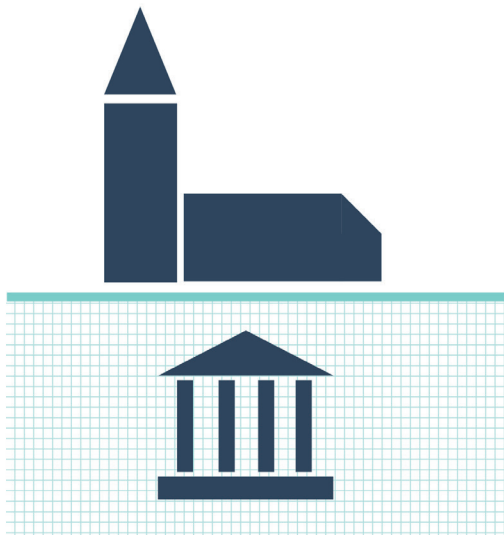
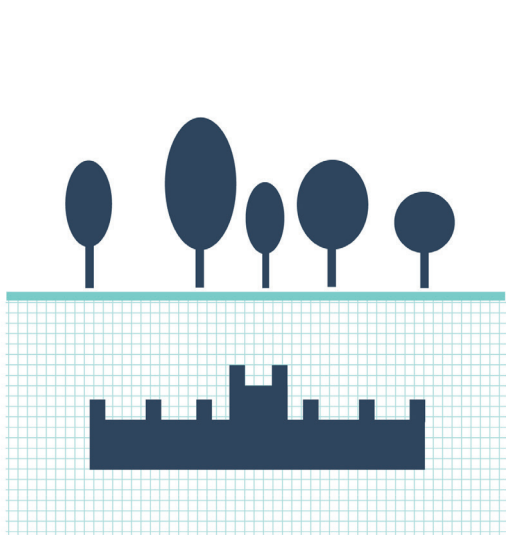
Development of the line

- = Limes road
- = Castellum
- = Flood plain
- = Water
- = Cities

2000

Dikes allow for the Netherlands to urbanize. (based on Rijksdienst voor het Cultureel Erfgoed, 2019)

Surface and Subsurface

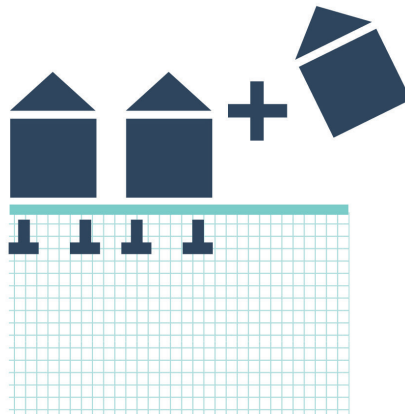


Pressures

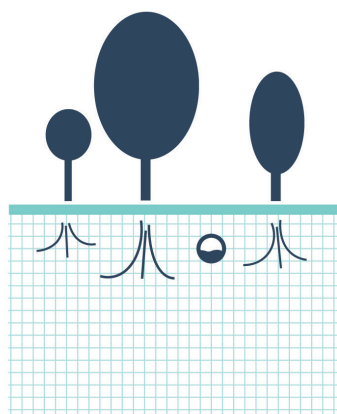
UNESCO PROTECTION
OF ARCHAEOLOGY



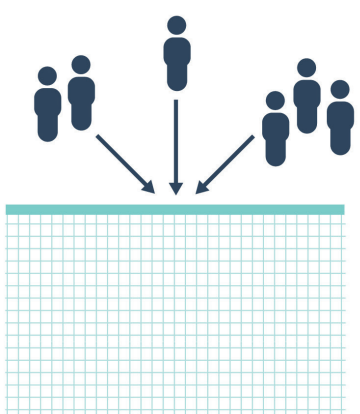
HOUSING SHORTAGE



CLIMATE ADAPTATION



TOURISM POTENTIAL



Research location



-  = Nominated property
-  = Bufferzone

Problem statement

Create a place for the cultural
memory and pride

02.

METHODOLOGY

Theoretical framework, research question, methods, structure

Research question

How can Roman history contribute to a sustainable future?

What are the Roman structures in the UNESCO SITES of Nijmegen-Oost?

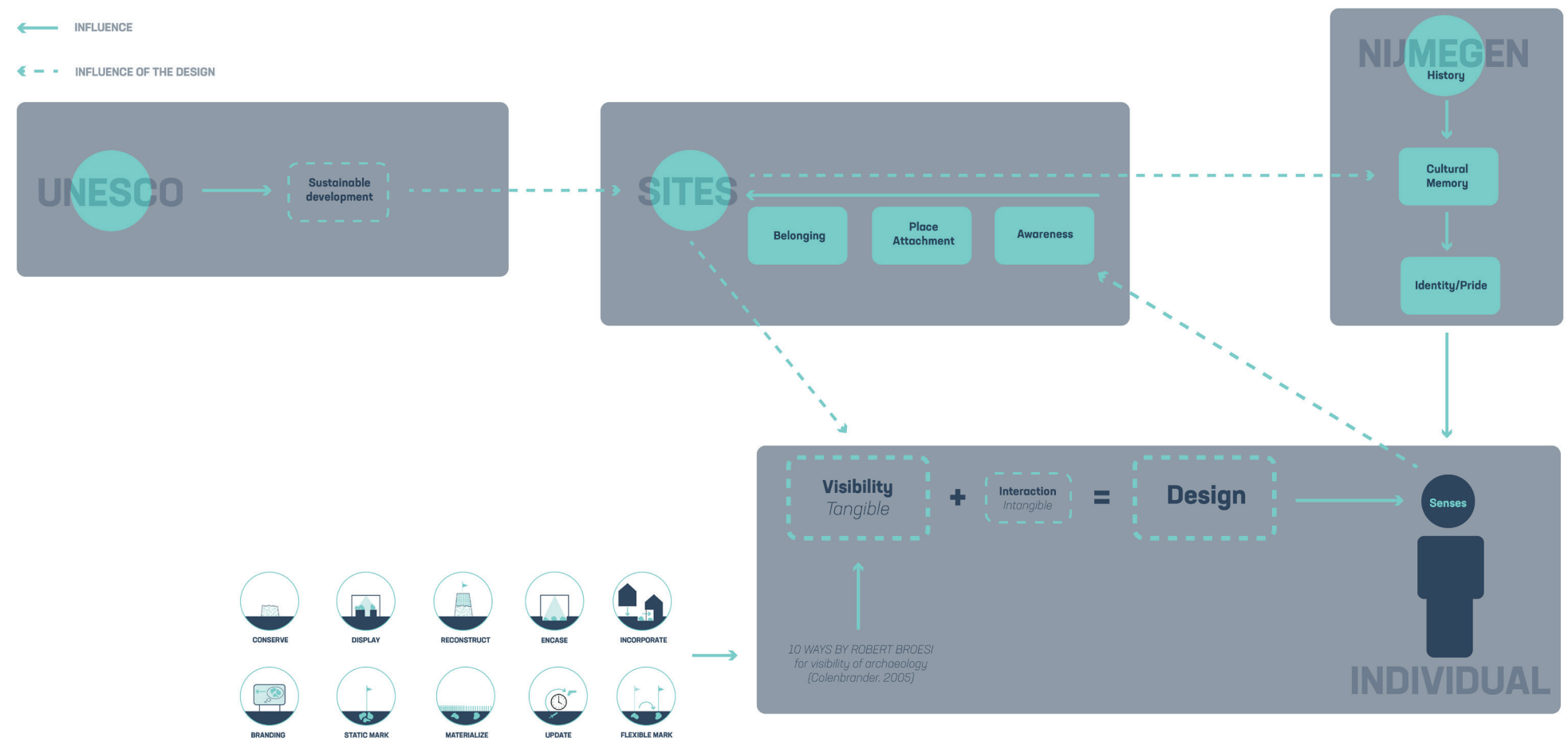
HOW CAN URBAN DESIGN SUSTAINABLY DEVELOP THE UNESCO SITES IN NIJMEGEN-OOST TO CREATE AWARENESS AND PLACE ATTACHMENT FOR THE CULTURAL MEMORY OF ROMAN NIJMEGEN?

How can urban design create place attachment and awareness with archaeology?

What is the cultural memory of Roman Nijmegen?

Where are people aware of Roman Nijmegen?

Theory



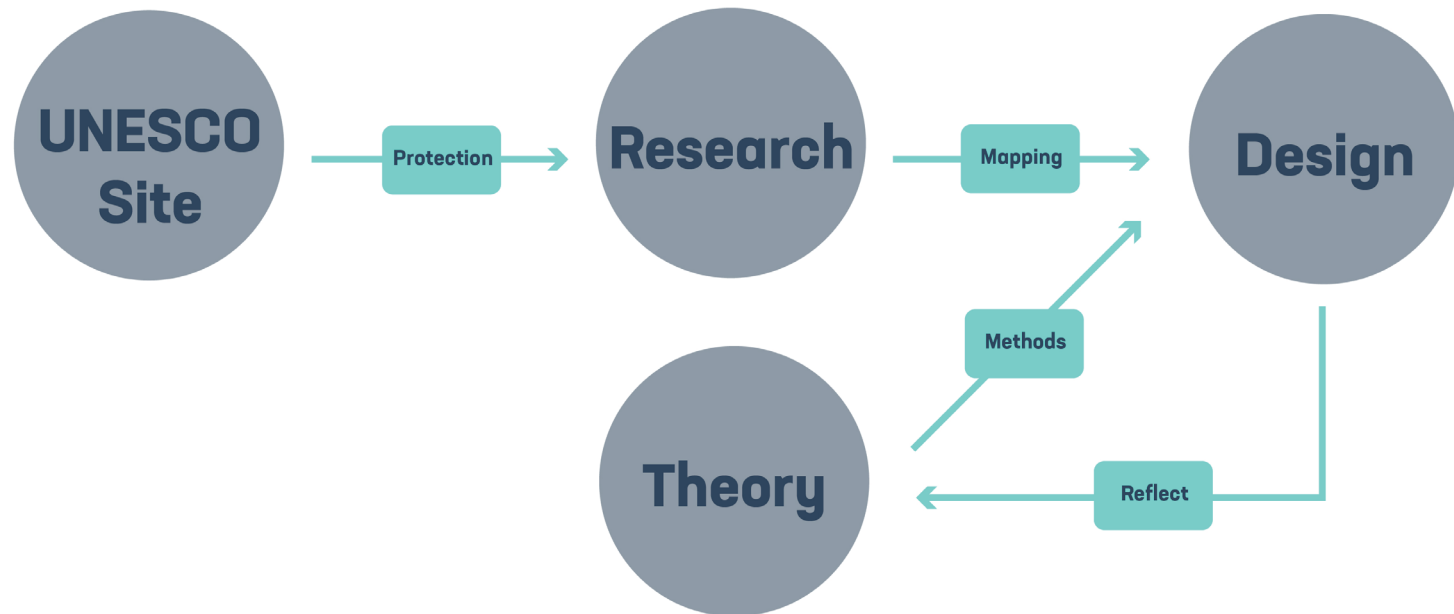
Research goals

Goal 1:

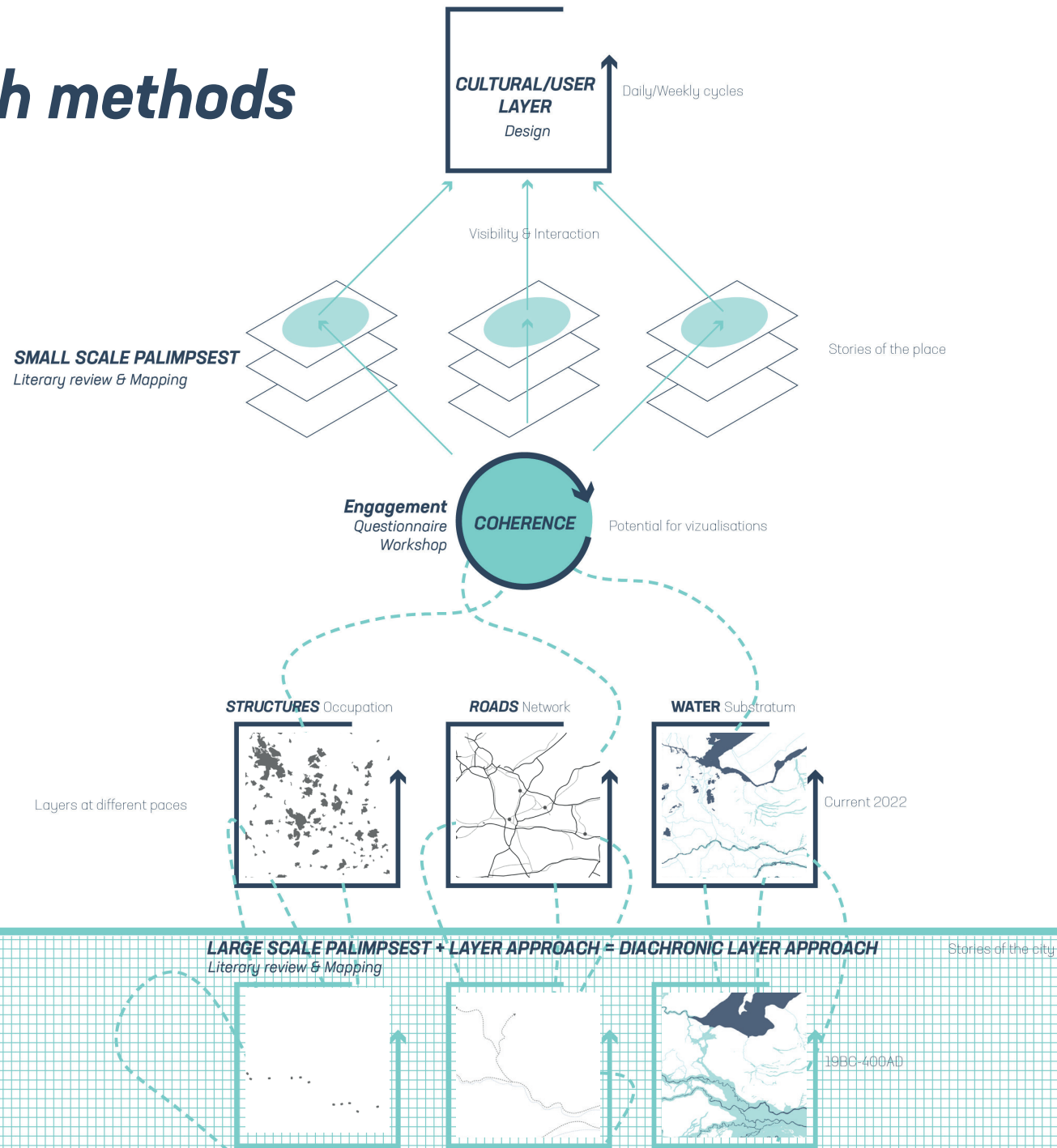
Create a design for the UNESCO sites of Nijmegen.

Goal 2:

Use design methods from heritage theory and reflect on them through the design.



Research methods

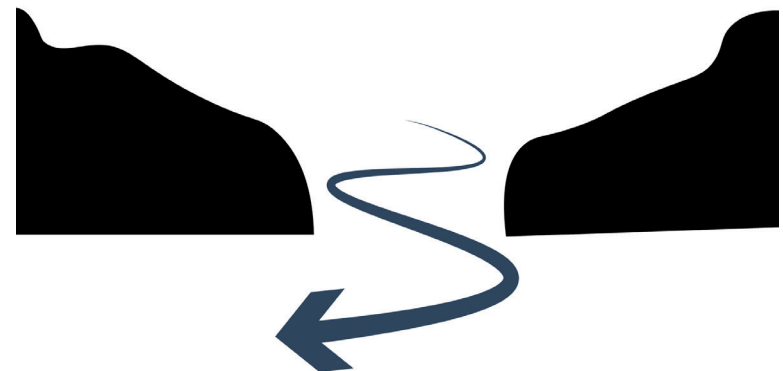
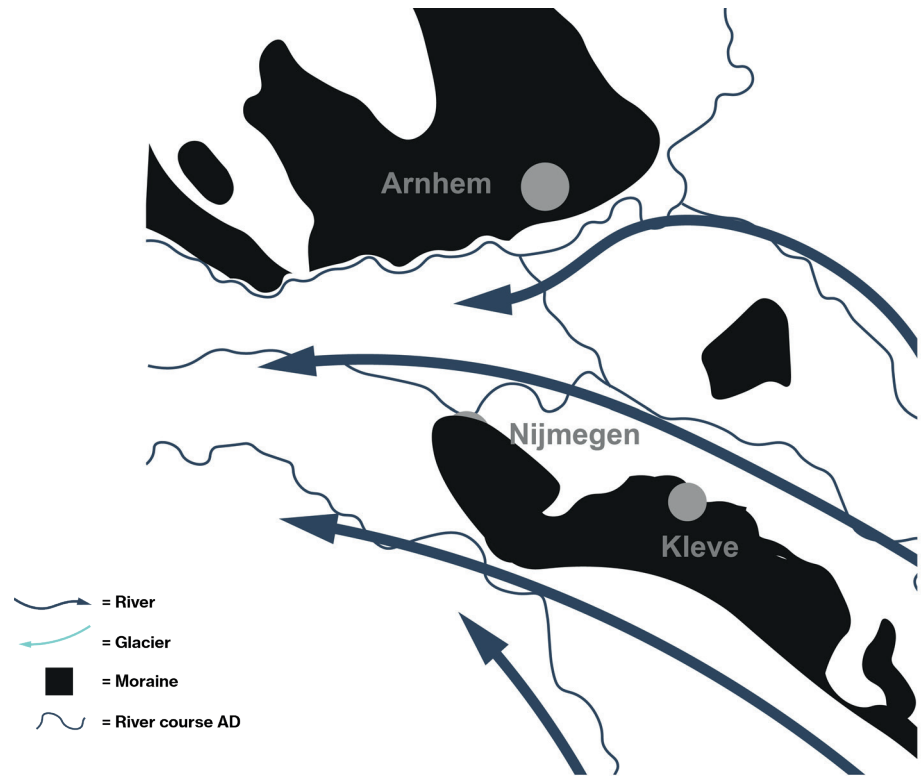
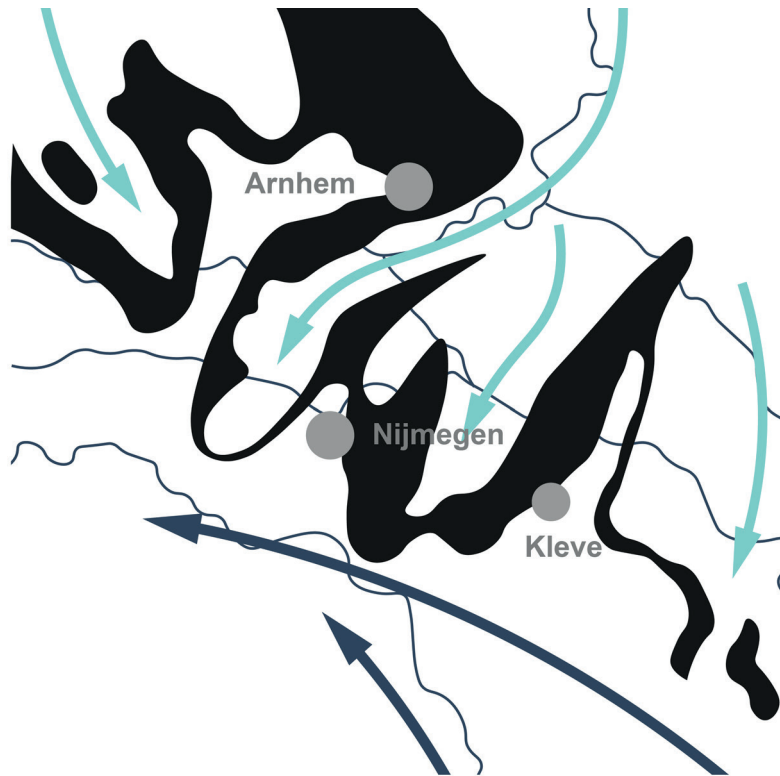


03.

PALIMPSEST

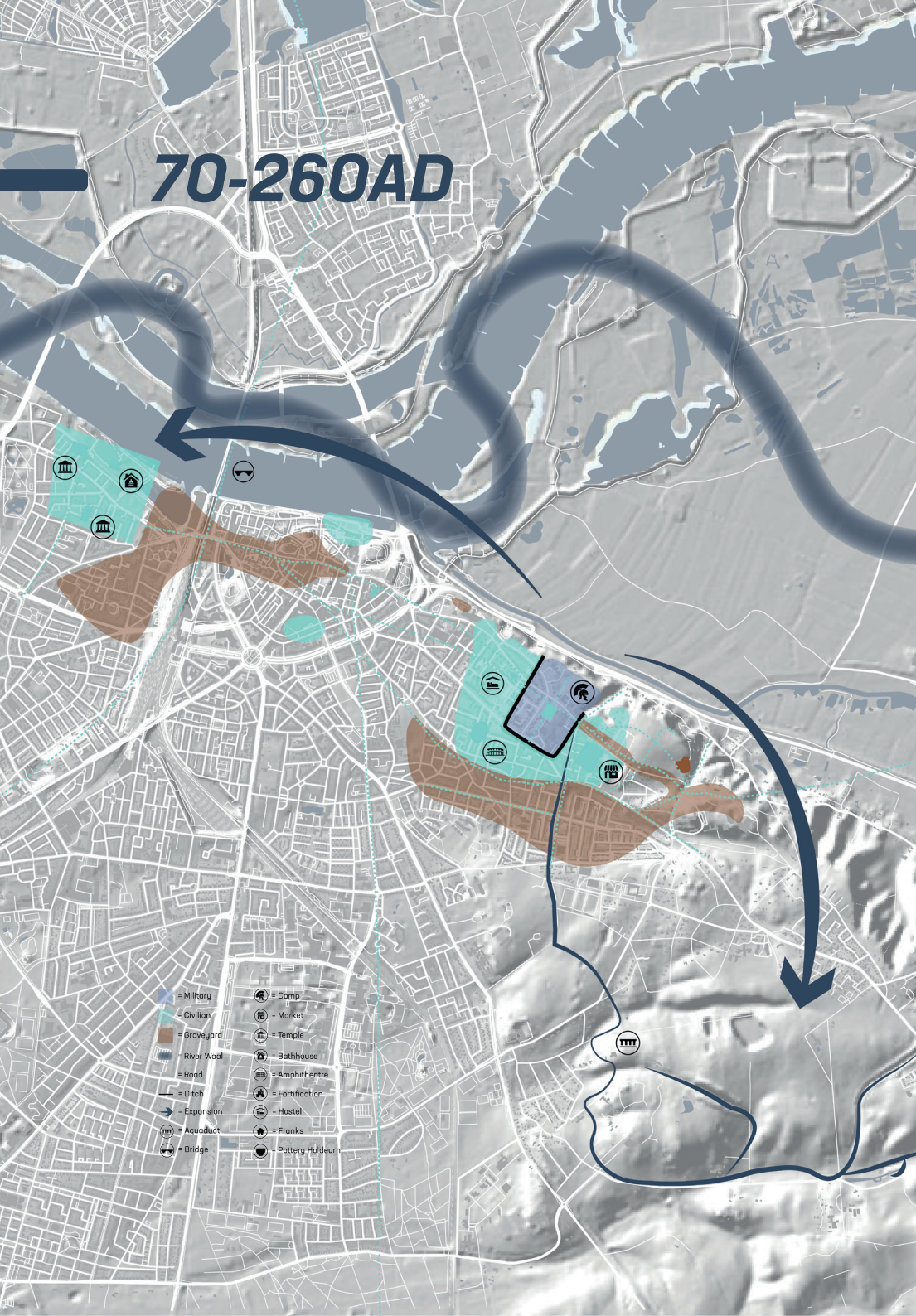
History of Nijmegen, Roman age, medieval, modern times, visibility

100.000-10.000 BC



19BC-70AD







400-1650



1650-1875

- = Pleasure ground
- = Fortification
- = Unbuilt zone
- = Built up
- = Forest
- = New connection
- ➔ = Expansion

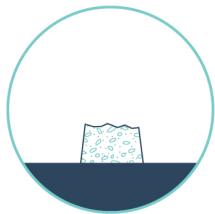
1875-1960

- Built up
- Forest
- New connection
- ➔ Expansion
- ⋯ New bridge
- Tram

1960-NOW

- Built up
- Forest
- New connection
- Expansion
- New bridge
- Tram
- WWII Destruction

Roman visibility



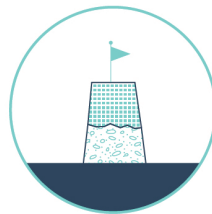
CONSERVE

Preserve the archaeology in its current state.



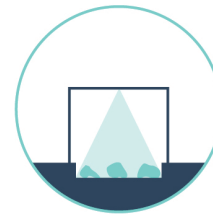
DISPLAY

Showcase the findings ex situ.



RECONSTRUCT

Rebuild the previous situation.



ENCASE

Showcase the remains in situ malta.



INCORPORATE

Develop around findings during the building process.

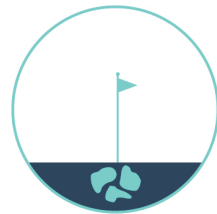
SHOWCASE

TRANSLATE



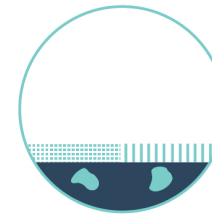
BRANDING

Use history as identity in advertisement and activities.



STATISCH MARK

Choose areas of the highest value to protect.



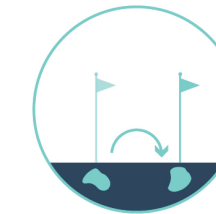
MATERIALIZE

Emphasize different layers of history with materials.



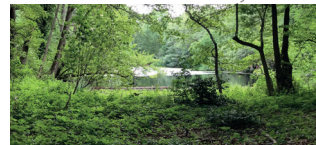
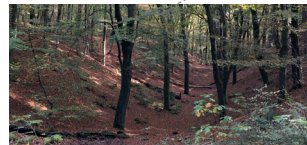
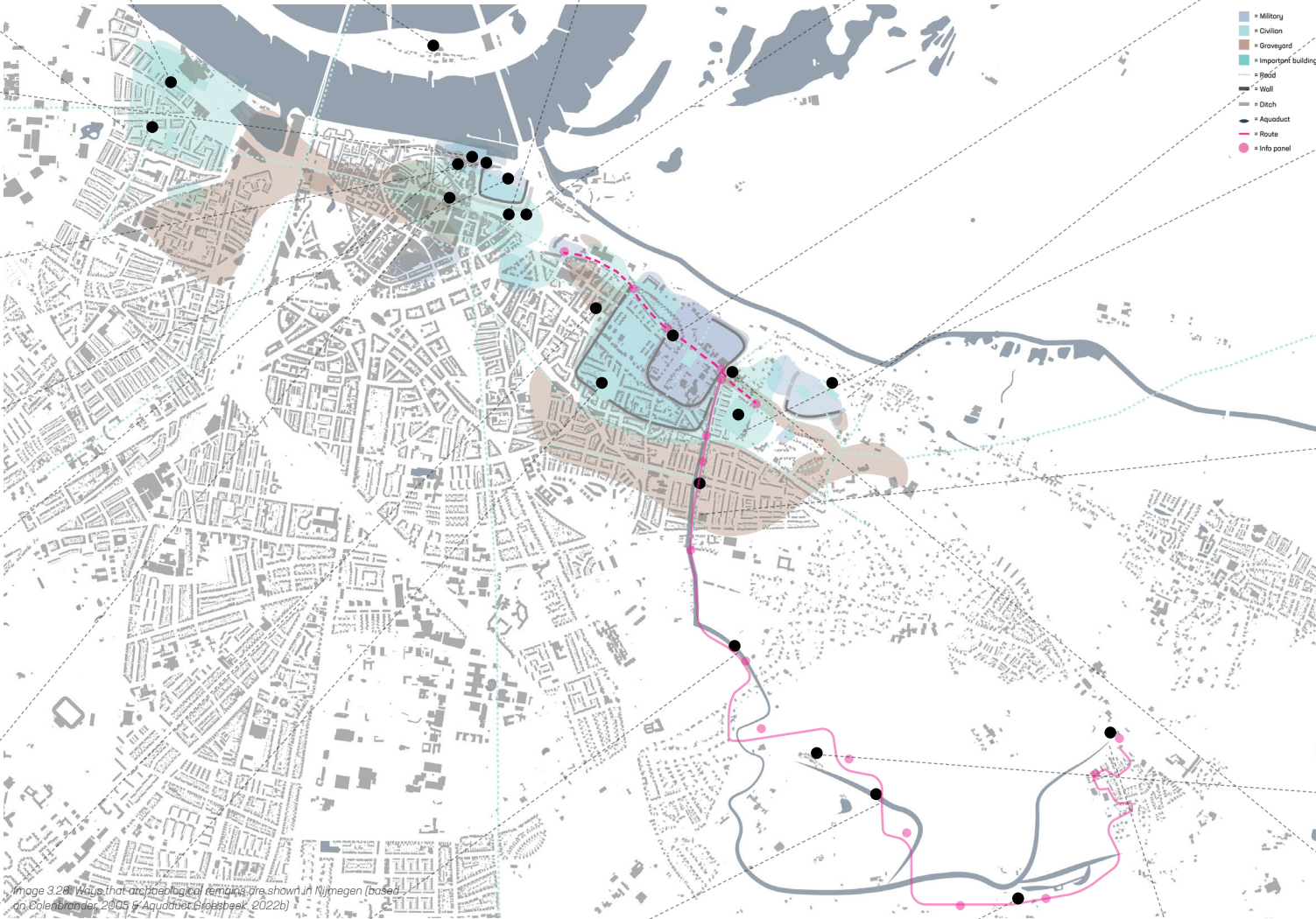
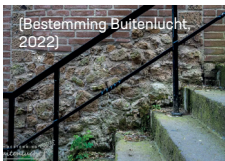
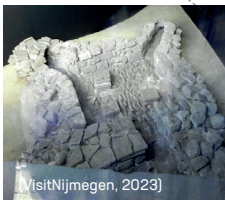
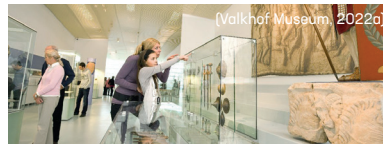
UPDATE

Visualize the experience of the past in a contemporary and artistic way.



FLEXIBLE MARK

Protect areas of high value flexibly during the process.



04.

OCCUPATION LAYER

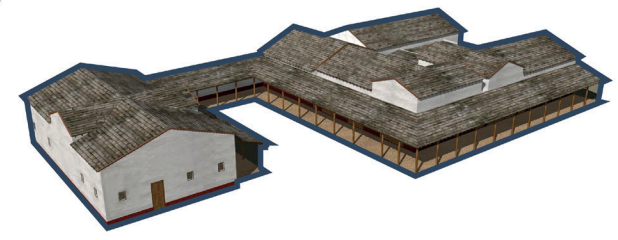
Castra, materials, green, public/private, functions

Materials

- = Wood
- = Masonry



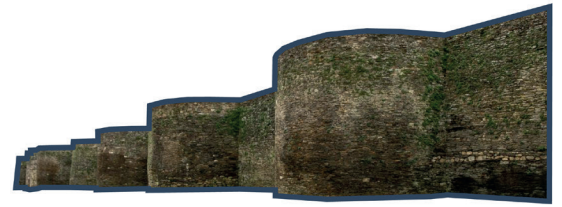
WOODEN RAMPARTS



PRAETORIUM



PORTA



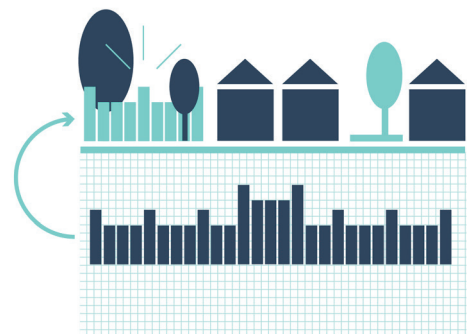
STONE RAMPARTS

Public/Private

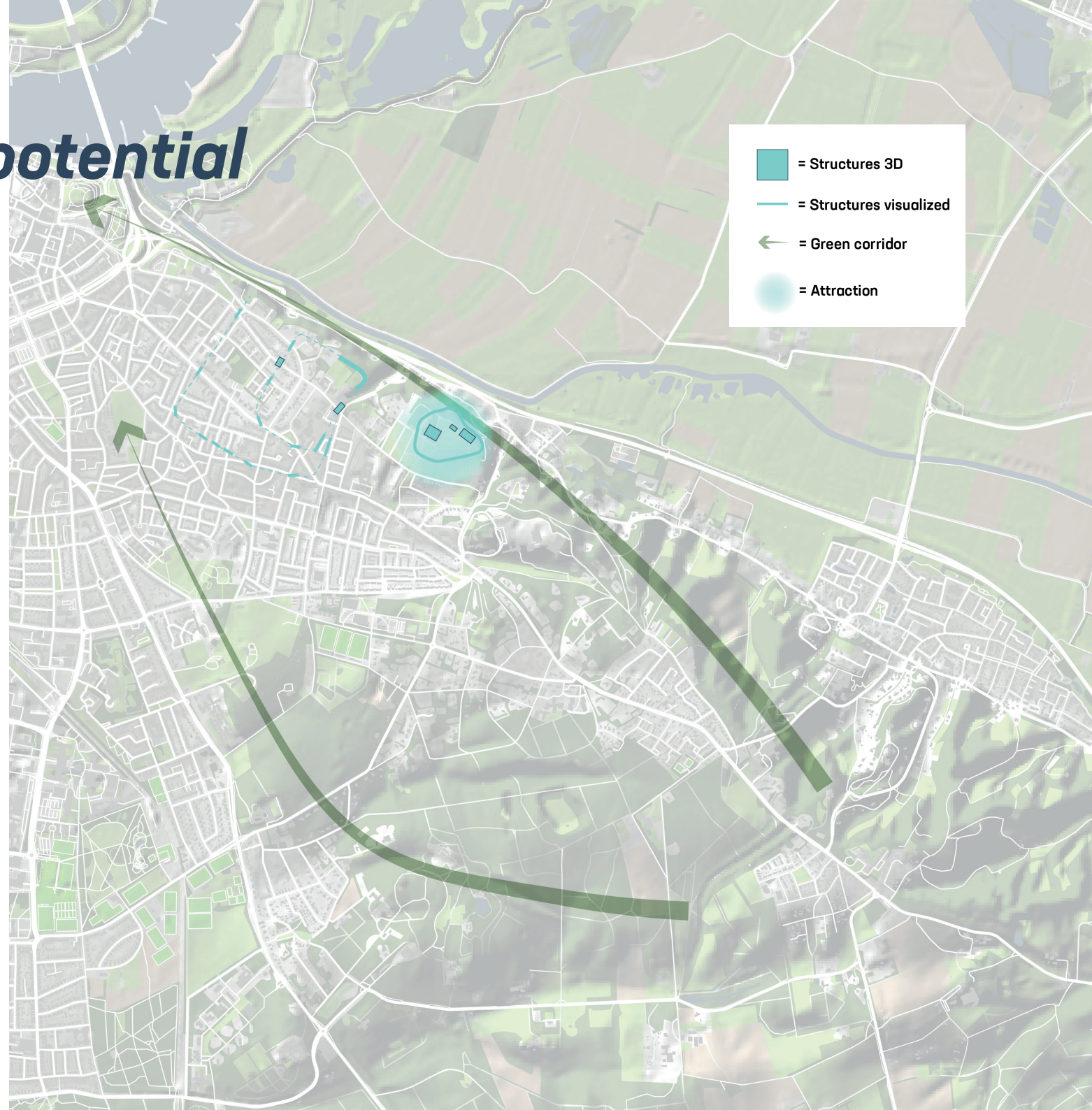
- = Food
- = Sport
- = Housing
- = Shops/Offices
- = Societal
- = Health care
- = Education



Structures potential



STRUCTURAL LAYER
Public space + Functions

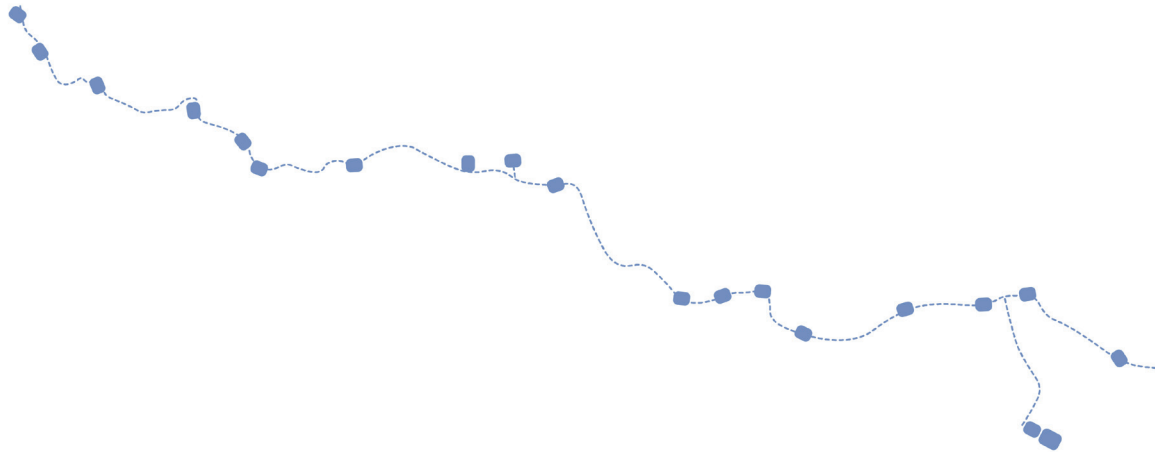


05.

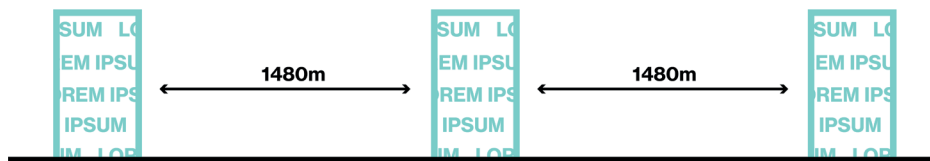
NETWORK LAYER

Roman roadsystem, route, public space, public transport

Roman roads



ROAD DITCHES

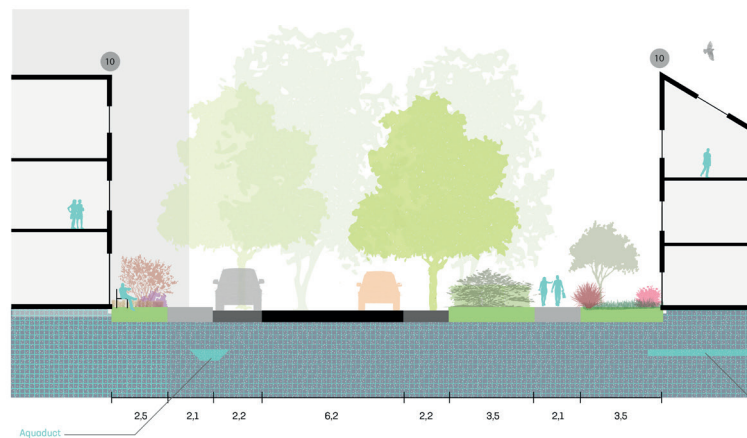
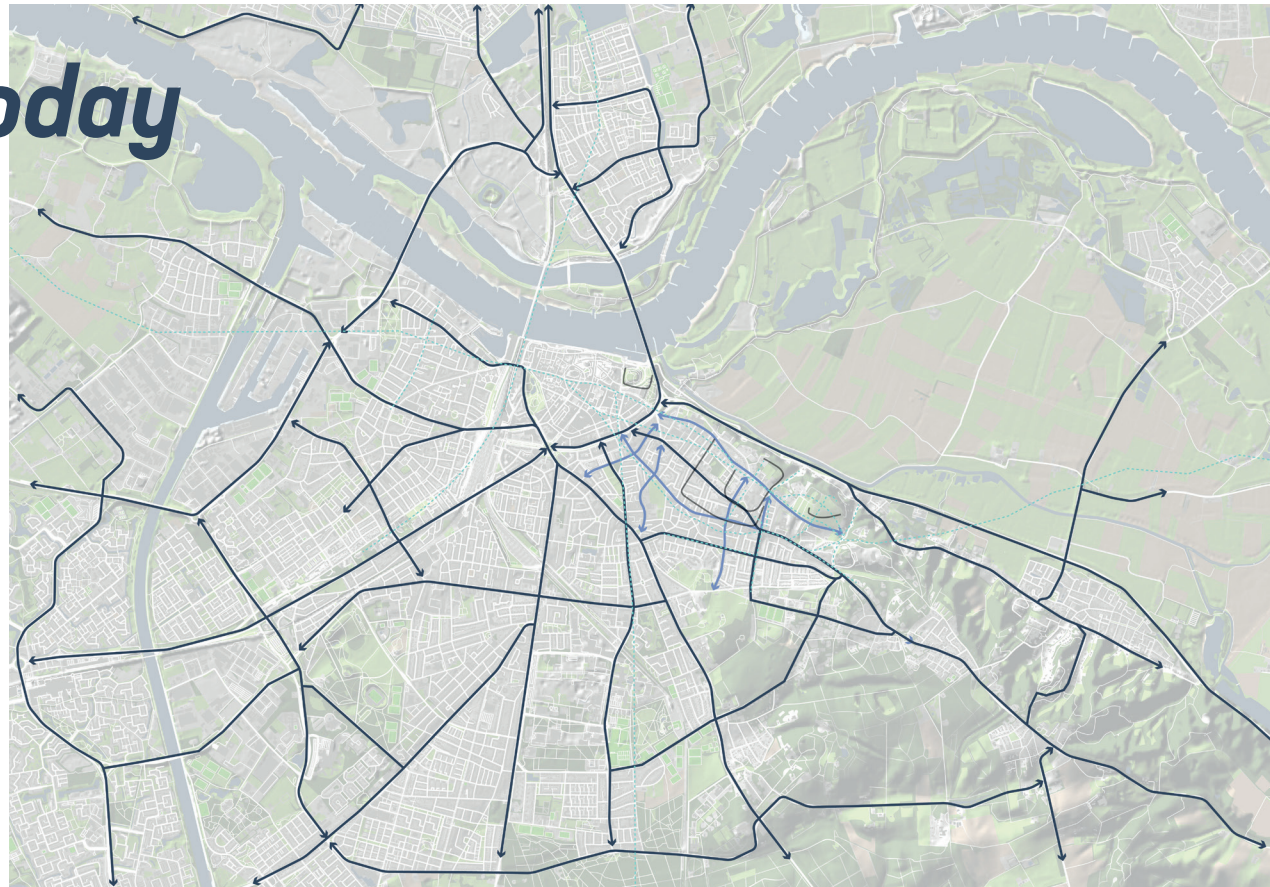


MILESTONES



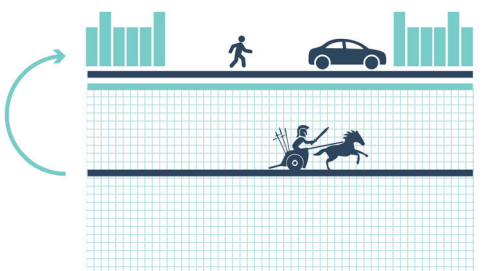
CARRIAGES

Roads today

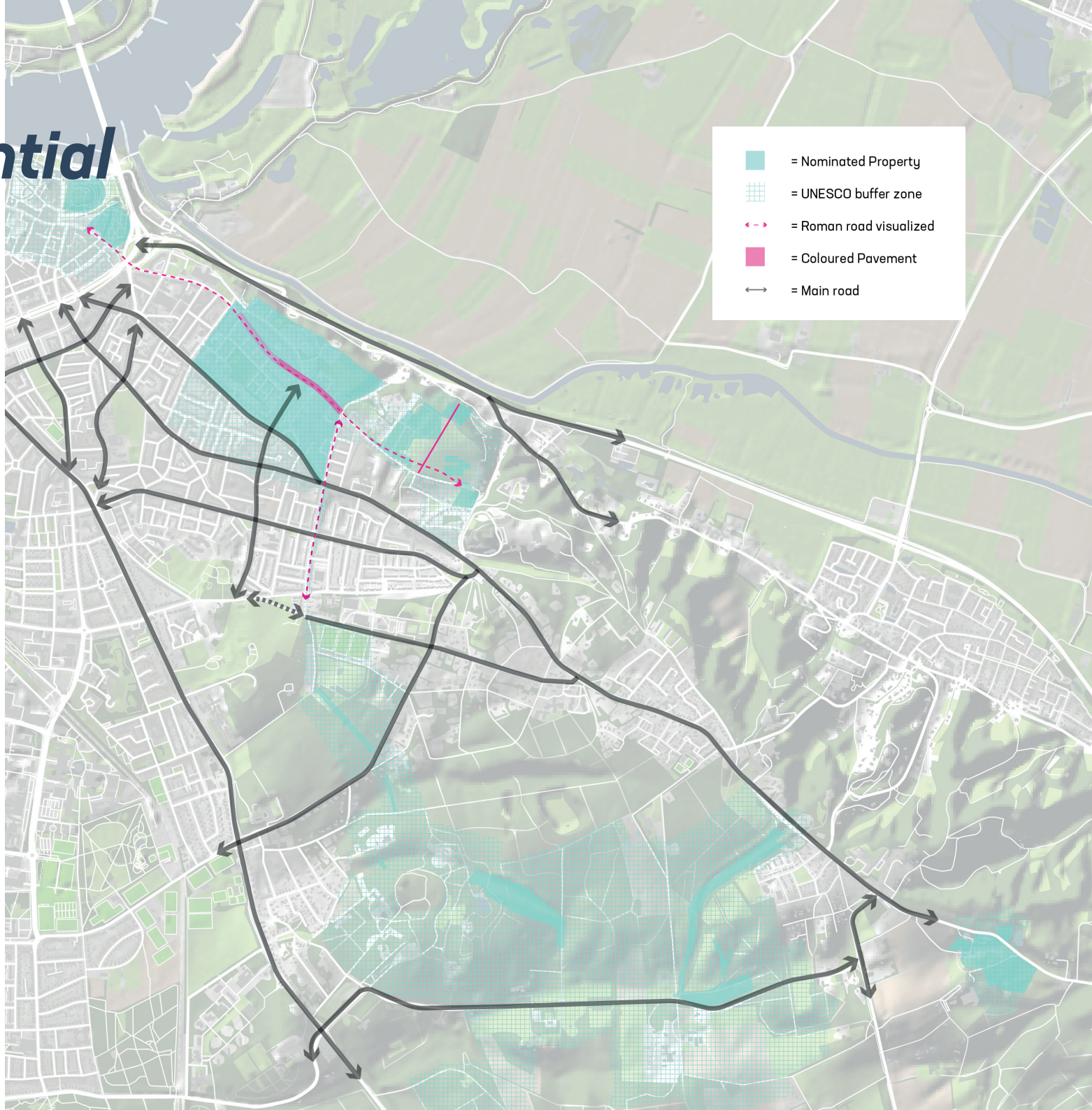


- = Roman fortification
- = Roman road
- ↔ = Main road
- ↔ = Cross connection east

Roads potential



ROAD LAYER
Connecting through bufferzones



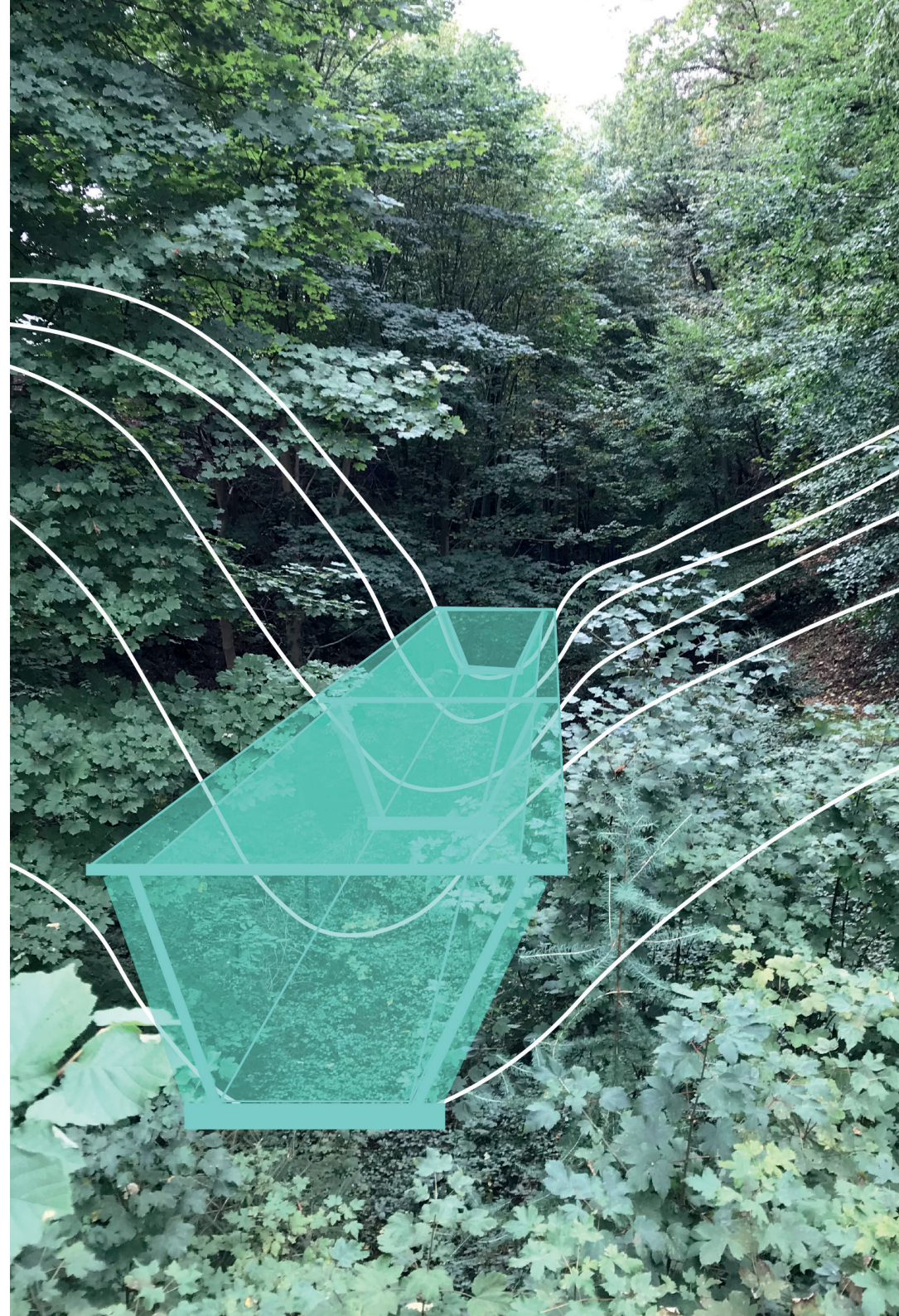
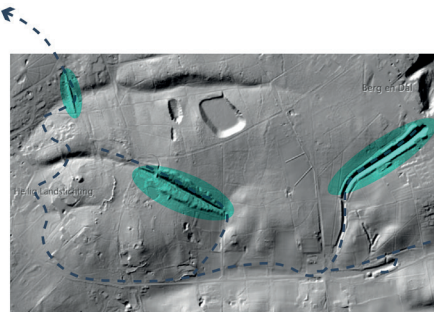
06.

SUBSTRATUM LAYER

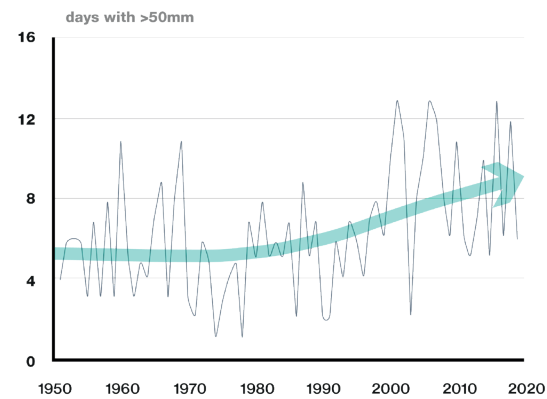
Aqueduct, river, waterways, rainfall, drought

Roman water system

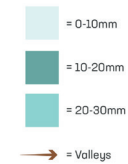
- = Dry valley
- = Aqueduct
- = Stream
- = Rivercourses
- = Waterbodies
- = River valley



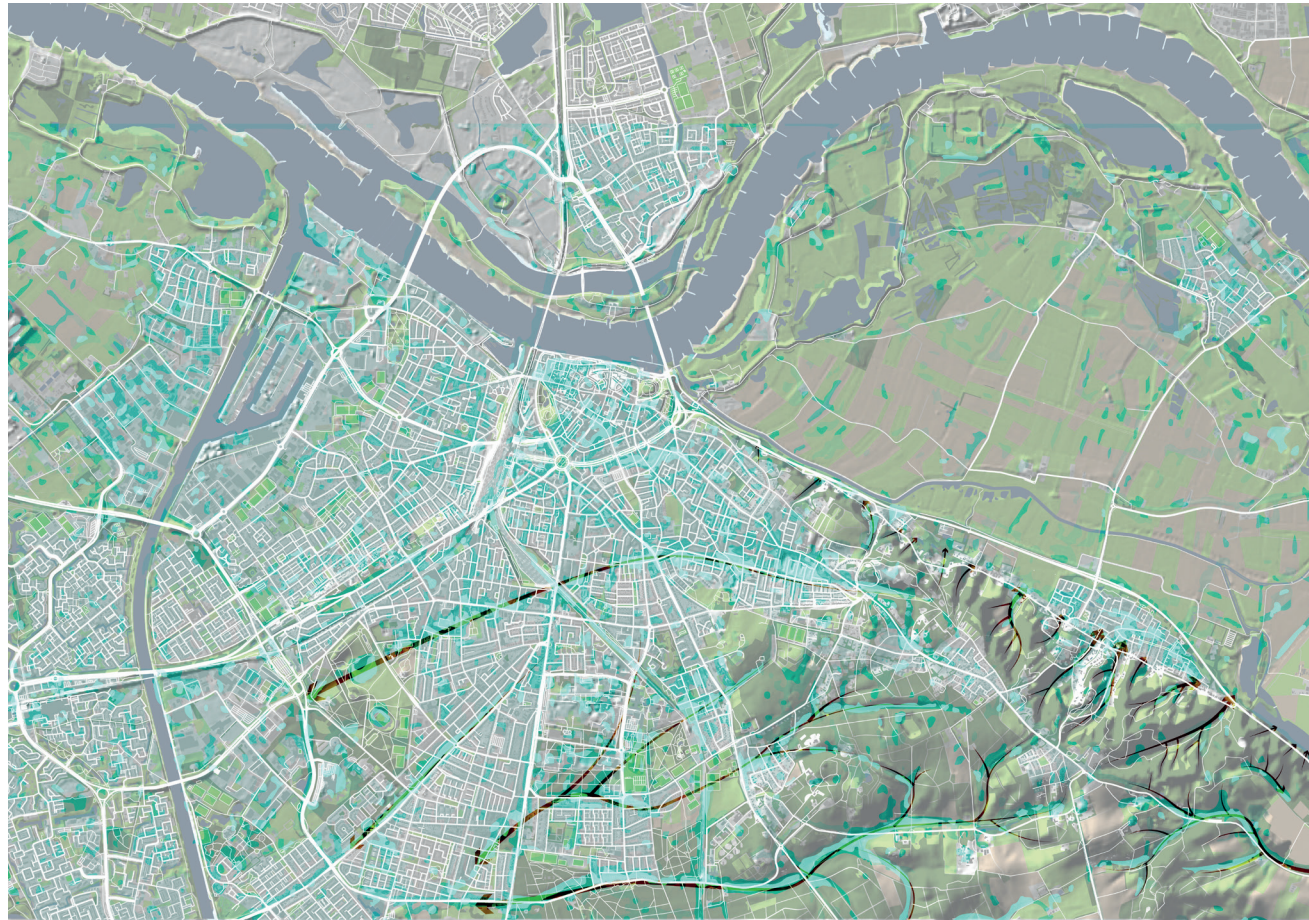
Rainfall



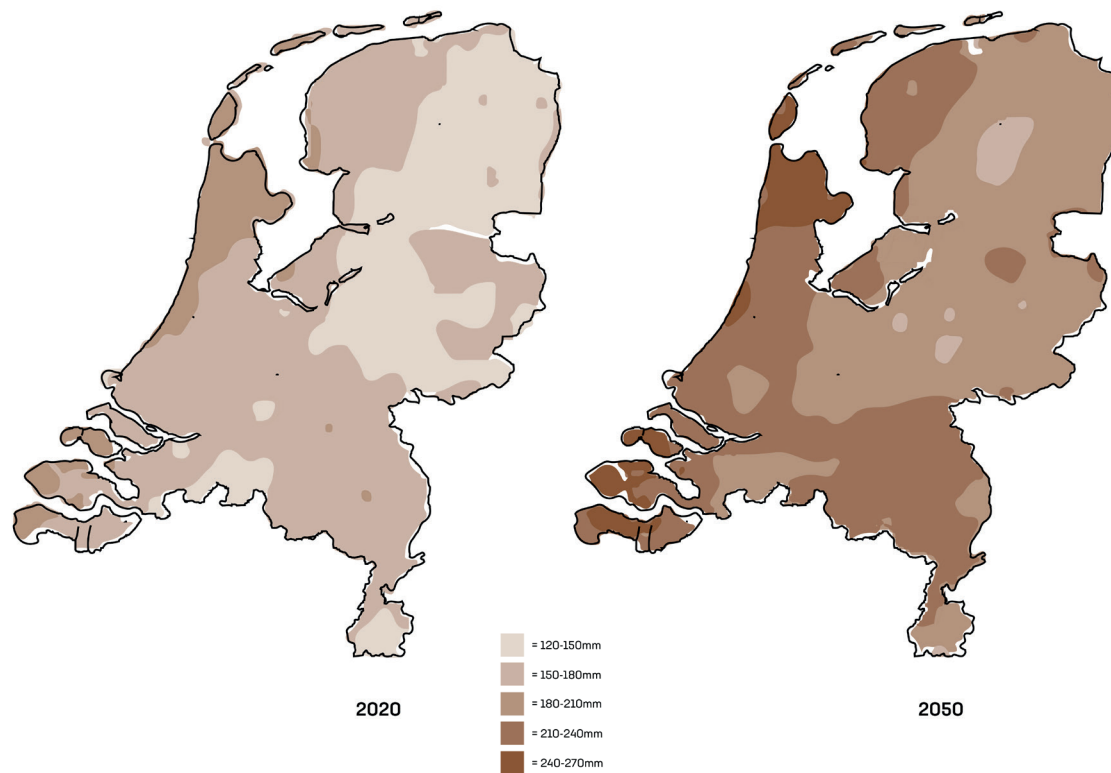
Days with >50mm of rain per year in the Netherlands 1950-2020 (KNMI, n.d.)



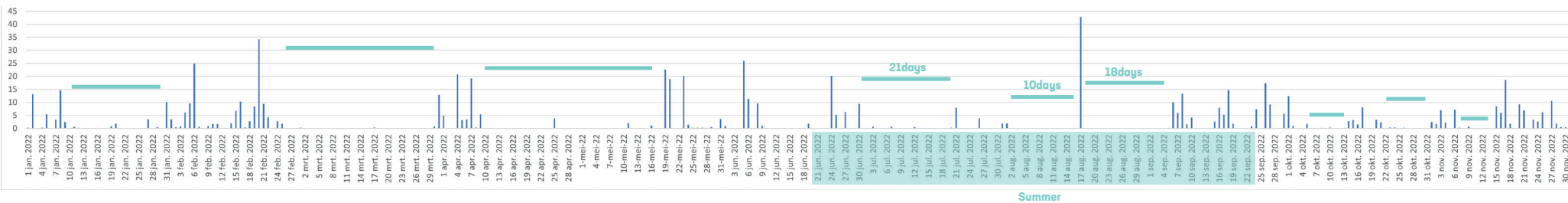
Extreme rainfall of 70mm/2 hours (Once per 100 years) in Nijmegen (based on Atlas Leefomgeving, 2018)



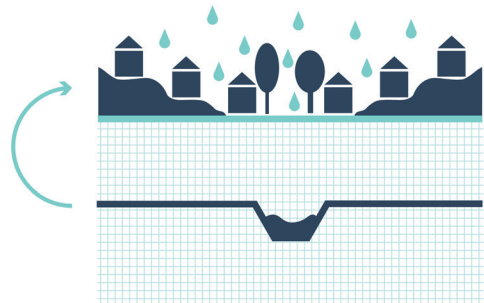
Drought



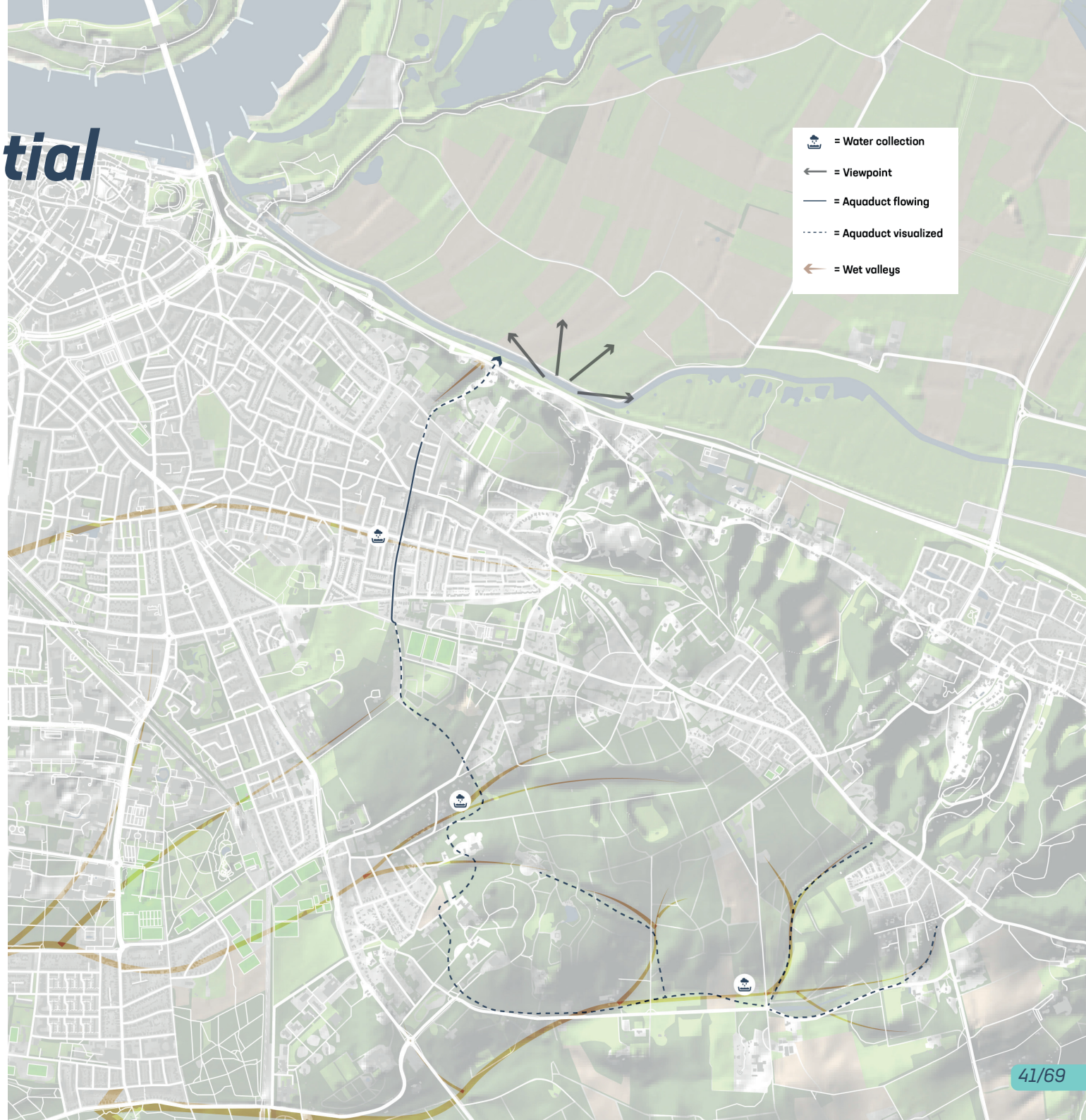
Rainfall (mm)



Water potential



WATER LAYER
Catchment where valleys cross the aquaduct



07.

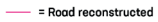
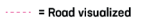
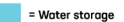
COHERENCE

Vision, design locations, goals, toolbox

VISION

The solutions are under the soil

M34 Thesis Mark van der Meer

	= Edges		= Water collection
	= Structures 3D		= Bioswale
	= Structures visualized		= Water fountain
	= Road reconstructed		= Coloured Pavement
	= Road visualized		= Lighting Artwork
	= Aquaduct flowing		= Water storage
	= Aquaduct visualized		= Green corridor
	= Wet valleys		= Viewpoint
			= Attraction

08.

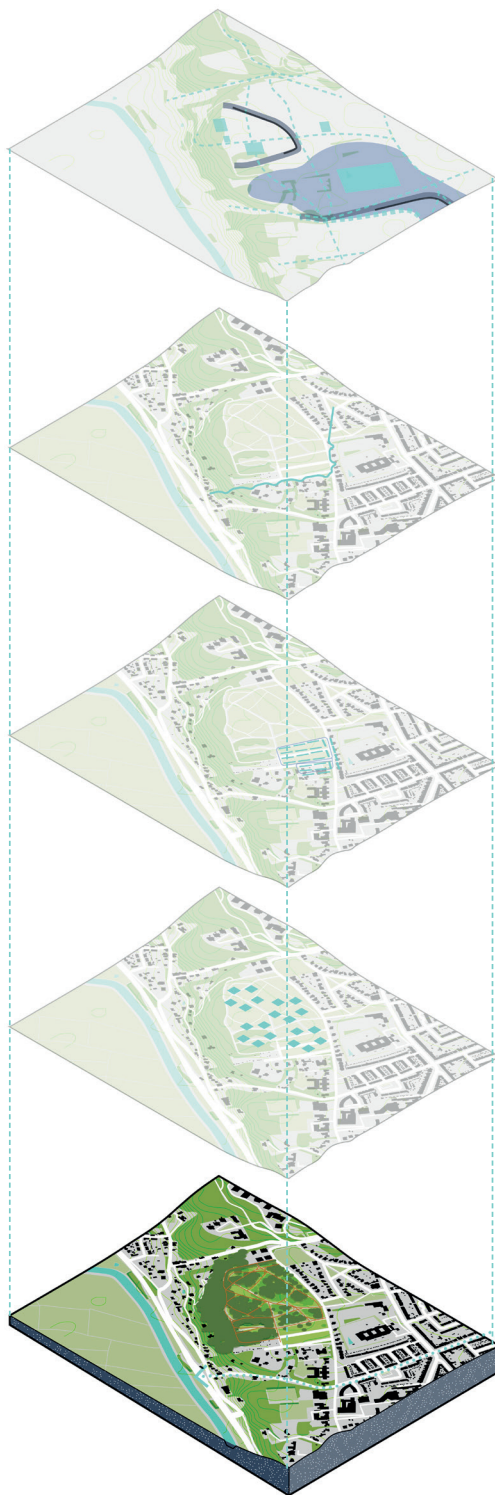
ENGAGEMENT

Small scale palimpsest, engagement, final designs

Engagement



Kopse Hof



69 AD: Wooden Roman castrum



1591 & 1794: Siege 80-years war and French siege



1945: Emergency housing WWII



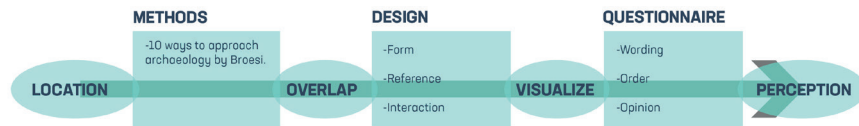
1936-1980: Unbuilt agricultural, villa's planned



2022: Nature after excavations and protection



Variants



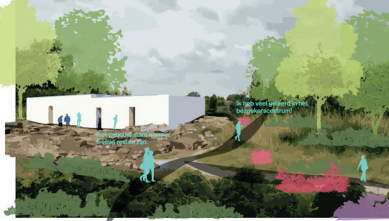
RECONSTRUEREN

Herbouw de Romeinse gebouwen met nieuwe functies.



INPASSEN

Bouw waar de archeologische waarde laag is.



STATISCH MARKEREN

Kunstwerken van vordeden gedaan op deze plek.



BRANDING

Park met Romeinse festiviteiten eens per maand.



OMHULLEN

Besleek de Romeinse resten in de grond met een constructie.



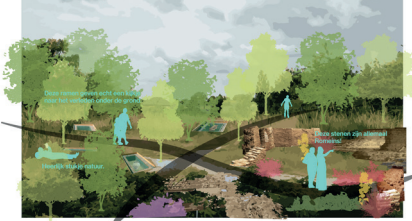
FLEXIBEL MARKEREN

Tijdelijke Romeinse objecten en functies.



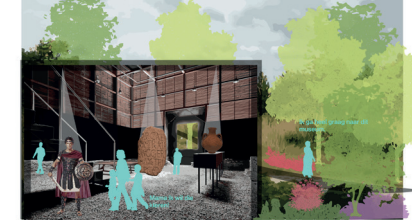
CONSERVEREN

Park met zichtbare opgravingen.



ETALEREN

Nieuw museum met Romeinse vondsten.



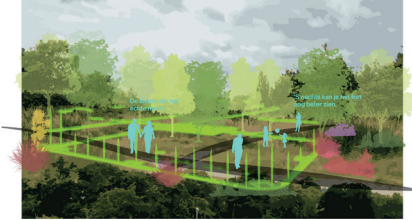
ACTUALISEREN

De Romeinse ervaring is vertaald in spelelementen en uitzichtpunt.



MATERIALIZEREN

Verlichting en lasers laten het fort zien.



Results

70 

1

RECONSTRUEREN Herbouwen de Romeinse gebouwen met nieuwe functies.

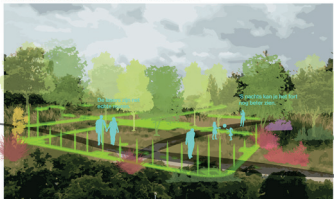
3,86

2

CONSERVEREN Park met oorspronkelijke opgravingen.

3,73

3

MATERIALISEREN Verlichting en bomen laten het fort zien.

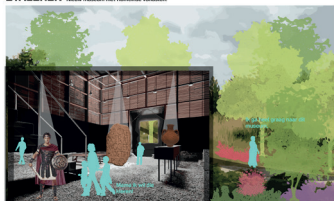
3,36

4

ACTUALISEREN De Romeinse omgeving is vertaald in speeltoestellen en uitzichtpunt.

3,17

5

ETALEREN Nieuw museum met Romeinse vondsten.

3,16

6

BRANDING Park met Romeinse herfschuilhutten aan een meerd.

3,06

7

OMHULLEN Buisen die Romeinse resten in de grond met een constructie.

3,01

8

STATISCH MARKEREN Kunstwerken van vandenbrouck groeien op deze plek.

3,00

9

FLEXIBEL MARKEREN Typische Romeinse objecten en functies.

2,97

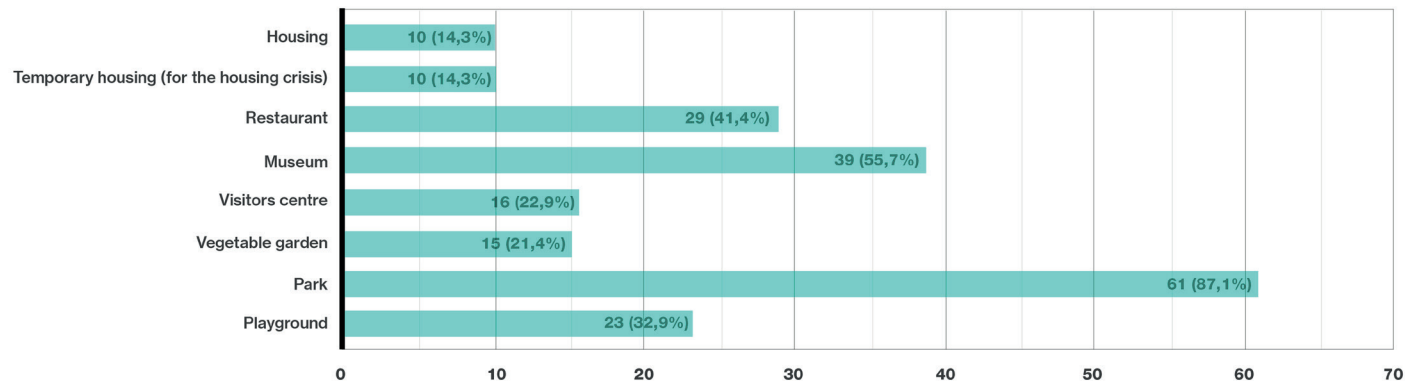
10

INPASSEN Houw waar de archeologische waarde lang is.

2,69

Co-creation

What function(s) would you like to see on this location?



Other additions:

Nothing (1)

Don't change the function and leave as is (1)

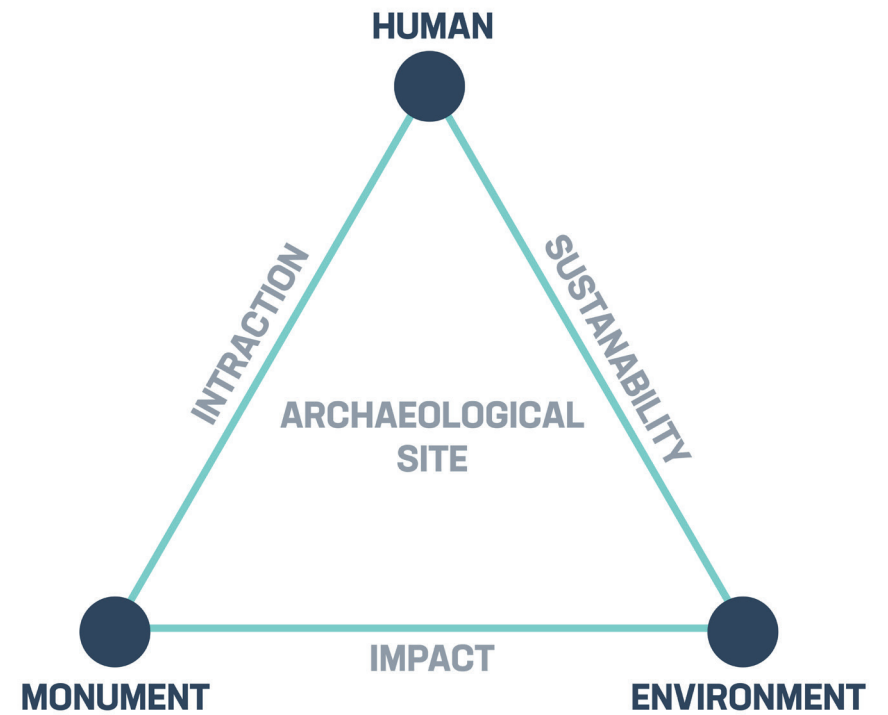
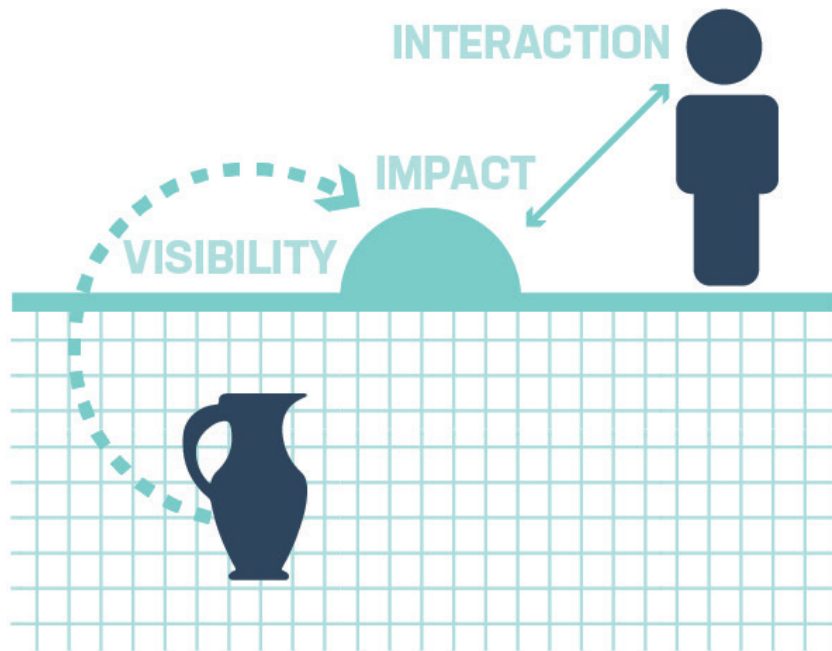
Nature (1)

Places of experience: discover, interact with history in a playful way. (1)

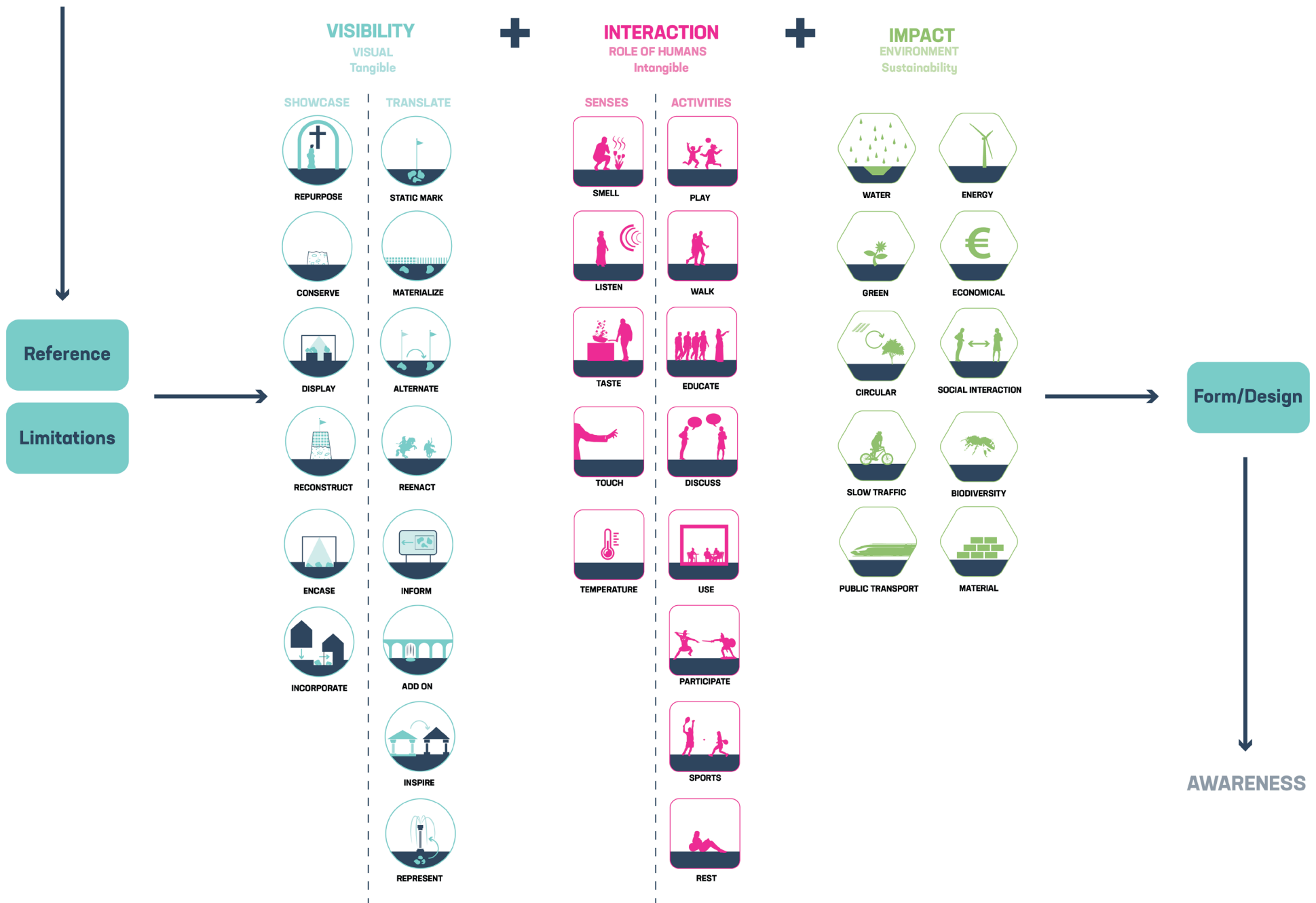
Small scale events (1)

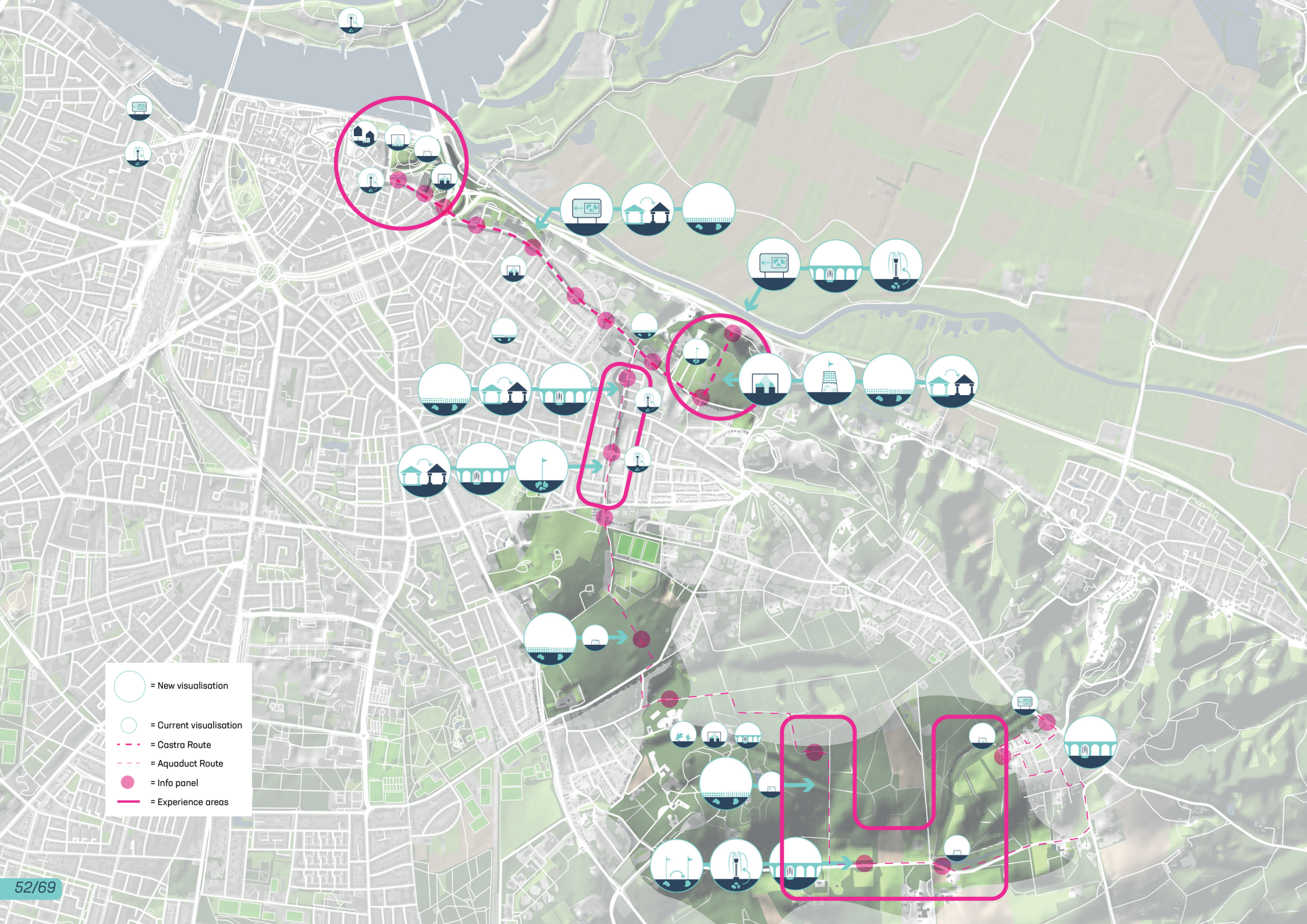


Revision of the method



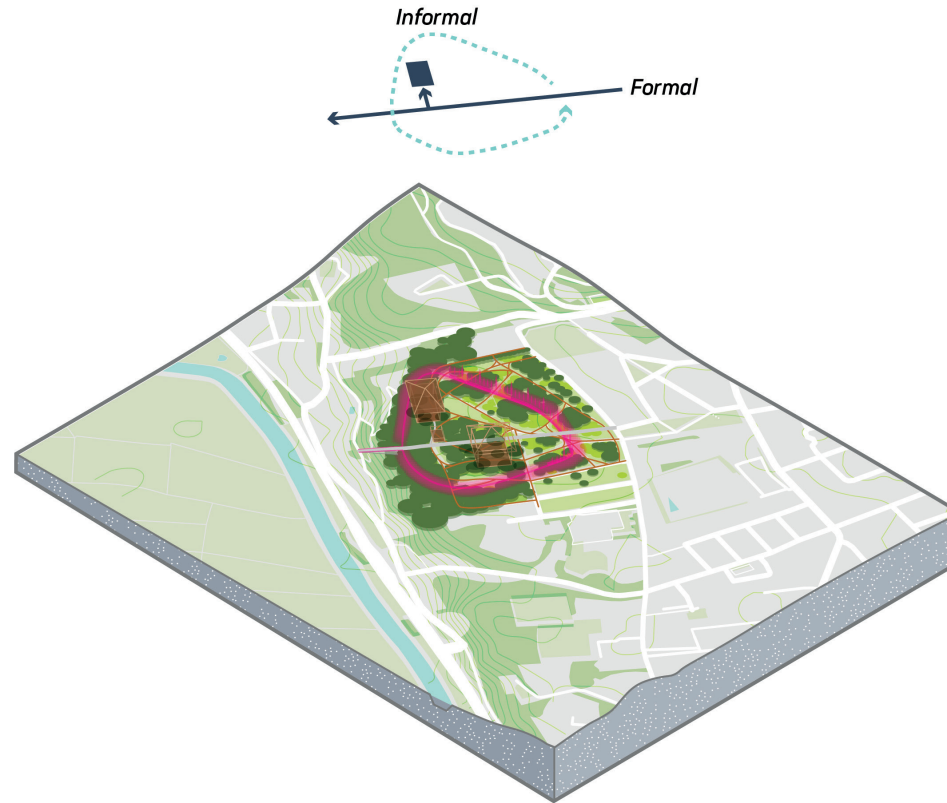
SITE ANALYSIS

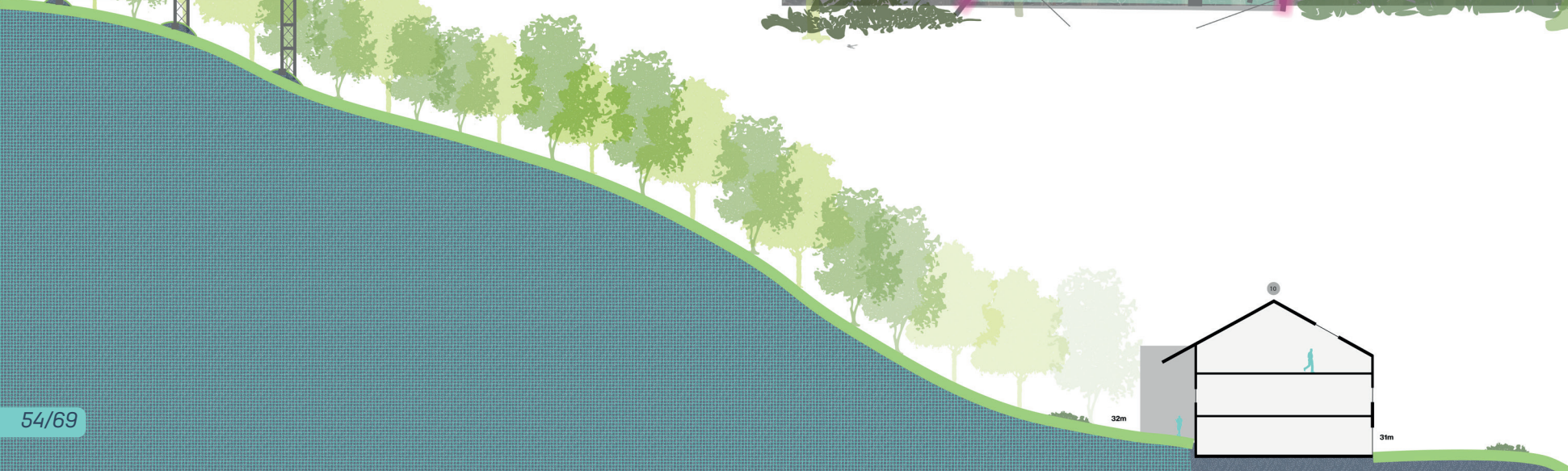
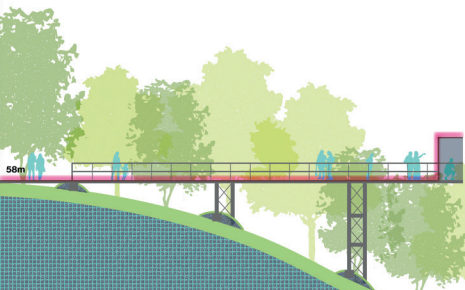
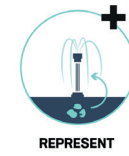
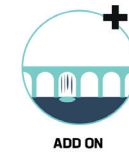




-  = New visualisation
-  = Current visualisation
-  = Castra Route
-  = Aquaduct Route
-  = Info panel
-  = Experience areas

Kopse hof







RECONSTRUCT



DISPLAY



MATERIALIZE



INSPIRE



WORKSHOP
BUSY

CLOSED
SILENCE



TASTE



DISCUSS



EDUCATE



ECONOMICAL



SOCIAL INTERACTION

Survey

Het Masker
51,4%

De Bastei
51,4%
Valkhofpark
85,7%
Valkhof Museum
75,7%

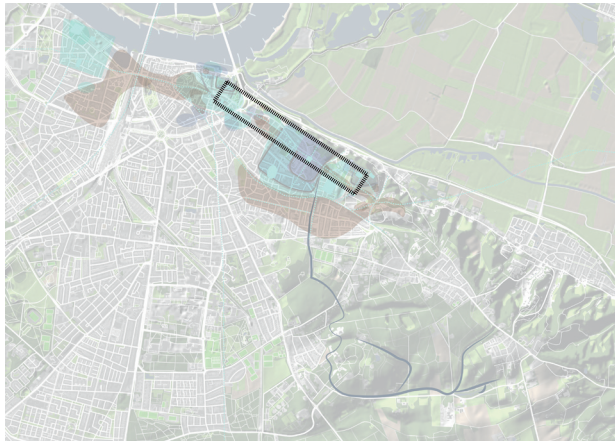
Hunnerberg
48,6%

Kopse hof
31,4%

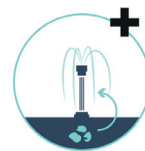
Orientalis
51,4%

De Holdeurn
15,7%

Museum route



1. QR tour



REPRESENT



INFORM



INSPIRE



WALK



SMELL



BIODIVERSITY

Archaeophytes



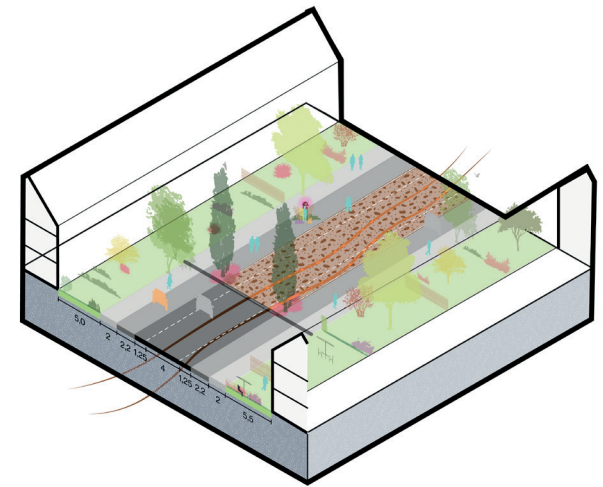
BIODIVERSITY



REST

6. Conquer and climb

Materials



7. Photomoment

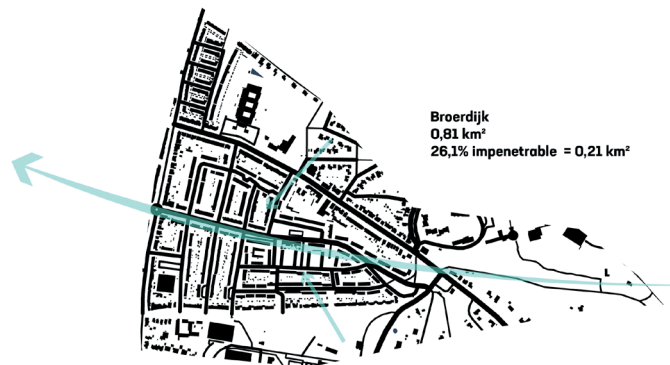
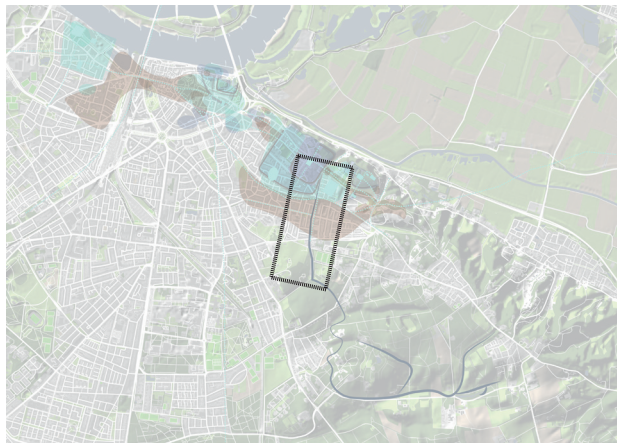


MATERIALIZE



PARTICIPATE

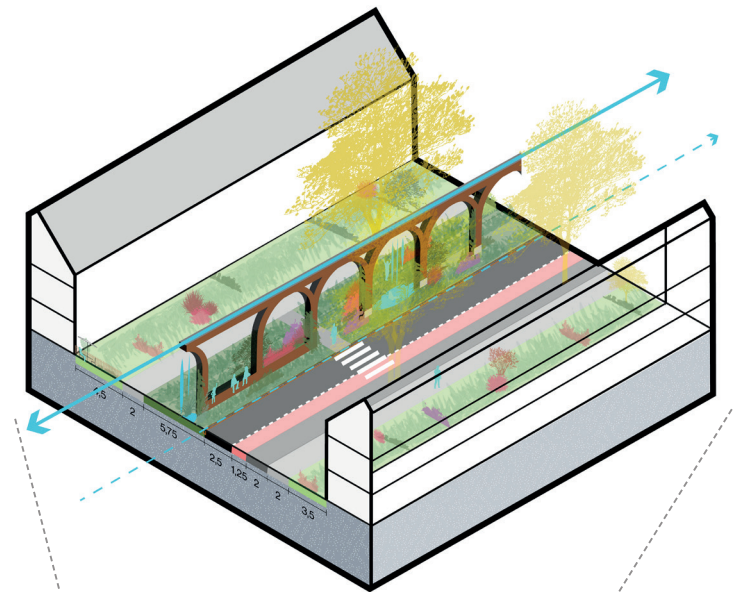
Green-blue aquaduct



Broerdijk
0,81 km²
26,1% impenetrable = 0,21 km²

Extreme rainfall of 70mm/2h
210000 m² x 0,07 m = 14.700 m³

Esdoornplein
2.259 m²
14.700m³ / 2.259 m² = 6,51 m depth



 = Nominated property
 = Bufferzone

2,5m

7,0m

3,5m



STATISCH MARK



ADD ON



INSPIRE



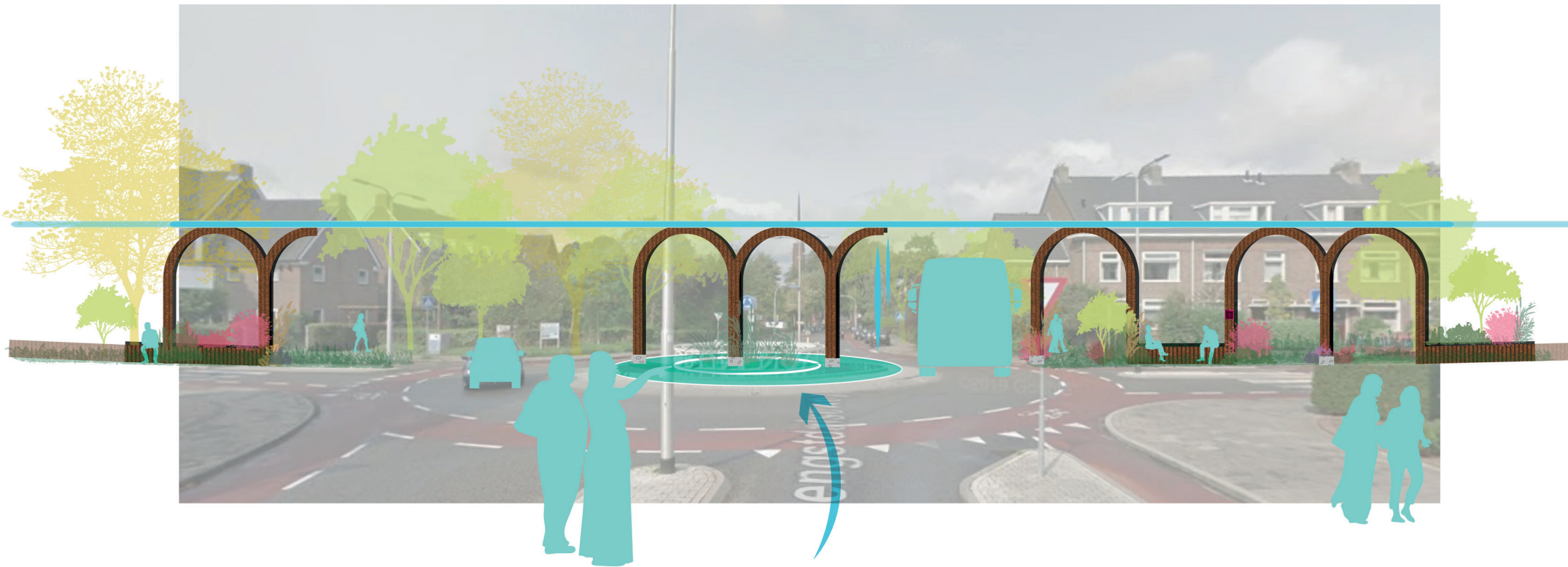
GREEN



WATER



SLOW TRAFFIC



PLAY

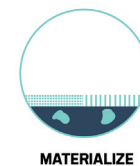


LISTEN

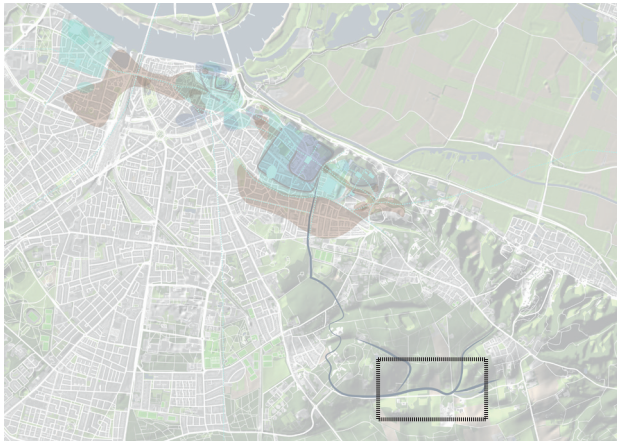


REST

Route



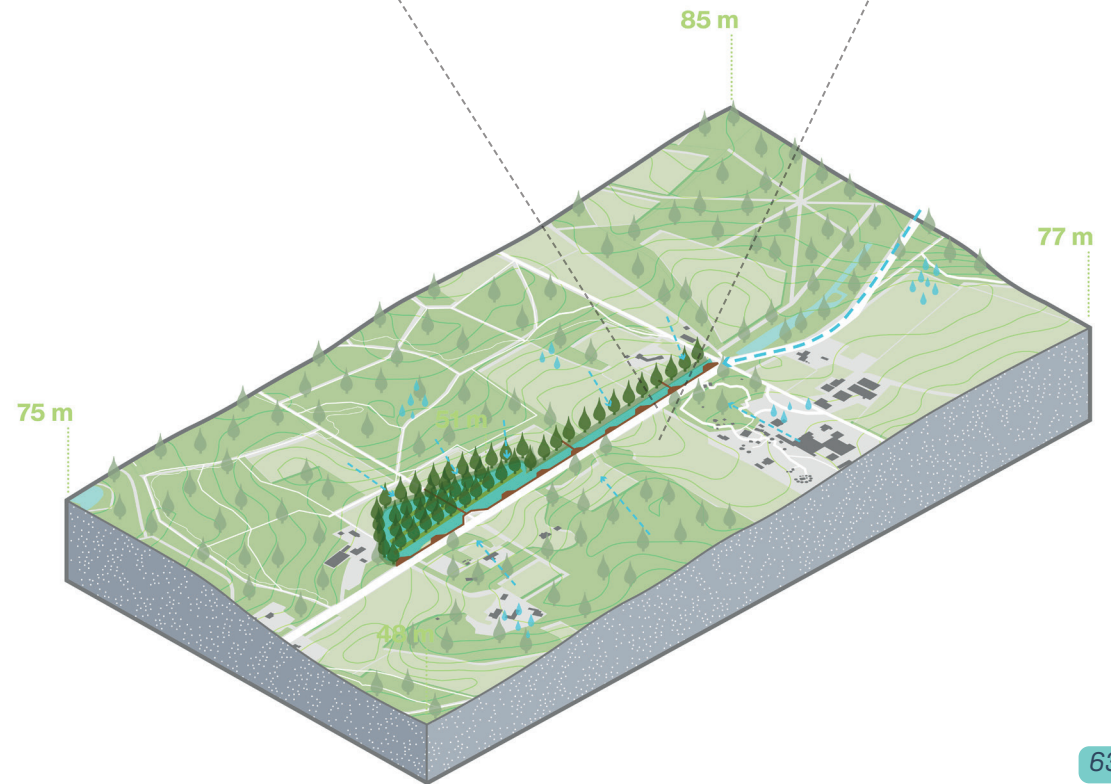
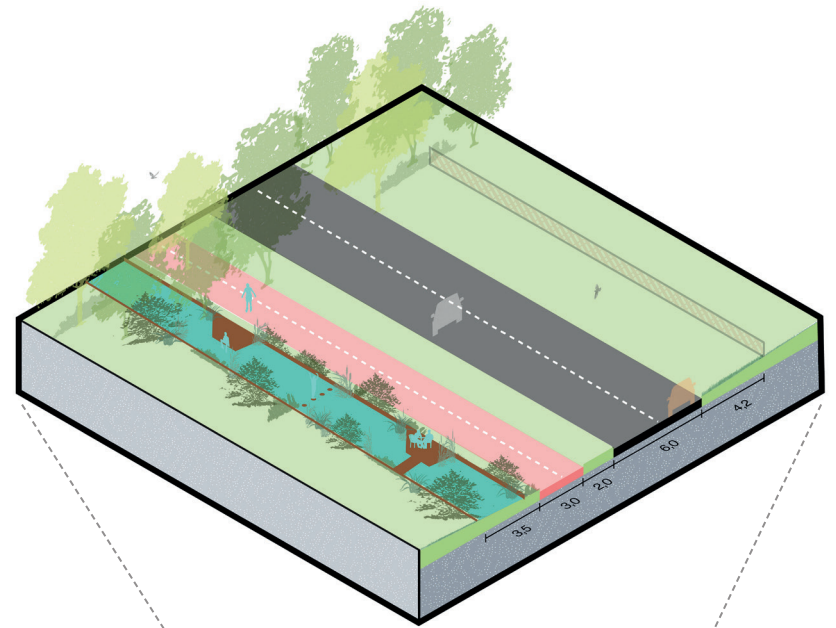
Roman pleasure ground



Watermeerwijk
1,73 km²
5,9% impenetrable = 0,10 km

Extreme rainfall of 70mm/2h
= 100000 m² x 0,07 m = 7.000 m³

Basin
9.585m²
7.000 m³ / 9.585m² = 0,73 m depth

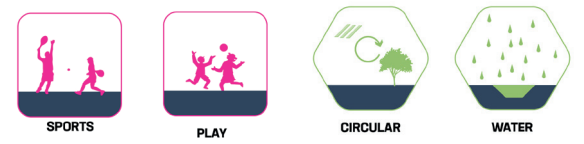




WET
GROWING



DRY
CHOPPED

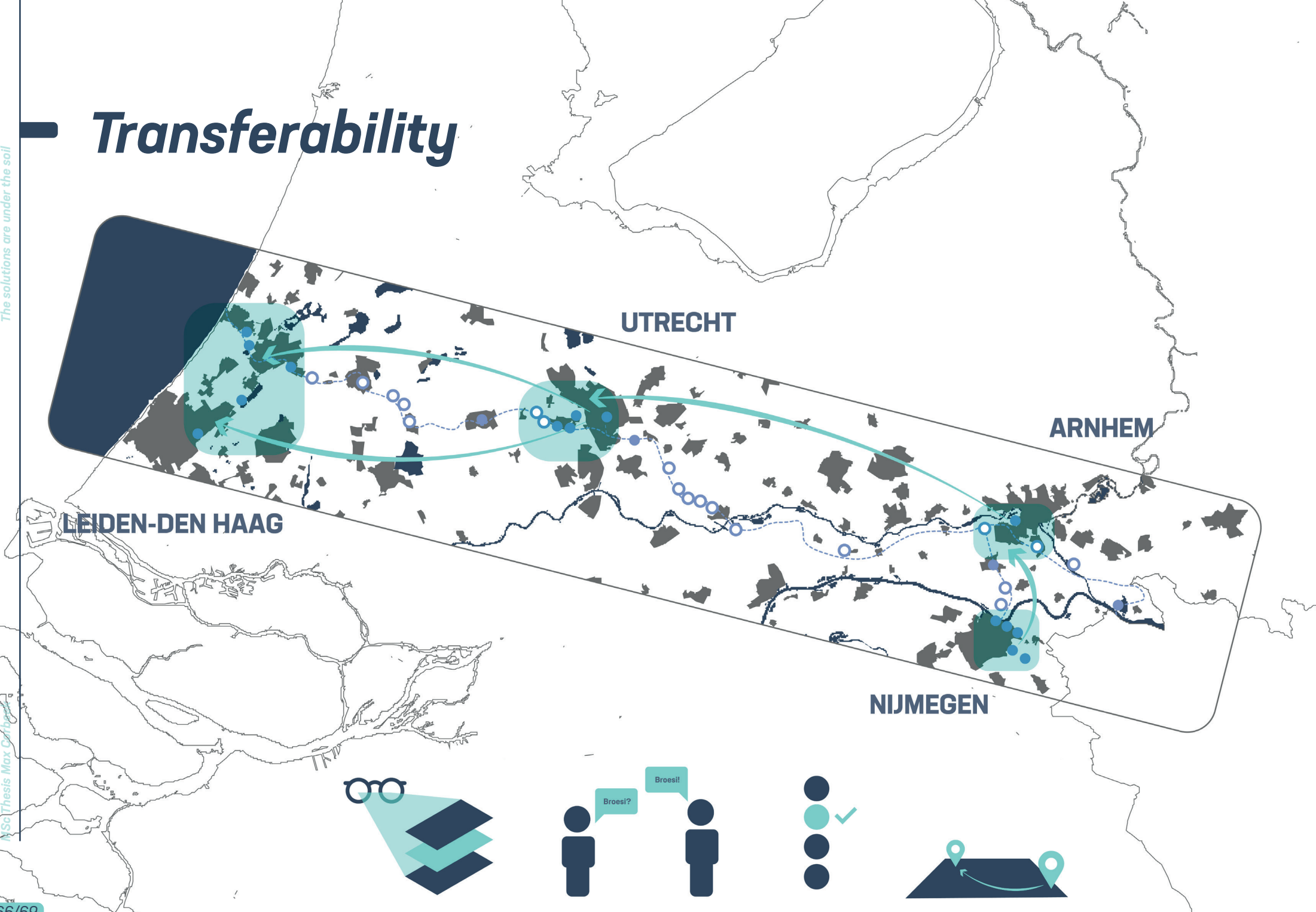


09.

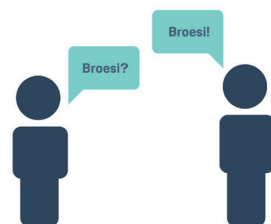
CONCLUSIONS

Answering the research question, reflections

Transferability



Approach



Language

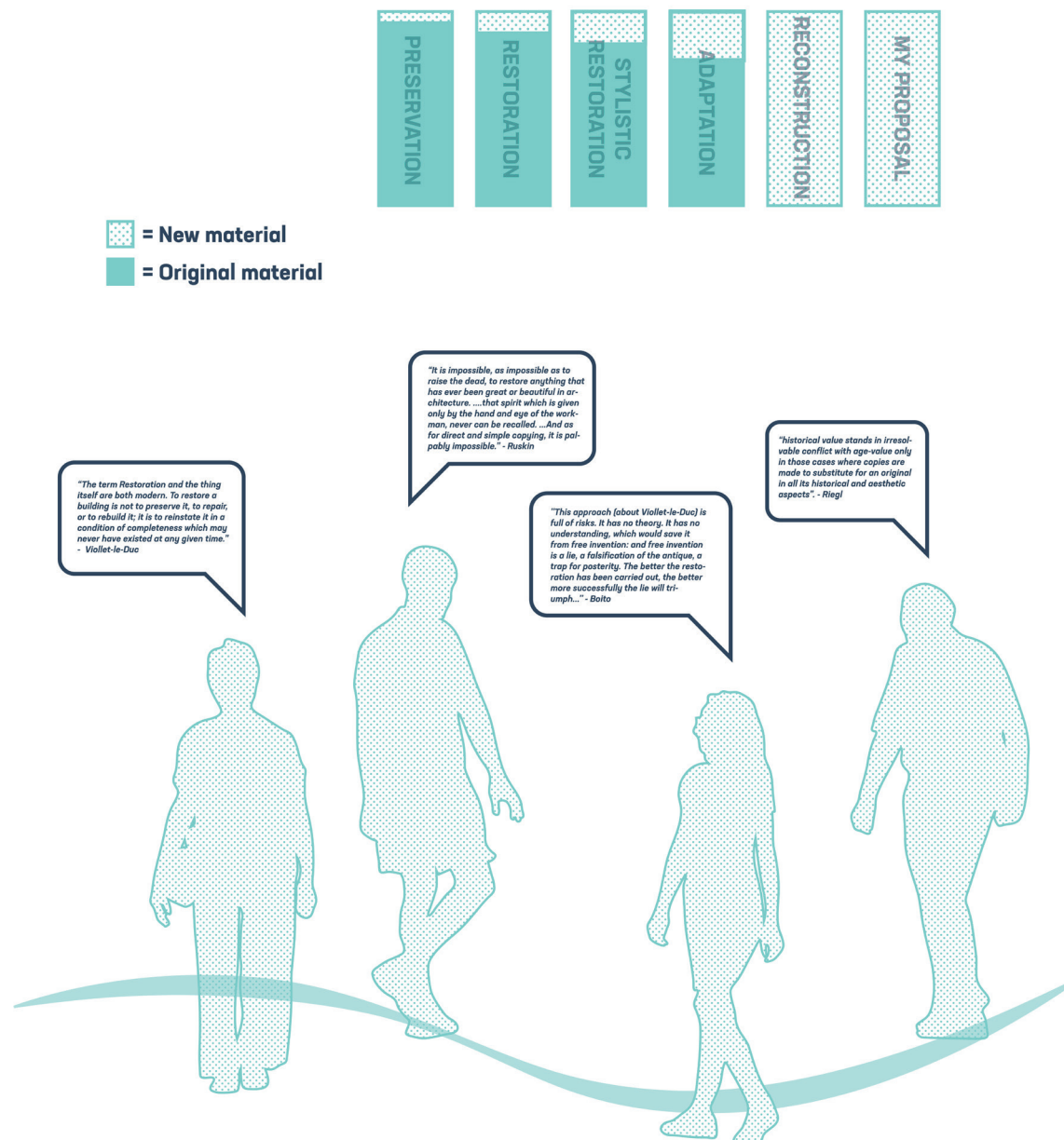


Design Tool



Expanding

Reflection on Ethics



Awareness



P5

MSc Thesis

Max Corbeek

