



# ***Machine made landscapes***

***Choreographing a dynamic excavation landscape***

*Exposing earth layers*



*Machine made*



*Dynamic landscapes*

**EXPLOITATION  
LANDSCAPES**



*Economic process*

*Inaccessible*



*Hidden impacts*

*Unsafe*

## **PART 1**

*Issues*  
**Introduction**  
**excavation**  
**landscape**

- 1.1 Fascination*
- 1.2 Current practices*
- 1.3 Problematique*
- 1.4 Research objective*

## **PART 2**

*The site*  
**Analysis large**  
**scale and**  
**small scale**

- 2.1 Site region*
- 2.2 Brief introduction*
- 2.3 Methodology*
- 2.4 Large scale analysis*
- 2.5 Choice of site*
- 2.6 Quarry analysis*
- 2.7 Challenges and potentials*

## **PART 3**

*Principles*  
**Tools for**  
**excavation**  
**landscapes**

- 3.1 Water Gravitas*
- 3.2 Unused material*
- 3.3 Scale balance*
- 3.4 Employ natural succession*
- 3.5 Recall history*
- 3.6 Site-specific program*

## **PART 4**

*Application*  
**Development**  
**plan**

- 4.1 Development plan*
- 4.2 Organization layers*
- 4.3 Spatial relationship*
- 4.4 The ramble – lake and mounds*
- 4.5 Paths experience*
- 4.6 Ecological ripple*

## **PART 5**

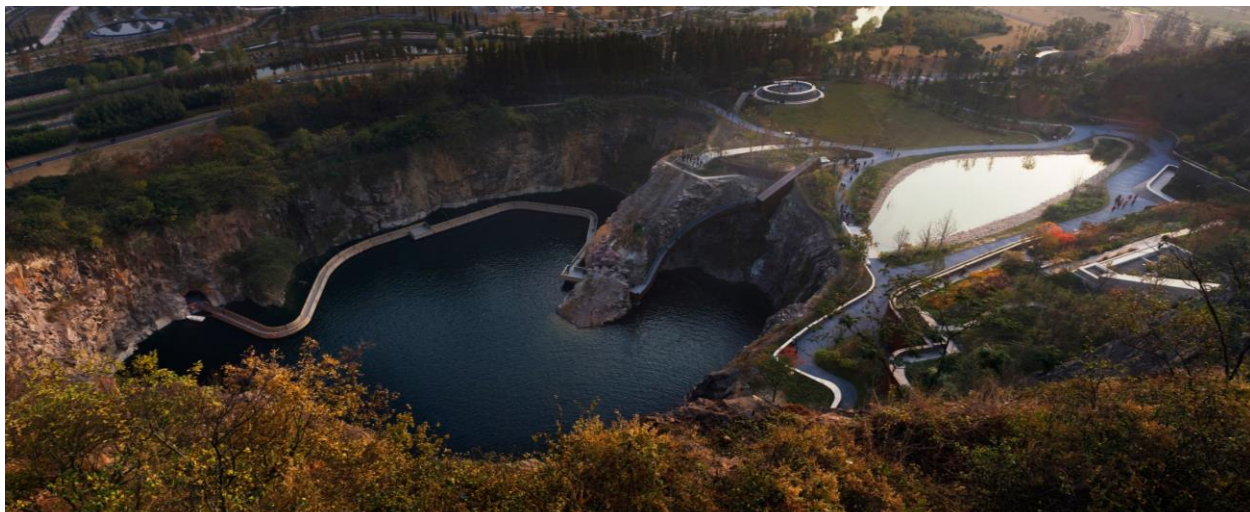
*Reflection*  
**Discussions**

- 5.1 Research*
- 5.2 The reading of site*
- 5.3 Design proposal*
- 5.4 Application to other sites*

# PART 1

*Issues*

***Introduction: excavation landscape***



<http://atstap.co.uk/quarry-garden-%E2%9F%B3%E2%9D%9%E8%8A%B%E3%BAD/>

<http://musingsmmst.blogspot.nl/2015/01/the-curated-garden-museum.html>

Shanghai quarry garden

Butchart gardens

Remediation practices



Abandoned and polluted quarries



<https://ok.ru/noangel1/topic/66351470687580>



<http://www.benedict.com.au/locations/cowra/>

- Lacking clarity about dynamics of the processes.
- Perceived only for its commercial benefits.
- No planning from the beginning of the process - Remediation in the end
- Lacking awareness about the spatial expression
- Failure to integrate well into its context.





*In summary, excavation landscapes are spaces where processes are taking place in a way that do not respect their unique characteristics. Remediation takes place after the completion of the excavation process which more often than not, neglect the challenges and potentials of these spaces. This graduation projects is intended towards tackling the unawareness of the ecological and spatial attributes of these spaces.*



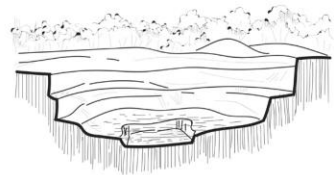
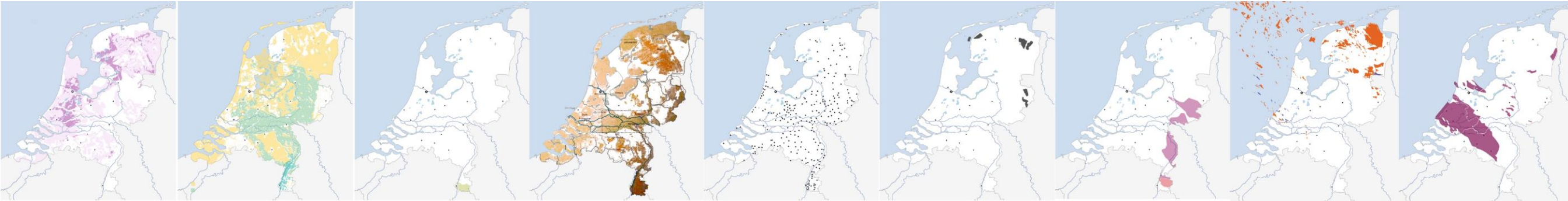
*To identify and explore excavation approaches and principles for landscape construction with the intention of facilitating ecological and recreational development in excavation sites across multiple scales while creating awareness about them.*

- What are the various processes taking place in the quarry from the spatial-visual perspective?
- What are the principles and tools for working with excavation landscapes?
- What are the design proposals based on the design principles and the landscape reading?
- Did the design proposal meet the objective and can the principles be applied to other such sites?

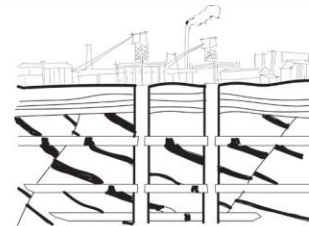
# PART 2

*The site*

***Analysis large scale and small scale***

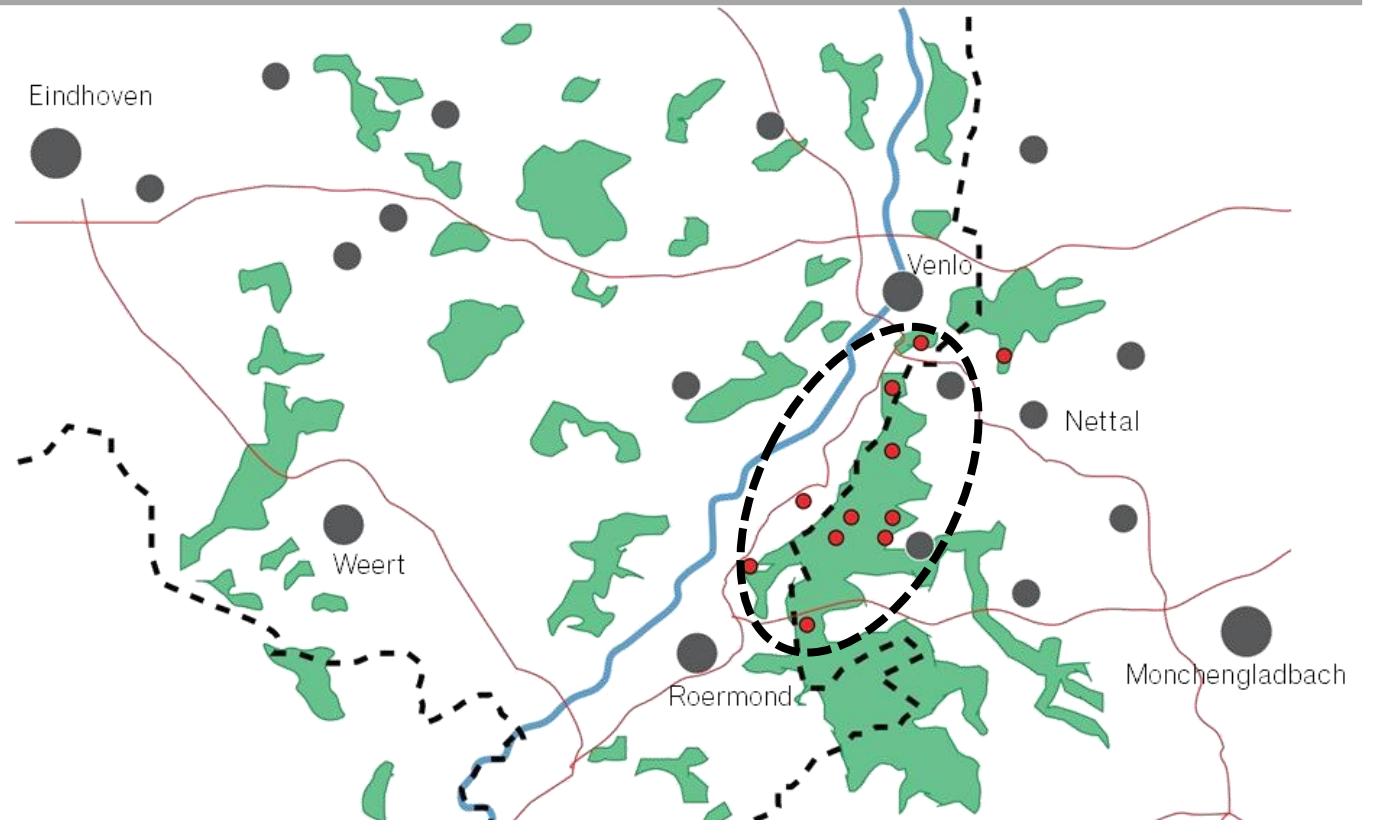


**EXCAVATION**  
Impacts seen as open pits in the landscape as a result of digging



**EXTRACTION**  
Impacts seen as industrial activity or elements used for the extraction

Excavation and extraction sites

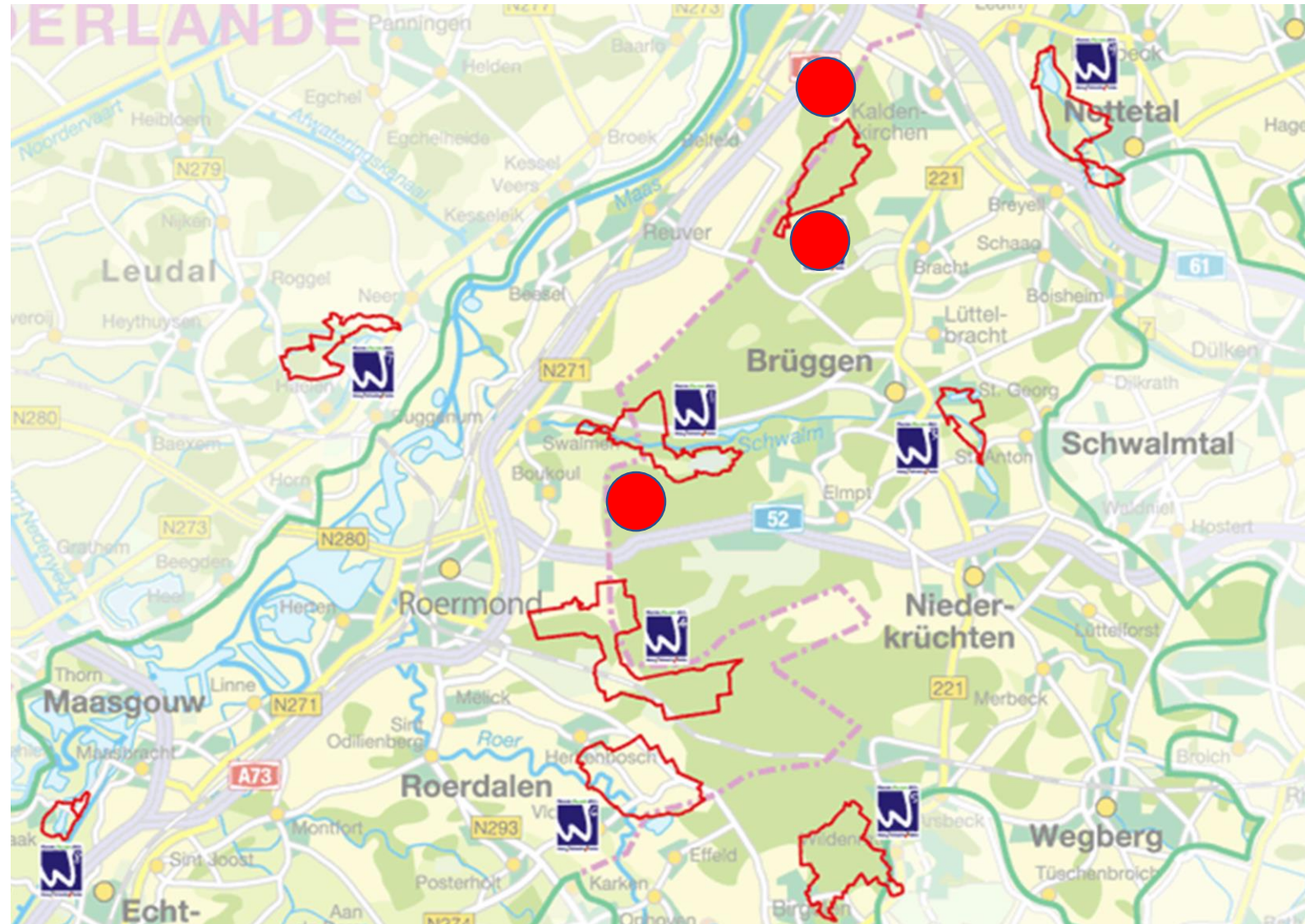


Quarries near Venlo within a forest



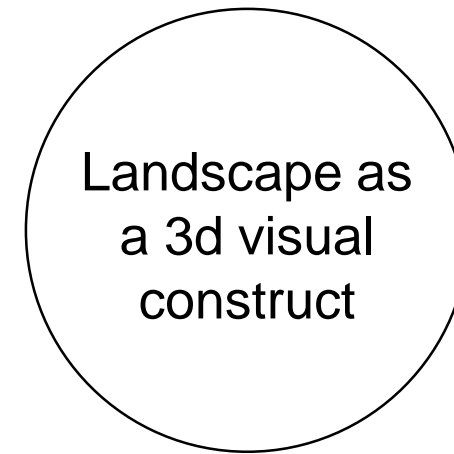
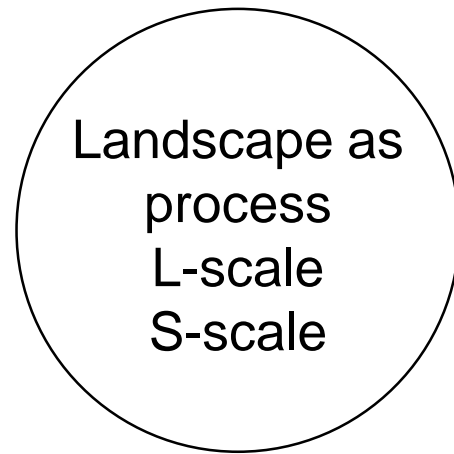


Monotonous Mono-culture landscape



Quarries not considered to be part of the recreational networks in the area

THEORETICAL  
BACKGROUND

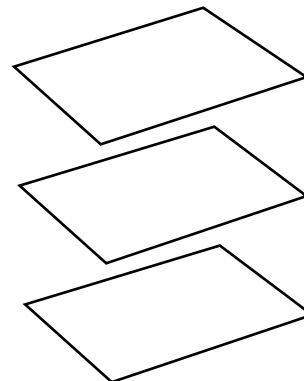


RESEARCH  
METHODOLOGY

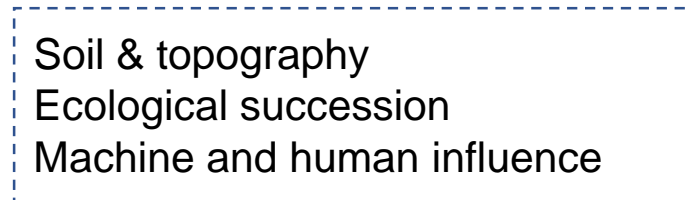
Understanding  
relationships between  
governing elements of  
the landscape



Spatial-visual expression



Abiotic layer  
Biotic layer  
Anthropogenic layer



SITE VISITS  
MODEL EXPERIMENTS

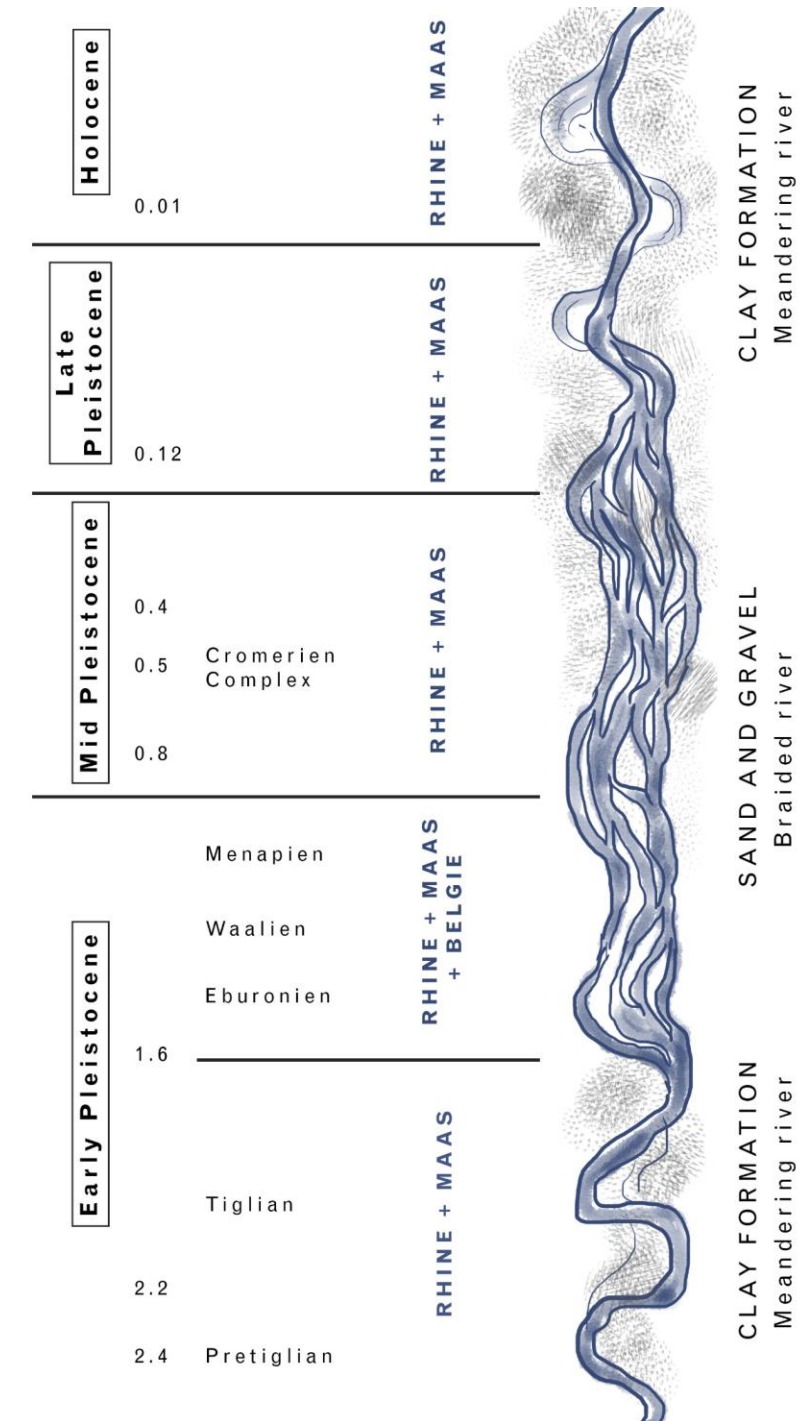
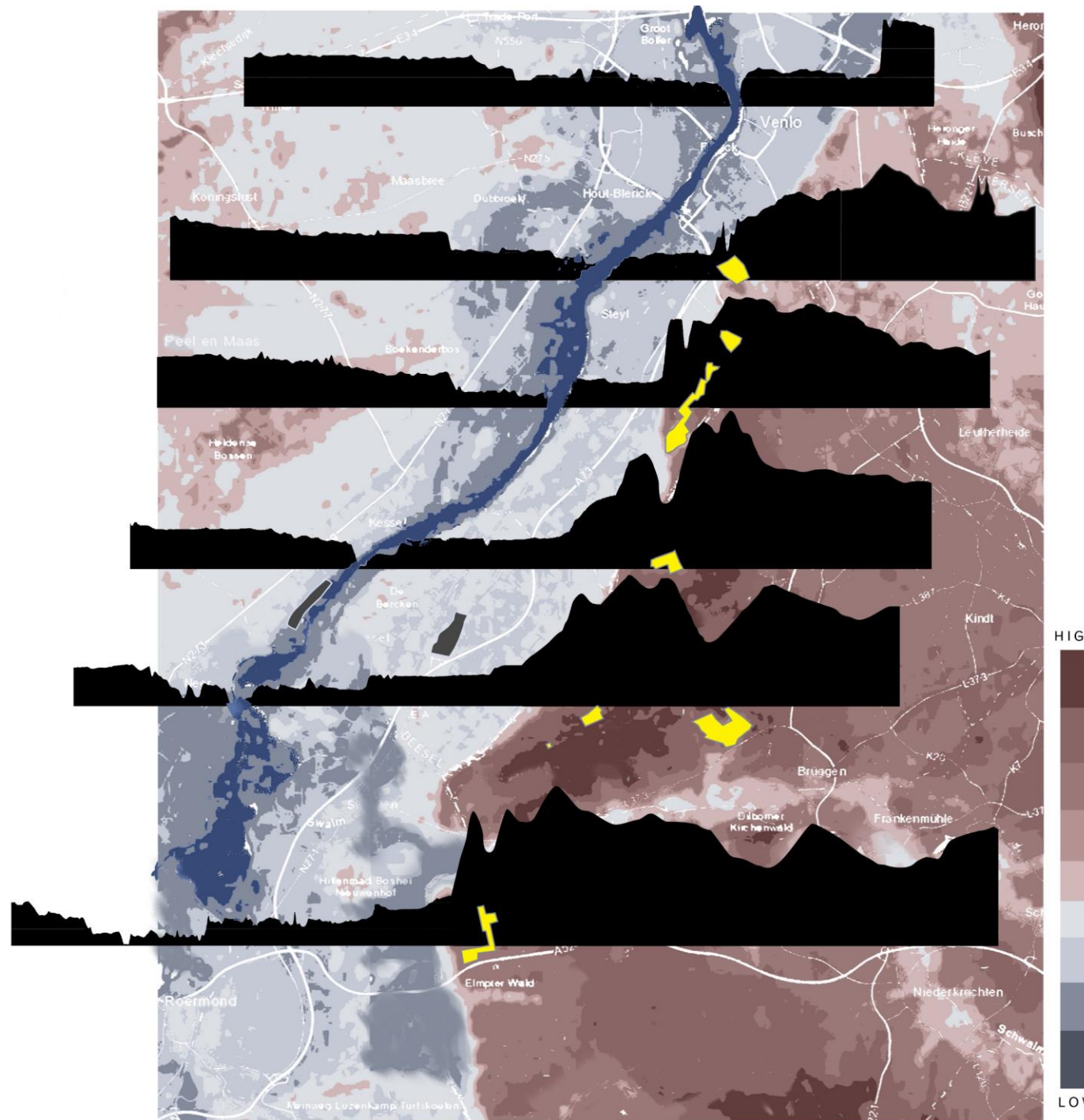
Spatial and experiential  
qualities through site visit

Physical model to  
conduct experiments

Gathering samples

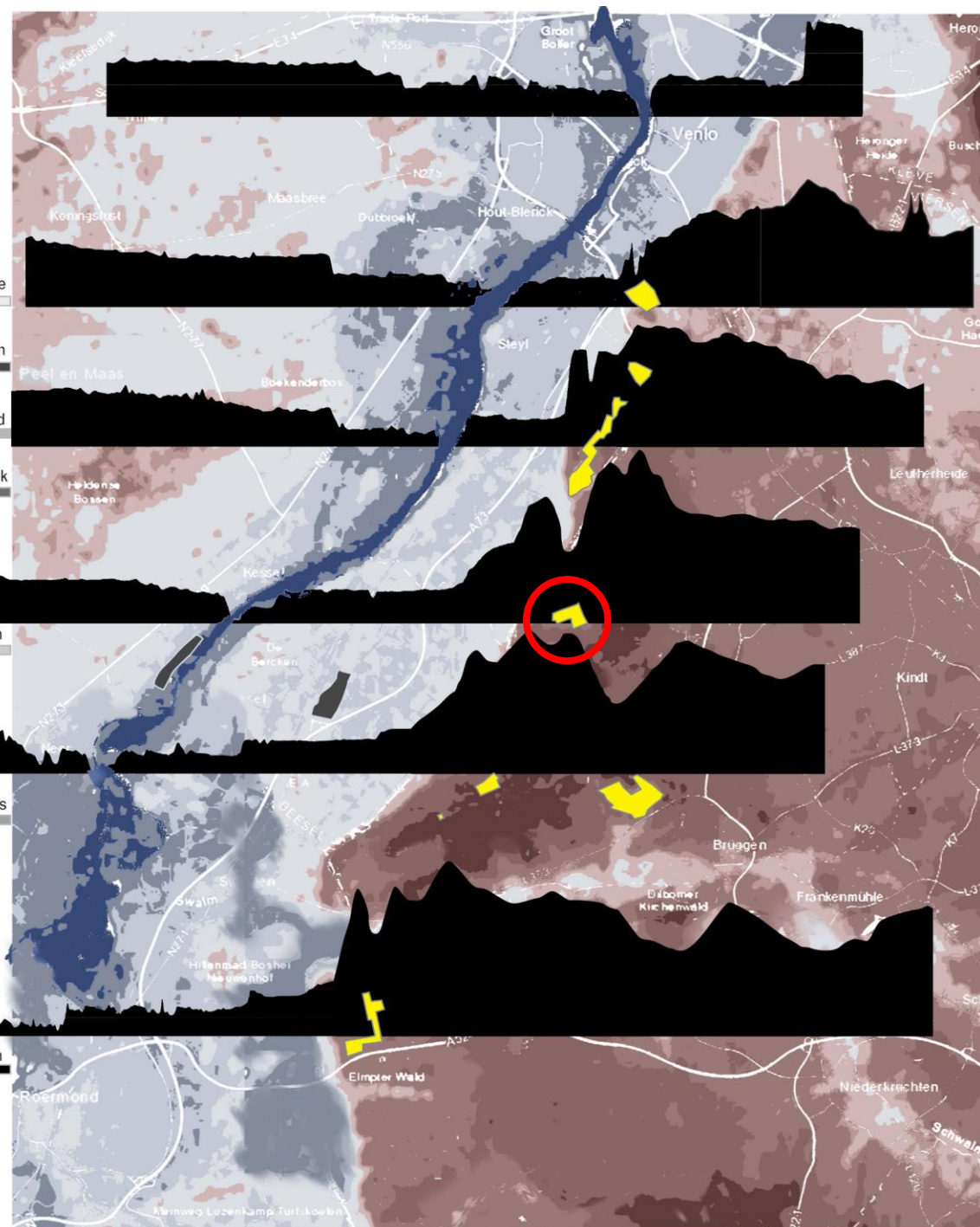
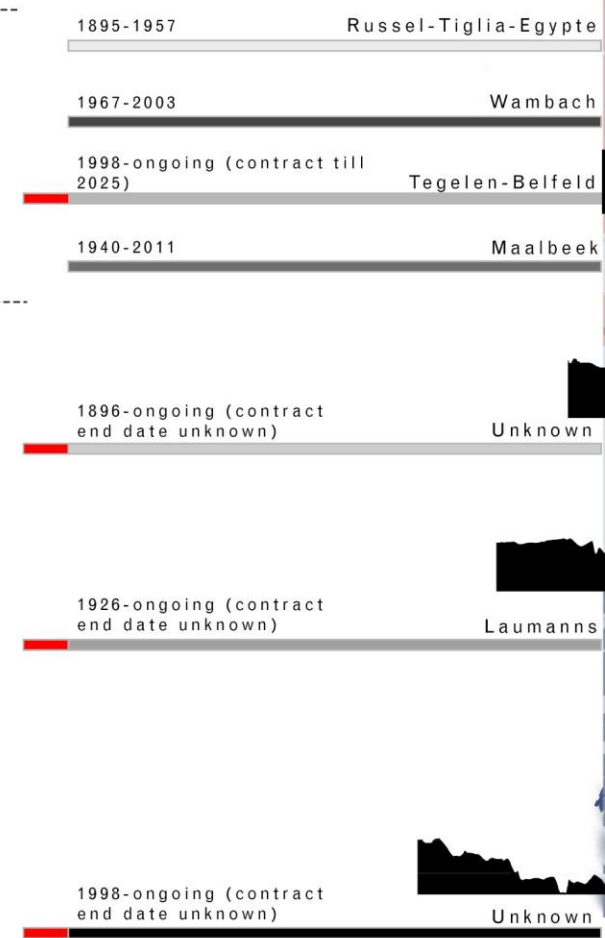


River influences



Underlying relationships on large scale  
 Rhine & Maas  
 Meandering & Braiding – Clay/Sand depositions

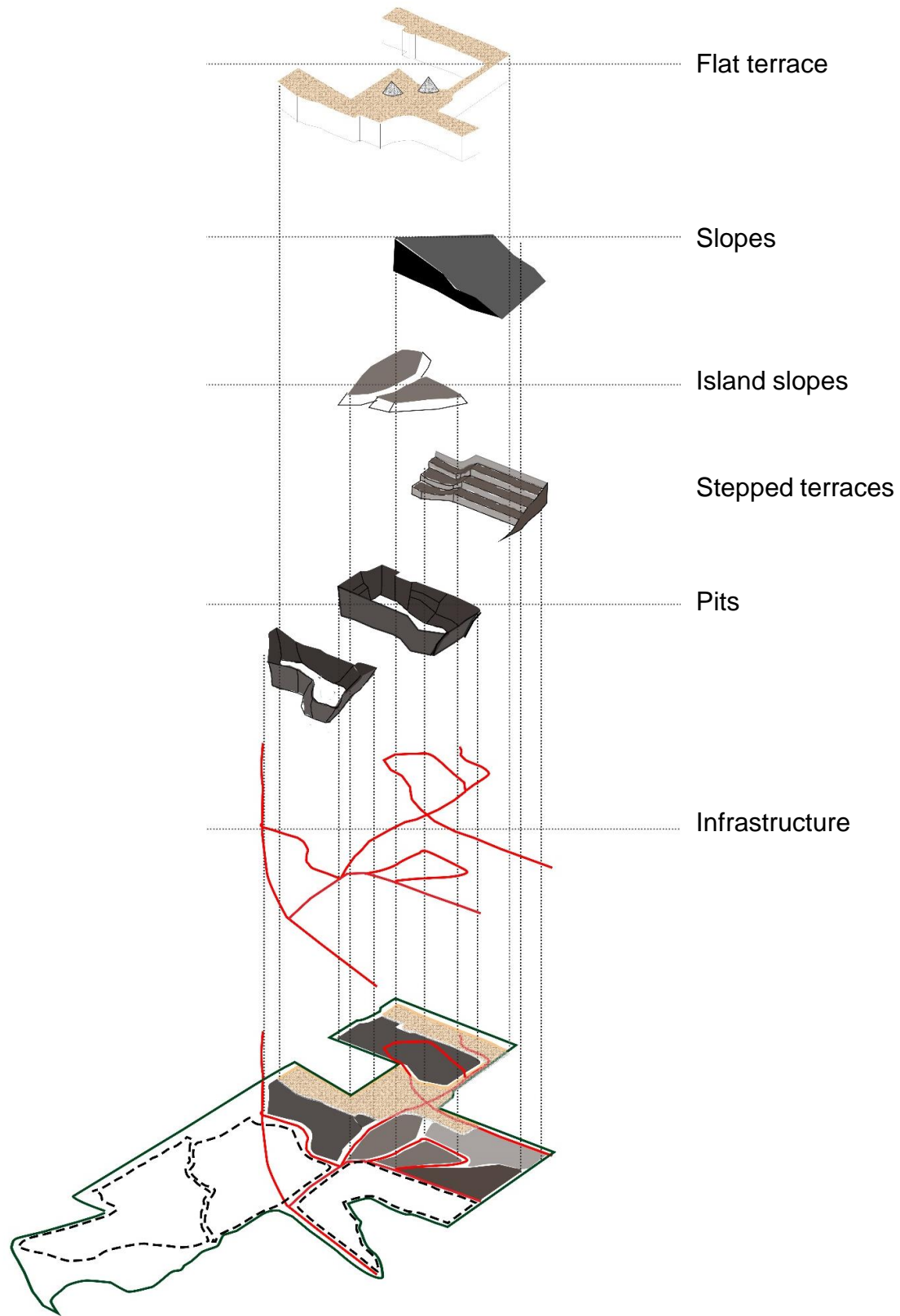
# Timeline of quarrying 1890s till today





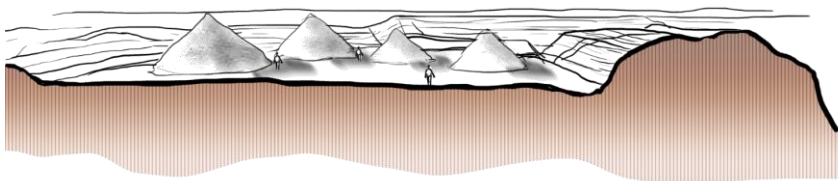
RELATIONSHIPS BETWEEN

ANTHROPOGENIC + BIOTIC + ABIOTIC

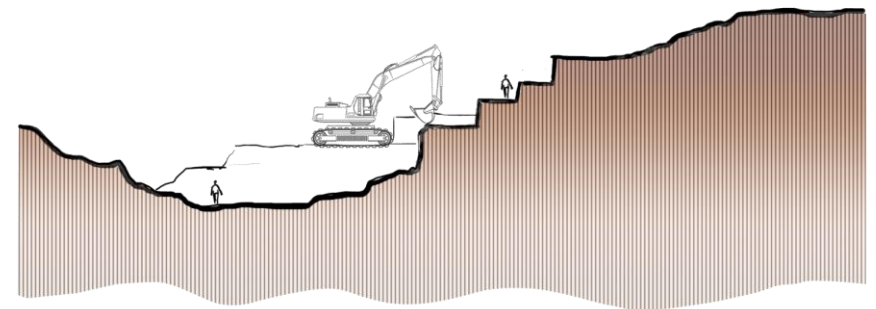


*Machines construct this layered quarry,  
Ones that create many a territory.  
They scoop, dig, sort, clear and expose,  
Forming terraces, platforms, pathways and slopes*

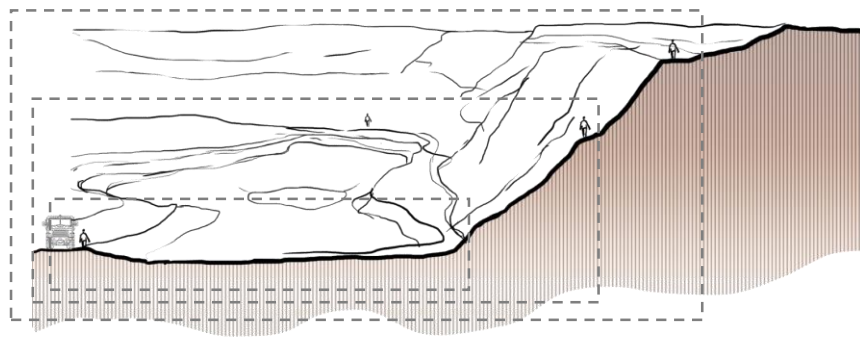
Excavation process



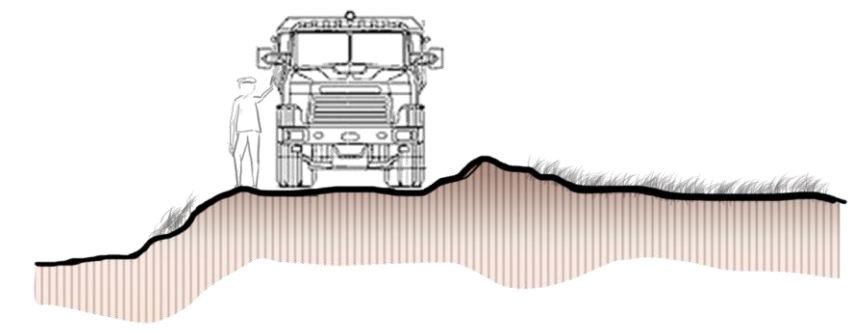
Flat terrace



Stepped terraces

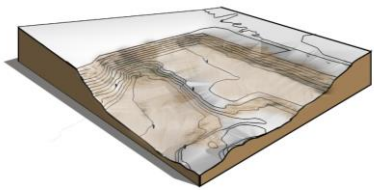


Pits



Pathways





Bare earth



0 months



Grassy meadow



5 months



Temporary wetland



7 months



Young forest



5-7 years



Mixed prairie



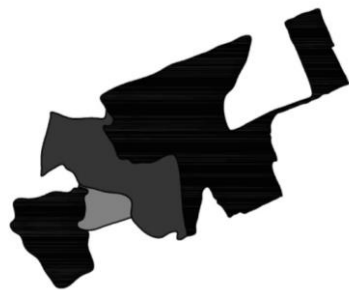
3-5 years



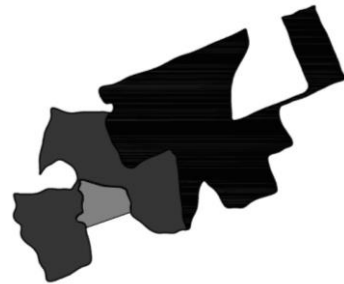
Developed forest



+15 years



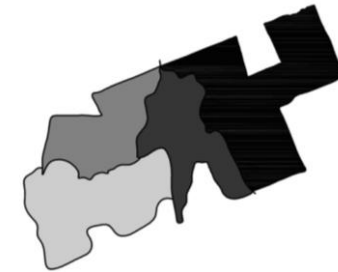
2005



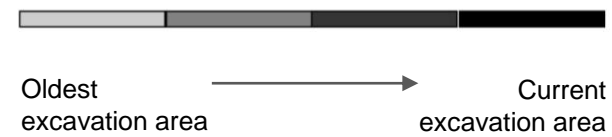
2007



2010



2017



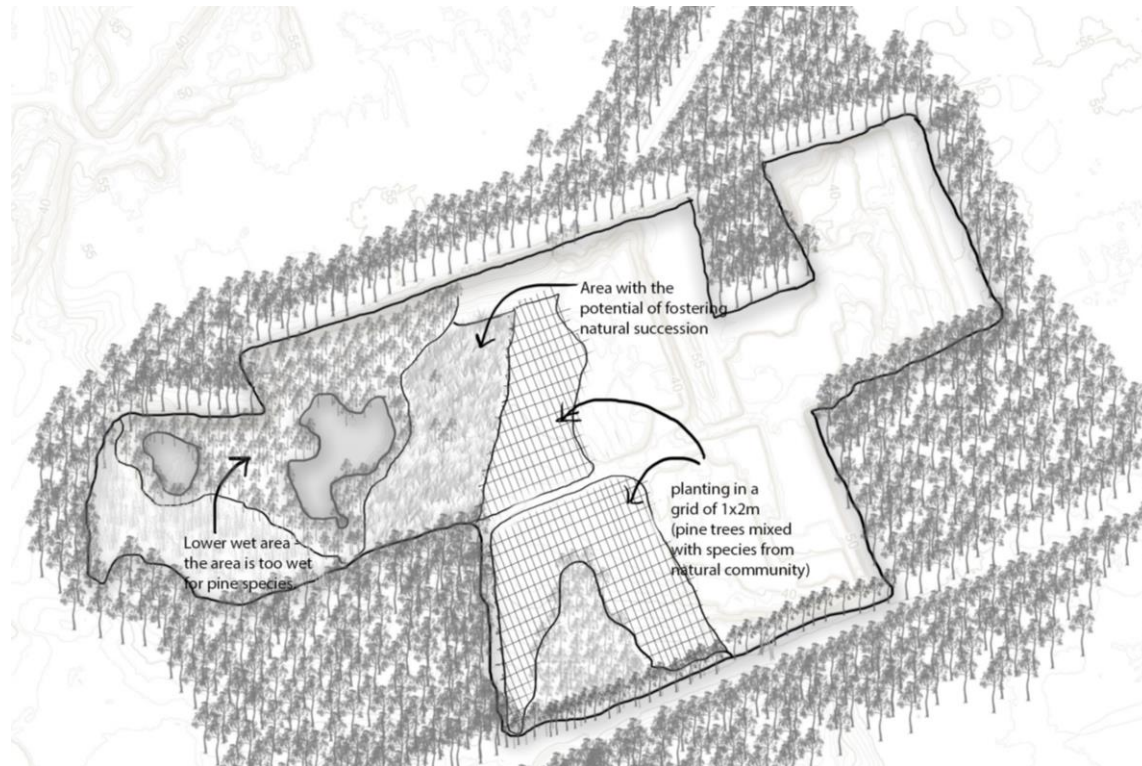
Variety by age



Many ecotones exist in this quarry – wetlands, grasslands, meadows, young forests. Nature follows the parcels and patterns dictated by machines so enormous.







A natural forest never exists as mono-culture and never in a grid!

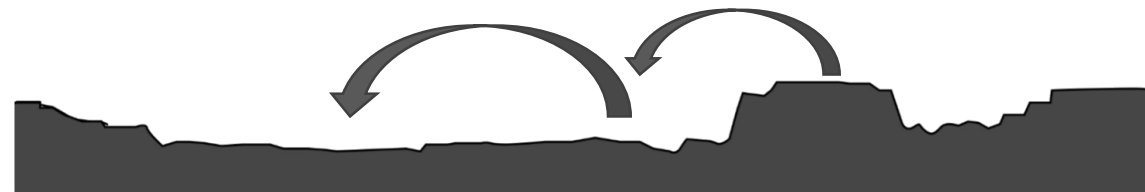
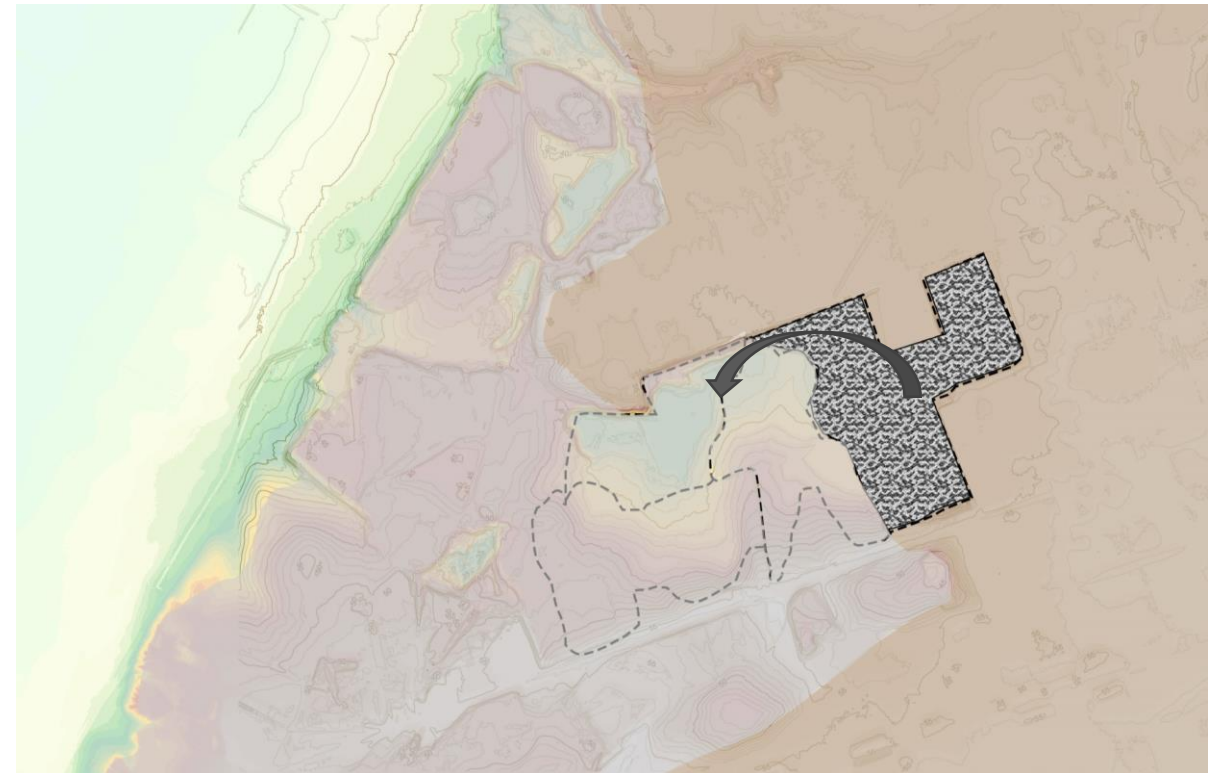
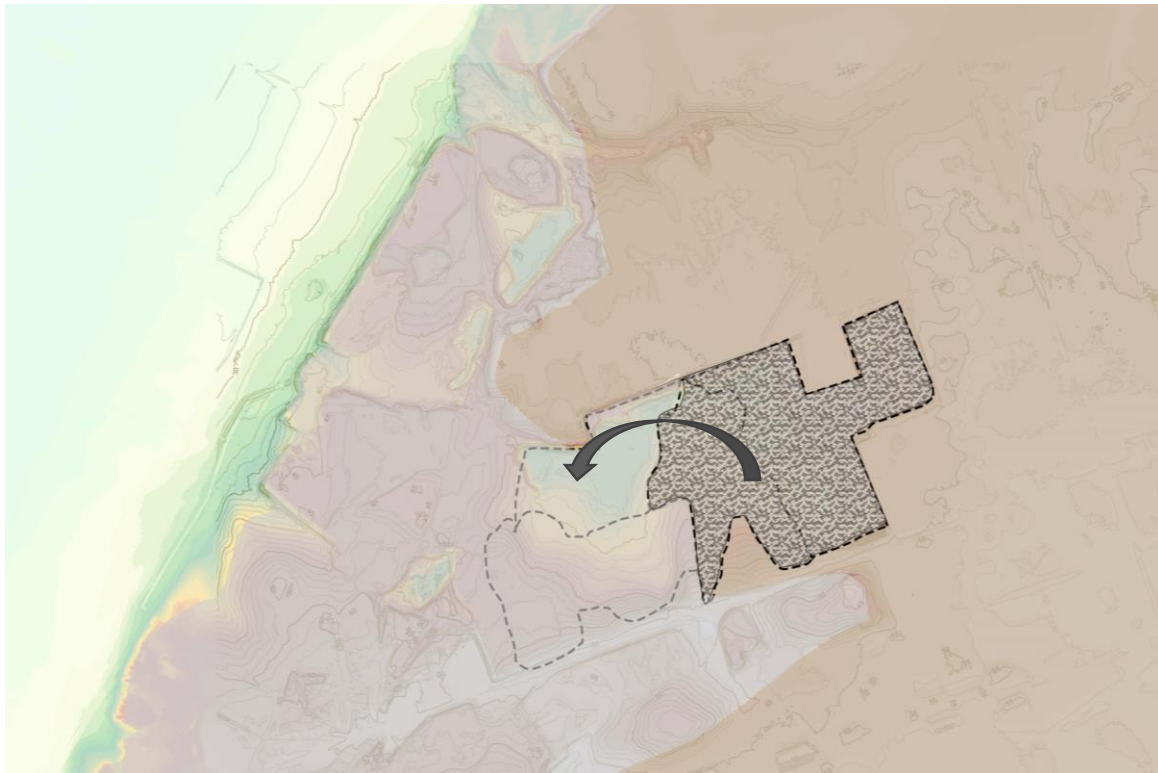
Pine trees planted by man for economic gains

Nature- to be or not to be?



*The moment the machine stops, nature takes control.  
But wait, you might wonder if its really natural,  
once you take a stroll.*



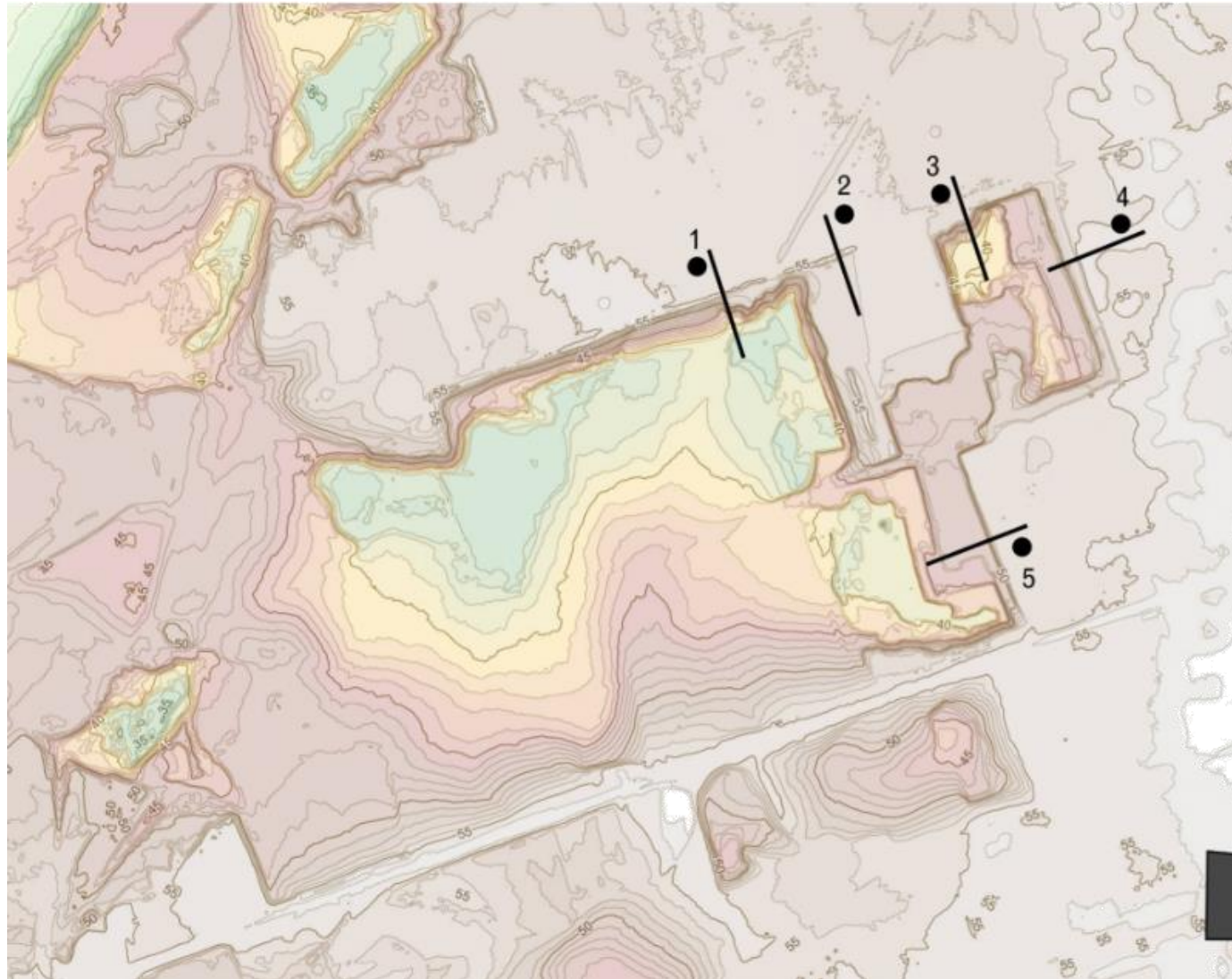


### Choreography with moving soil

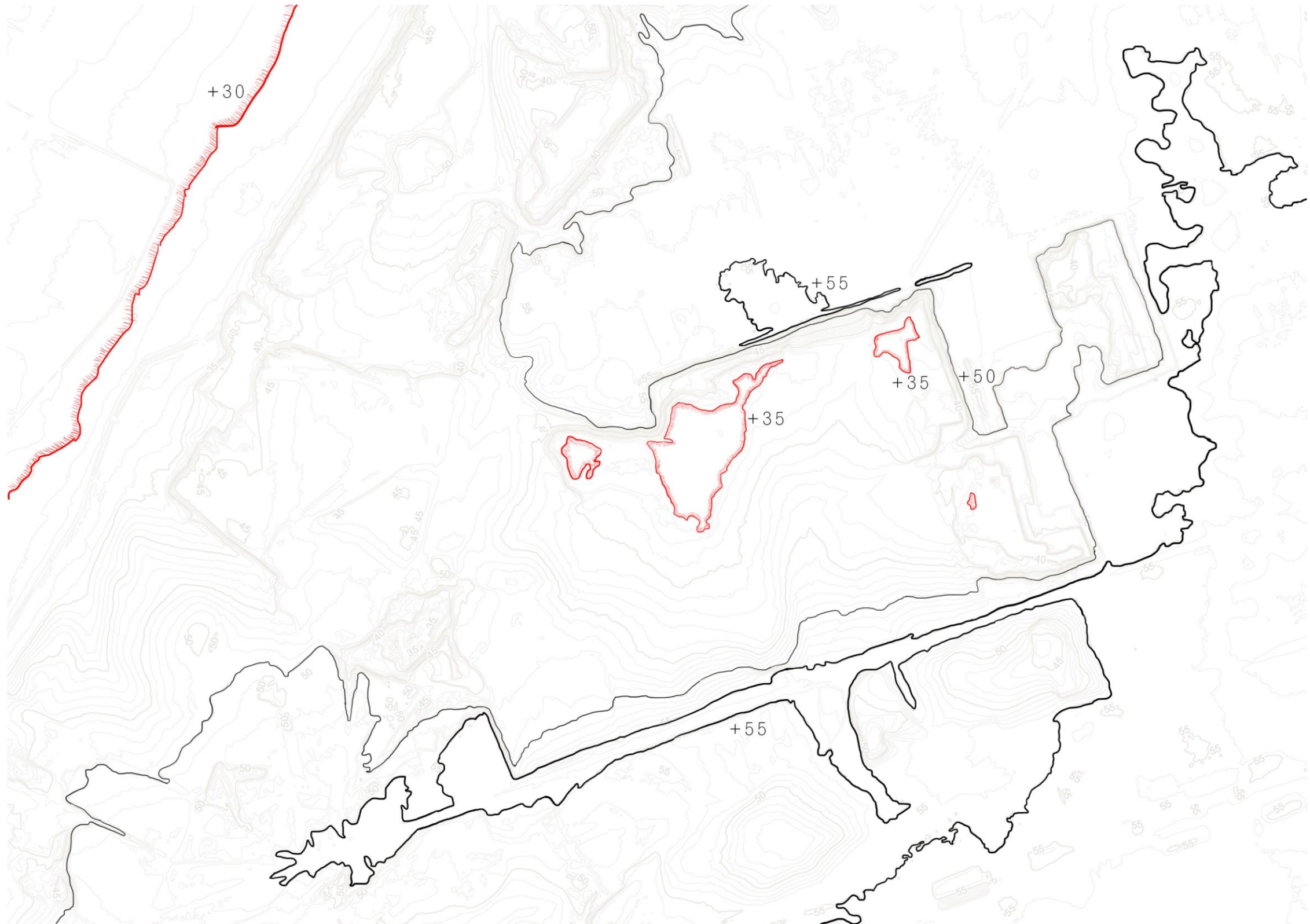


*It's the dance of the moving soil,  
Constantly covering up the land and machine's toil,  
Once dug, then replaced,  
The quarry's unique characteristics are left untraced.*





The quarry offers relief amongst the otherwise flat landscape



High and low points

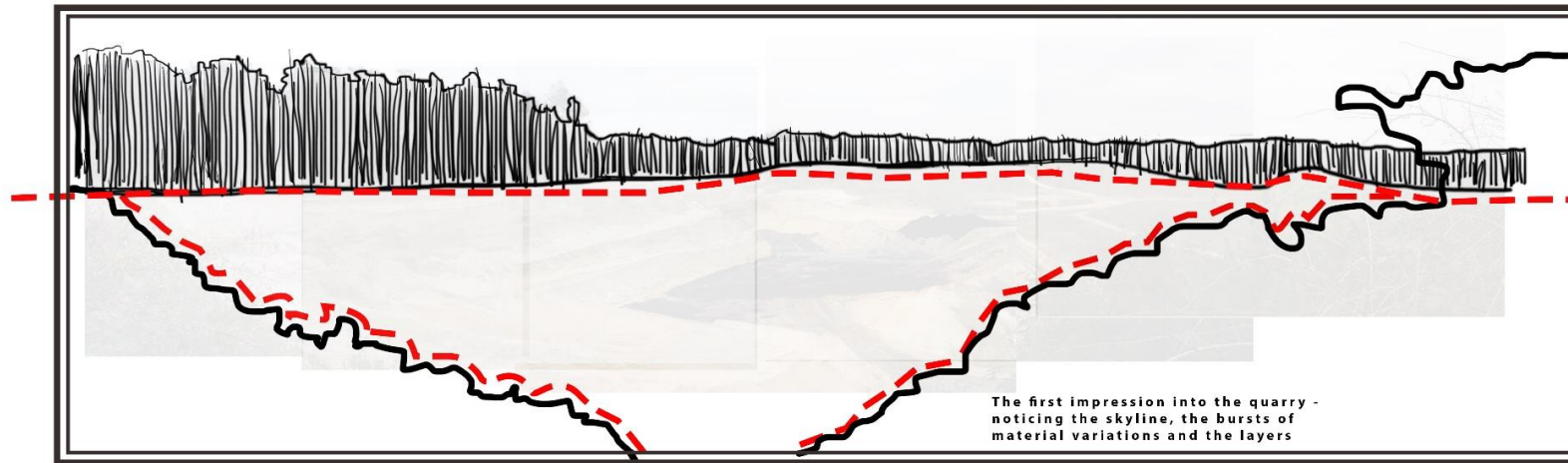
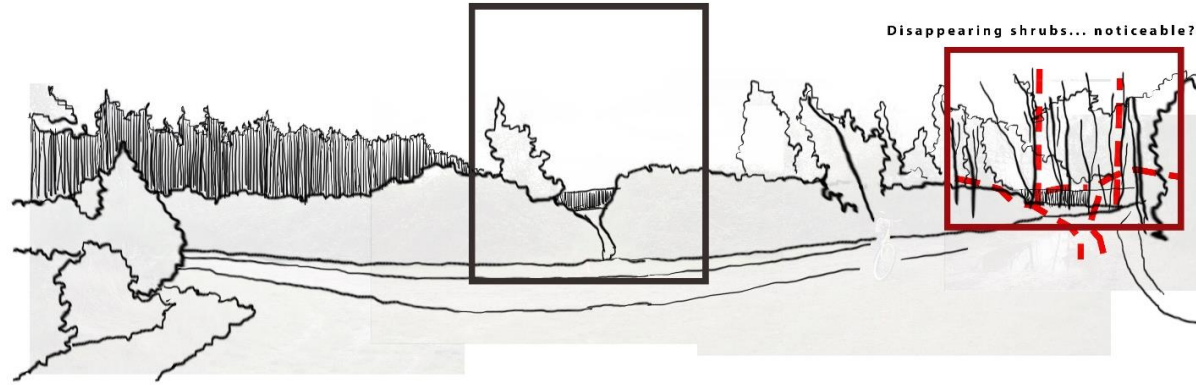
Highest point - +55

Lowest point- +35



The first clue about a quarry being there:  
a clearing in the shrubs

Disappearing shrubs... noticeable?



The first impression into the quarry -  
noticing the skyline, the bursts of  
material variations and the layers

Economic  
Excavation/Quarrying  
Destroyed  
Dangerous  
Industrial

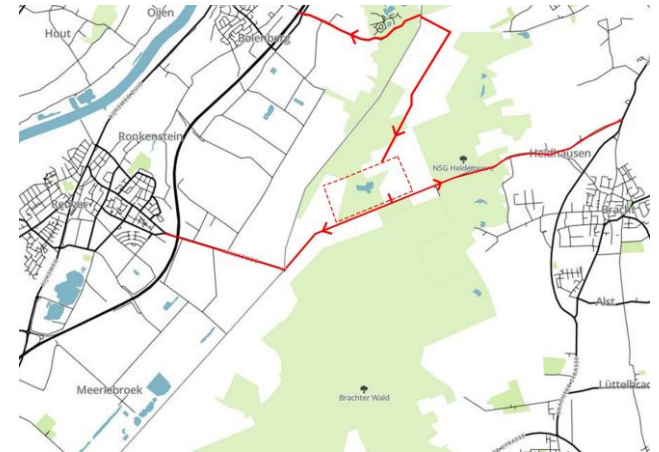
DUALITY  
INDUSTRIAL VS NATURE

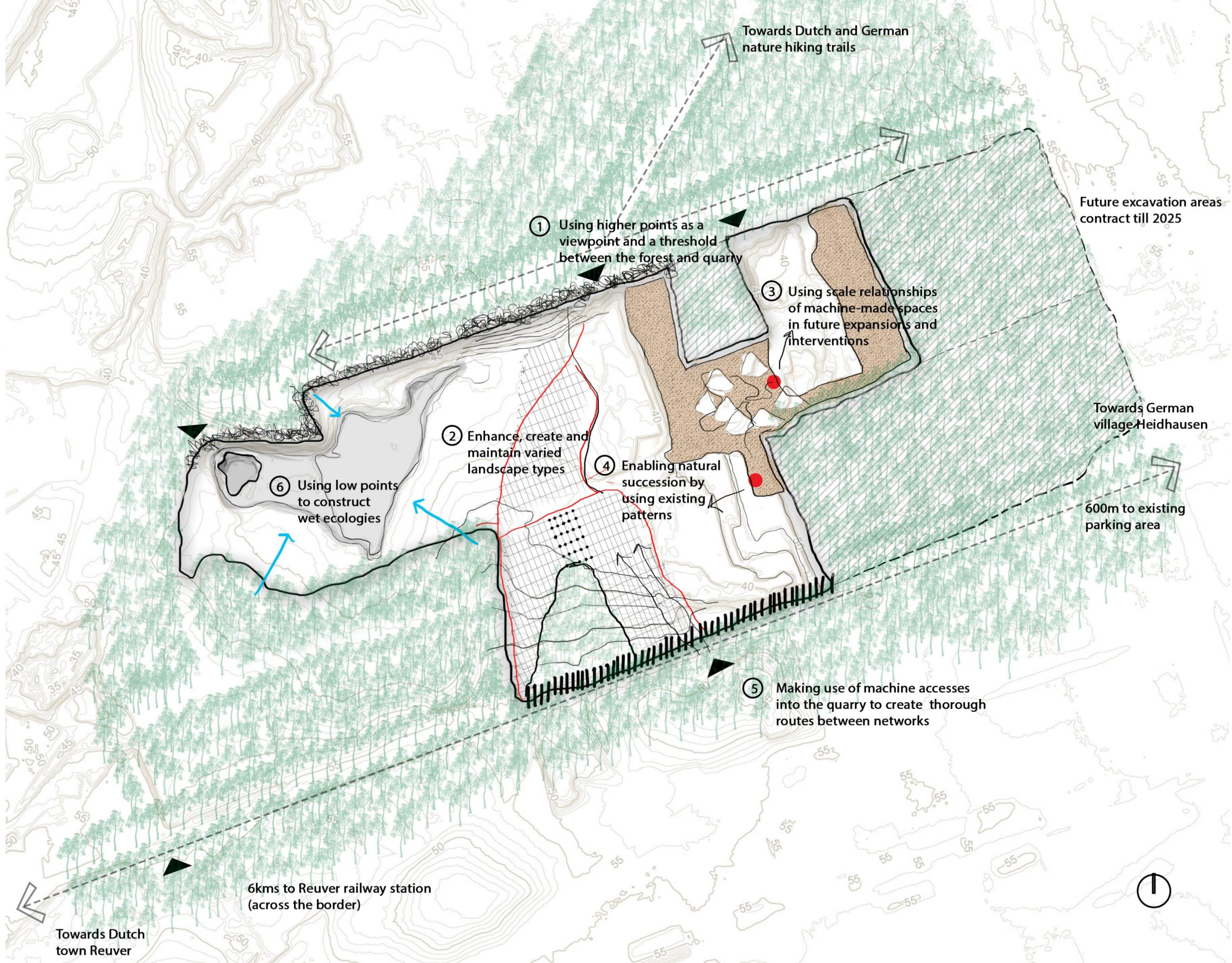
Green  
Beautiful  
Scenic  
Picturesque  
Landscape



Healing  
Temporal  
Succession  
Infill  
Aging

View points and the first  
impressions of the quarry space



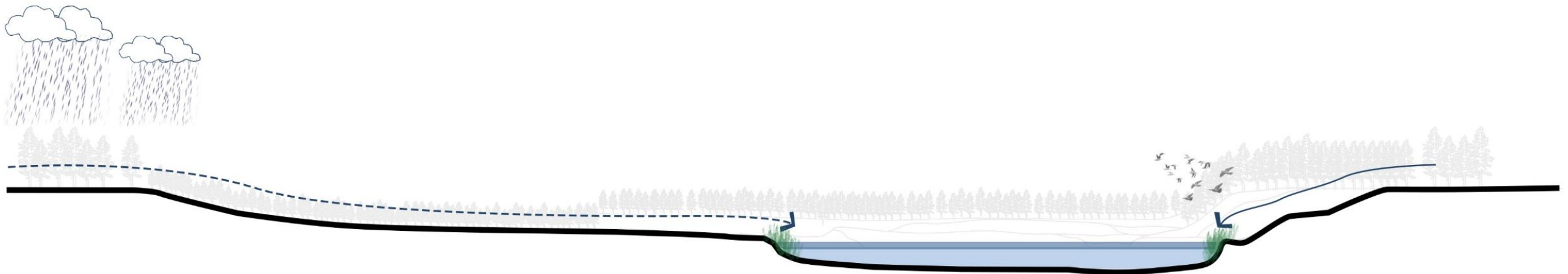




# PART 3

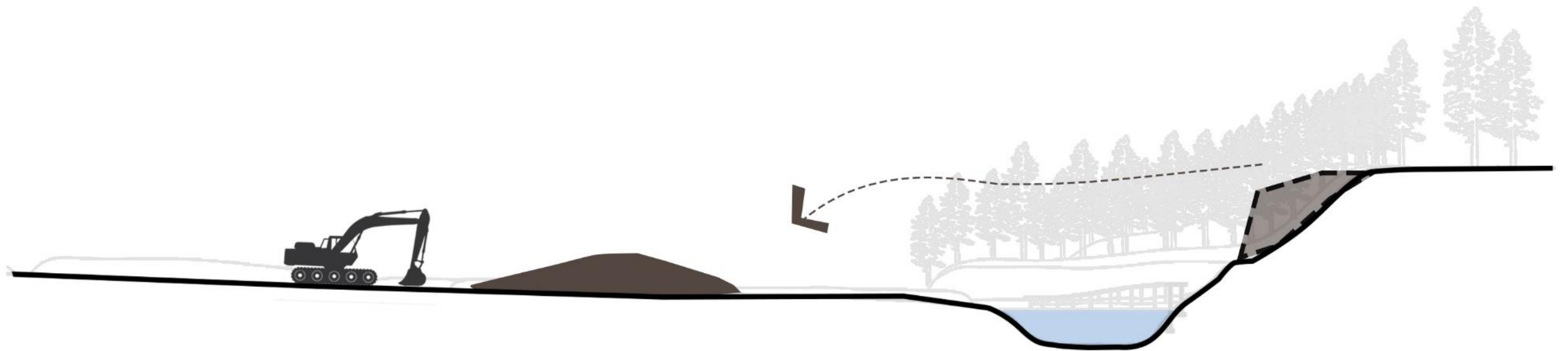
*Principles*

***Tools for design of excavation landscapes***



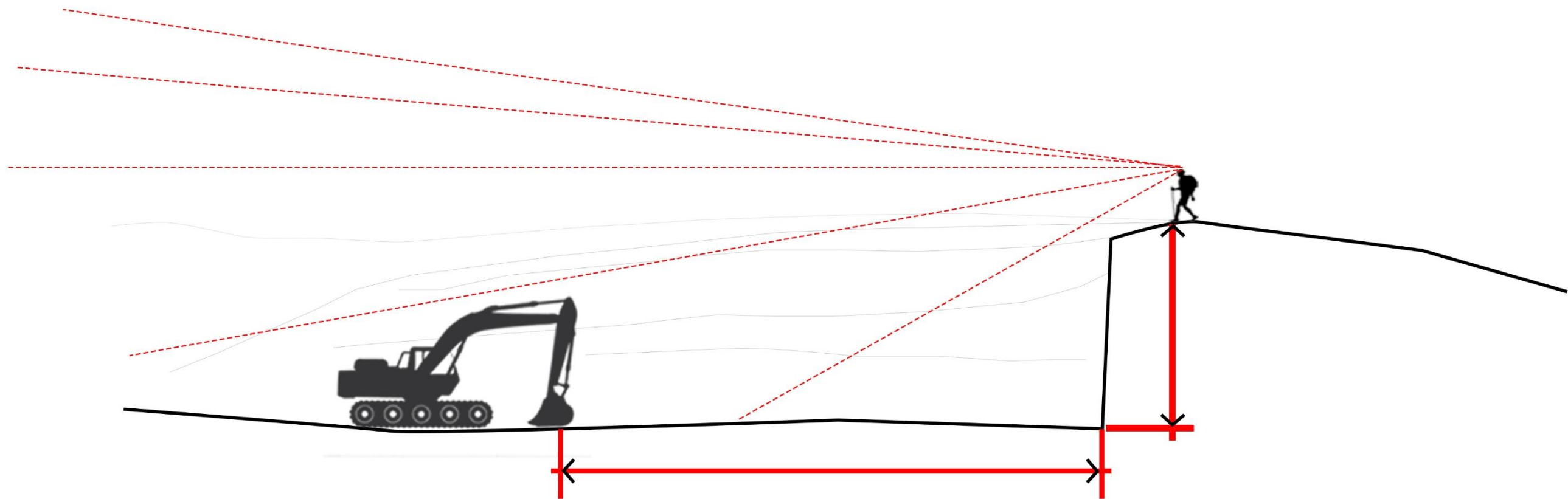
## Water gravitas

Use the understanding of topography and material in the quarry to create wet ecological conditions and spatial experiences around water as the focal point



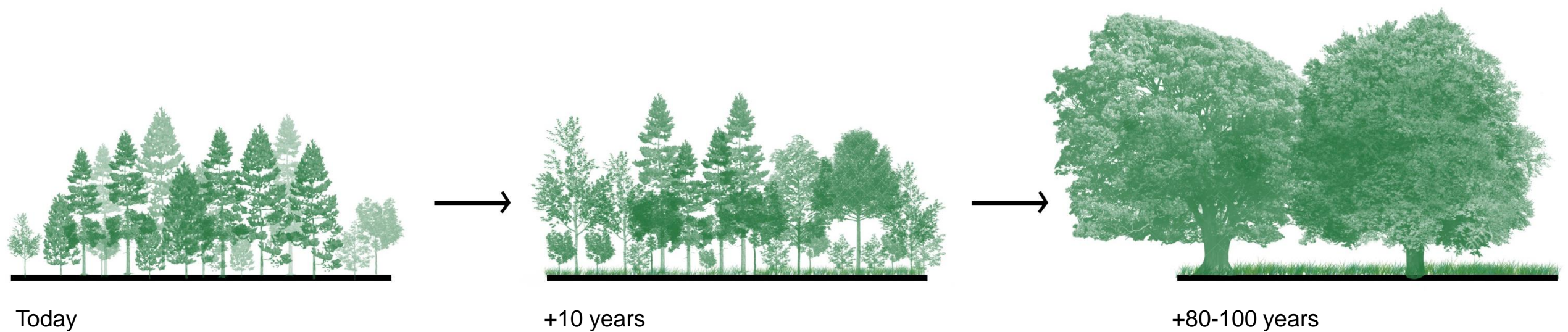
## Cut and fill of Unused materials

Make use of unused materials such as top-soil and cut timber in or around the quarry to create spaces for enhanced kinesthetic experiences or to modulate thresholds



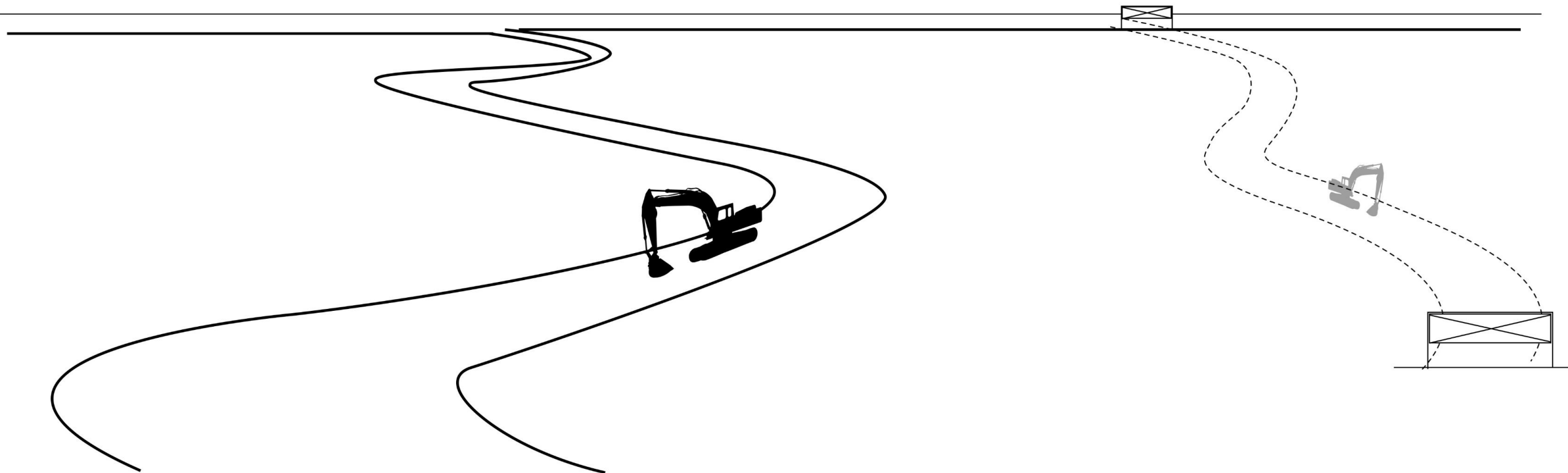
## Balance between Machine-scale and Human-scale

Ensure that the machine-made spaces in the landscape also fit human scales by the use of spatial typologies which are unique to such spaces.



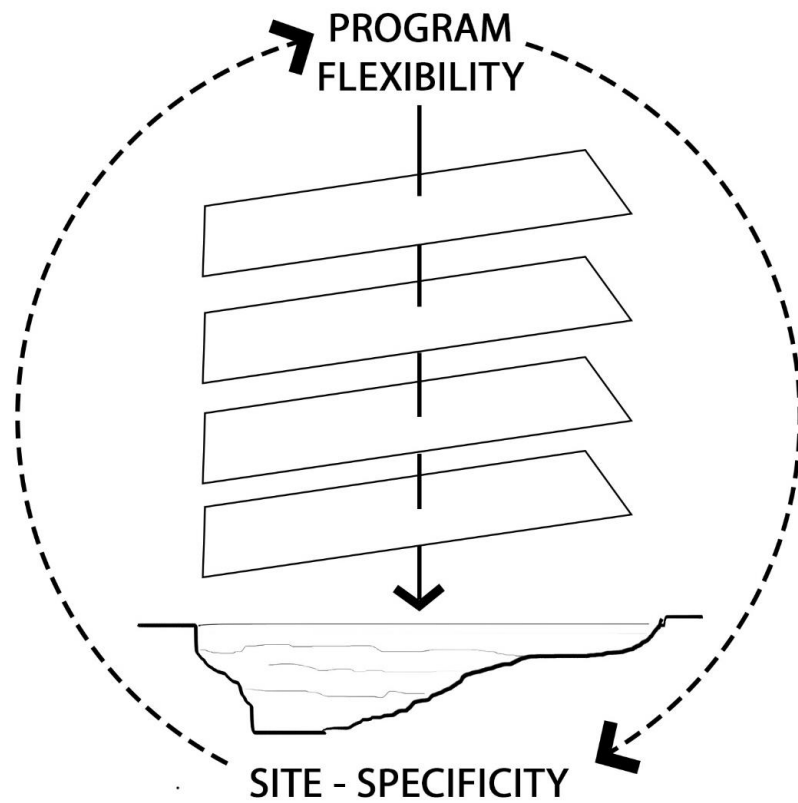
## Employ Natural succession

Use the potential of the quarry being a “clean slate” to foster natural ecological systems. Use minimal interventions to employ succession in the future.



## Past routes and Organizational backbones

Recall the history of the site (based on its significance) – past used pathways and underlying structures.



Sheshan Shimao Quarry Hotel



Ecological development, ENCI quarry

## Site-specific program

Make use of an appropriate program overlay on the site which can ensure economic viability of the area. Make sure that the spaces are flexible to fit into it multiple programs or functions.

## PART 4

*Working on the quarry using the principles  
Development plan and its components*

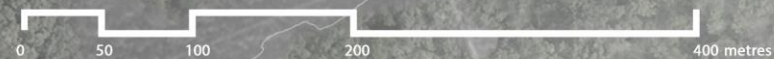


DEVELOPMENT PLAN 2030

(A)  
Quarrying completed

(B)  
Future excavation

- 1. Approach, bike parking and viewpoint
- 2. Entry into quarry
- 3. The lake and café
- 4. The braided walk
- 5. Ecological ripple
- 6. The axis down memory lane
- 7. Approach from Germany, parking and viewpoint



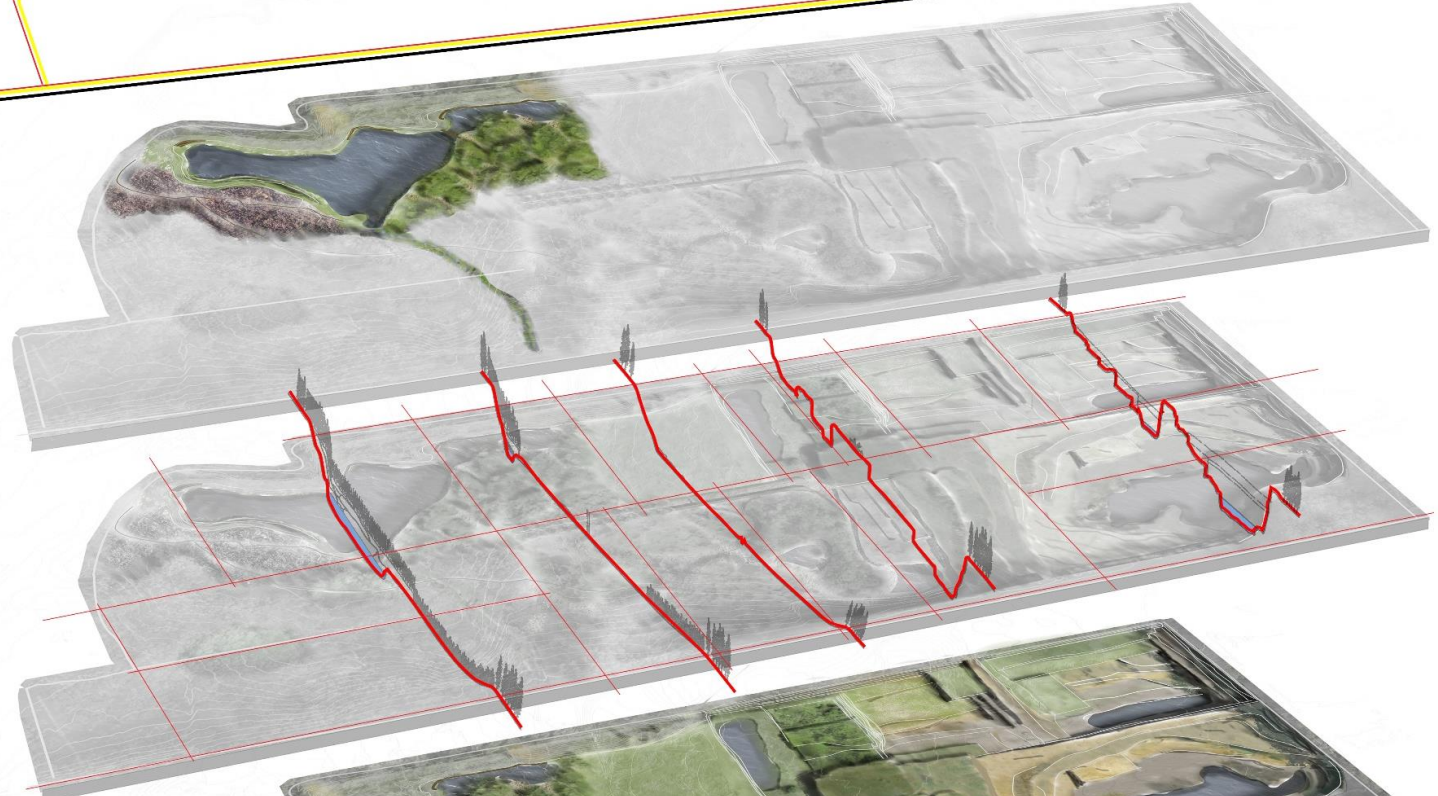
*Ecological ripple*



*Paths of experience*



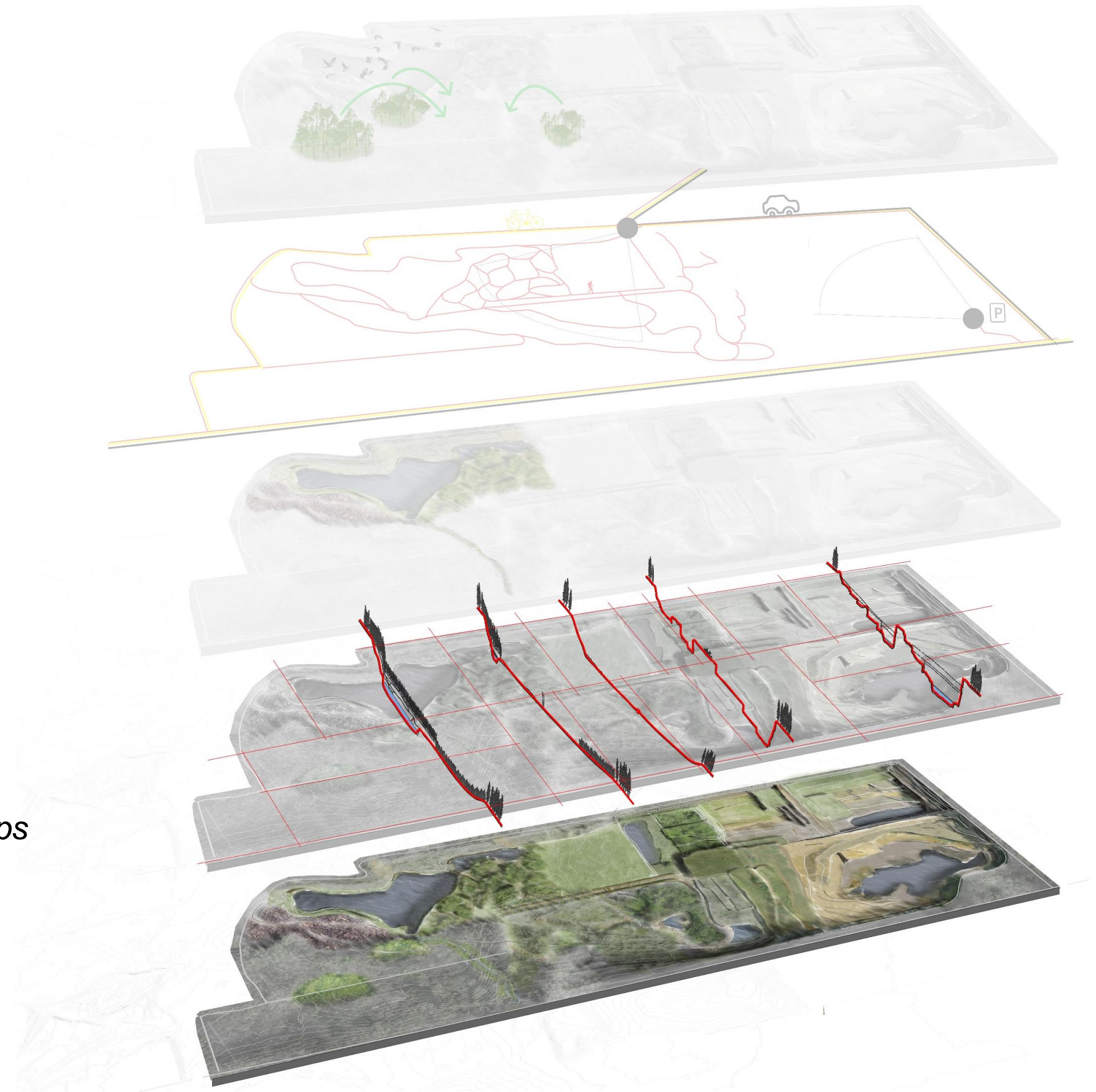
*The ramble*



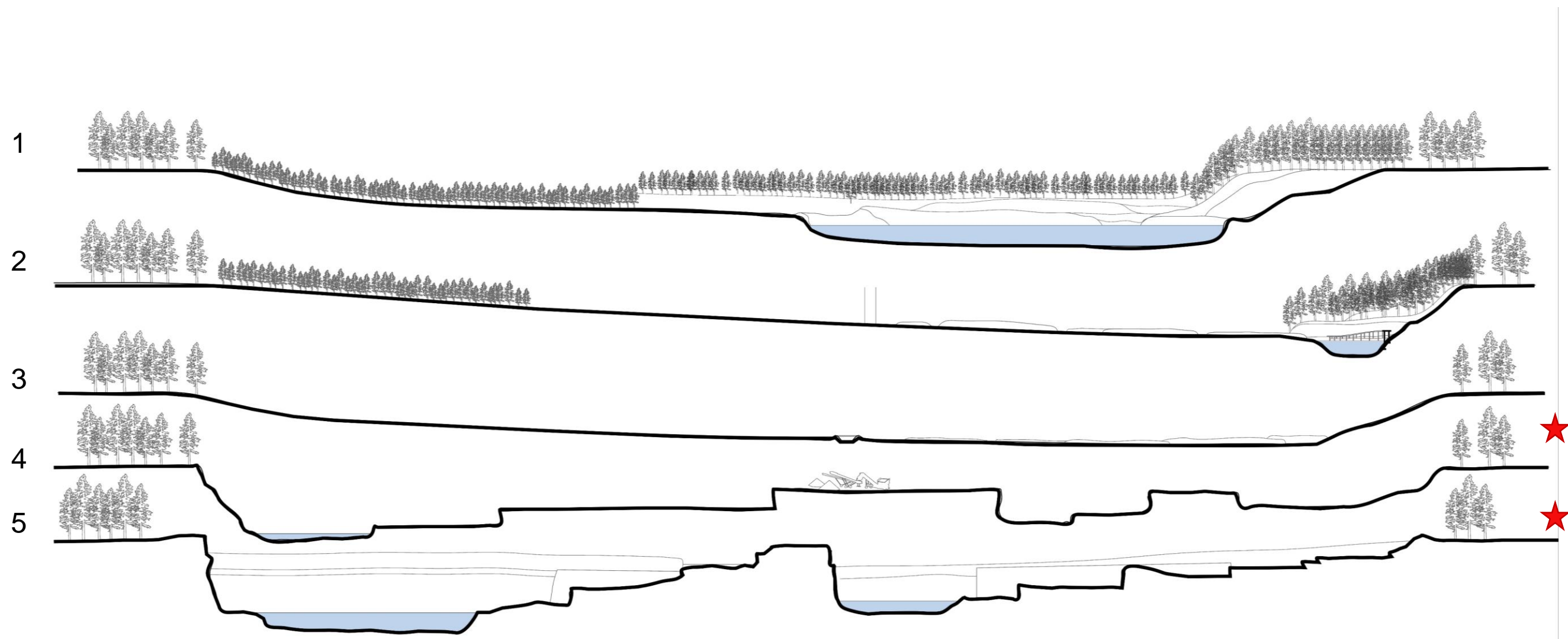
*Spatial relationships*



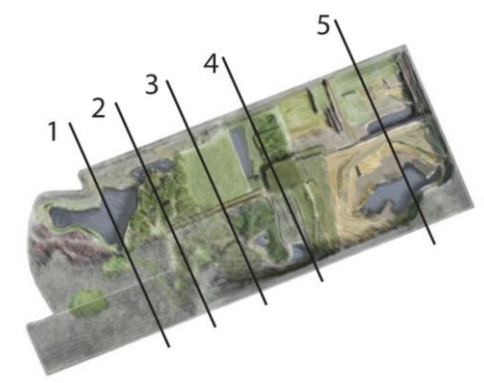
*Development plan 2030*

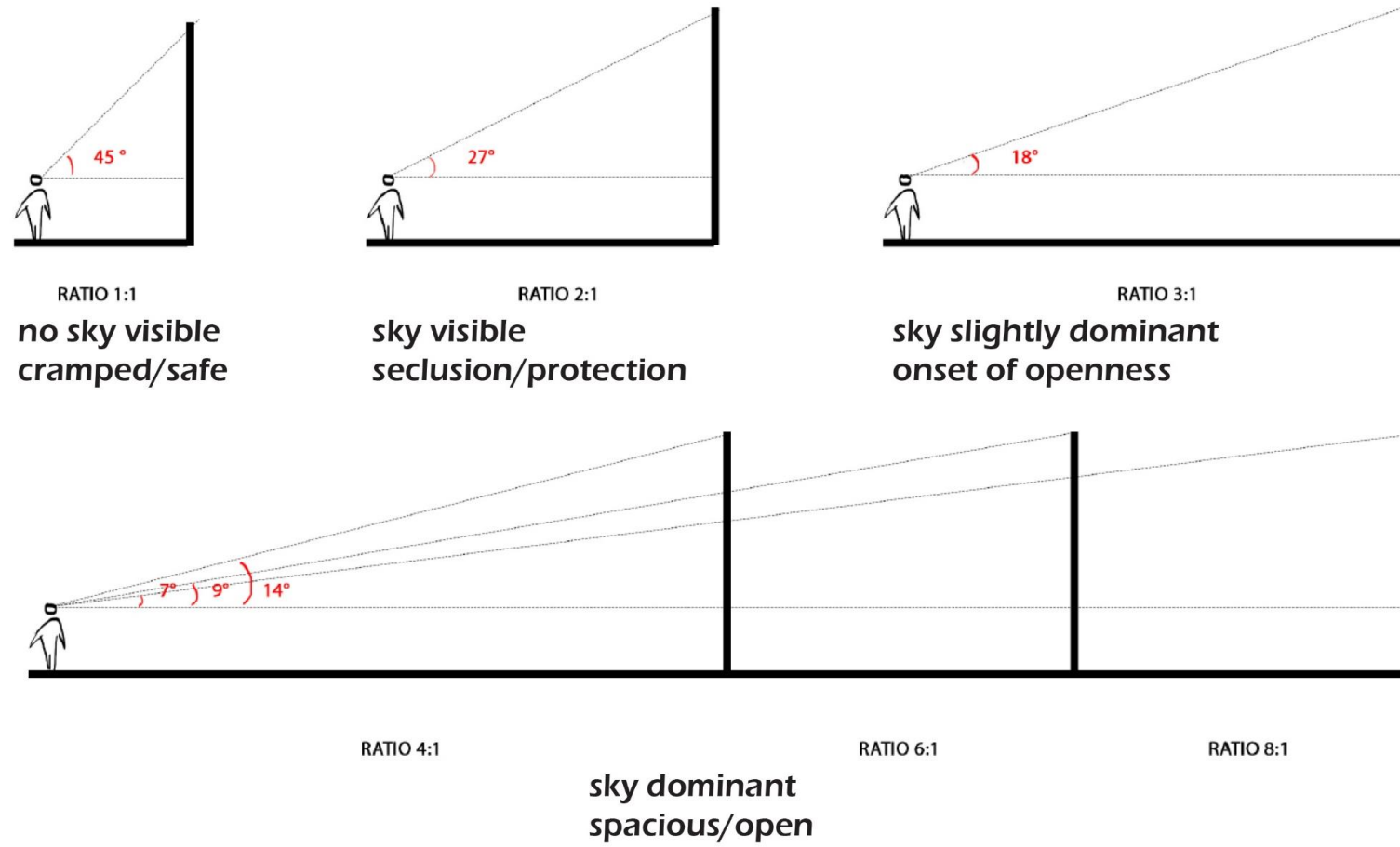


*Spatial relationships*

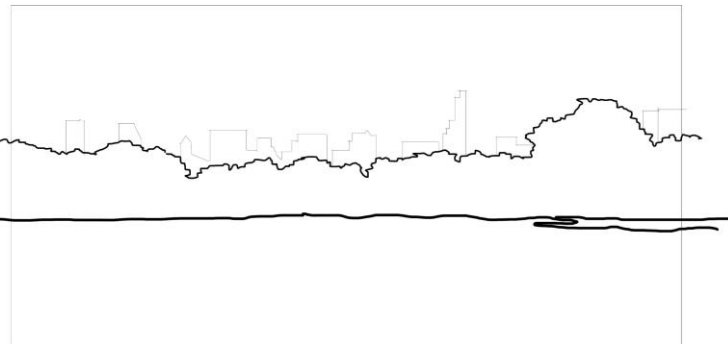


Changes in spatial relationships between completed excavation area and future excavation area

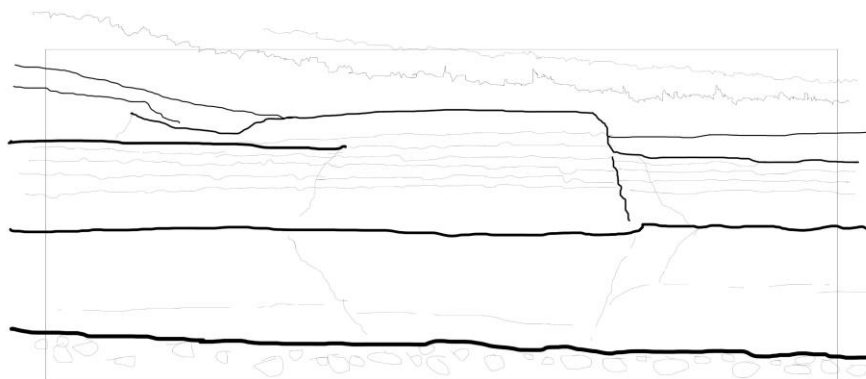




Space definitions



Open space in Central park,  
New York.  
Sky lines and tree covers

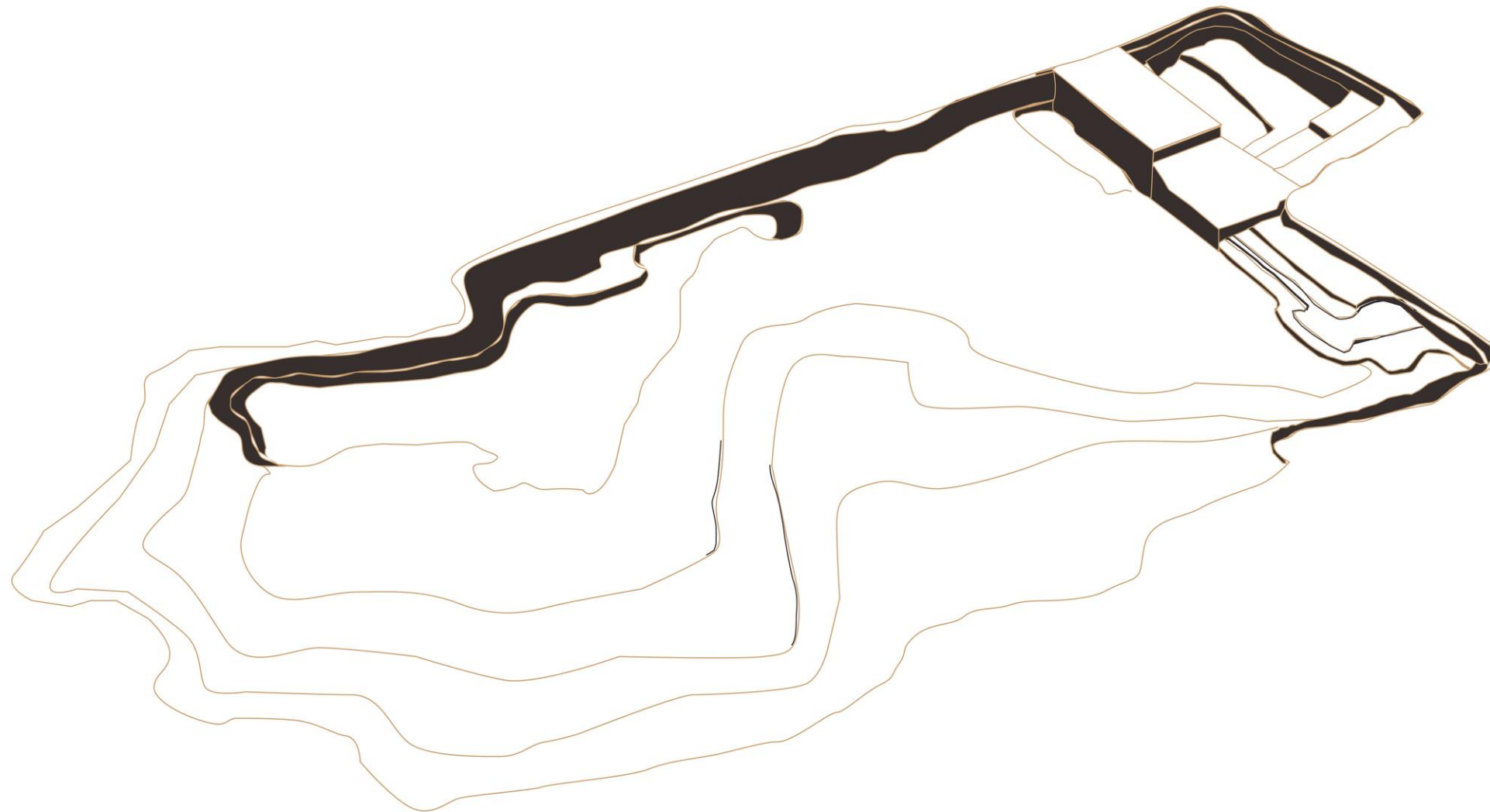


Within the quarry.  
ENCI quarry, NL  
Gravel and striated textures



Atop the quarry,  
ENCI quarry, NL  
Layers by terraces.

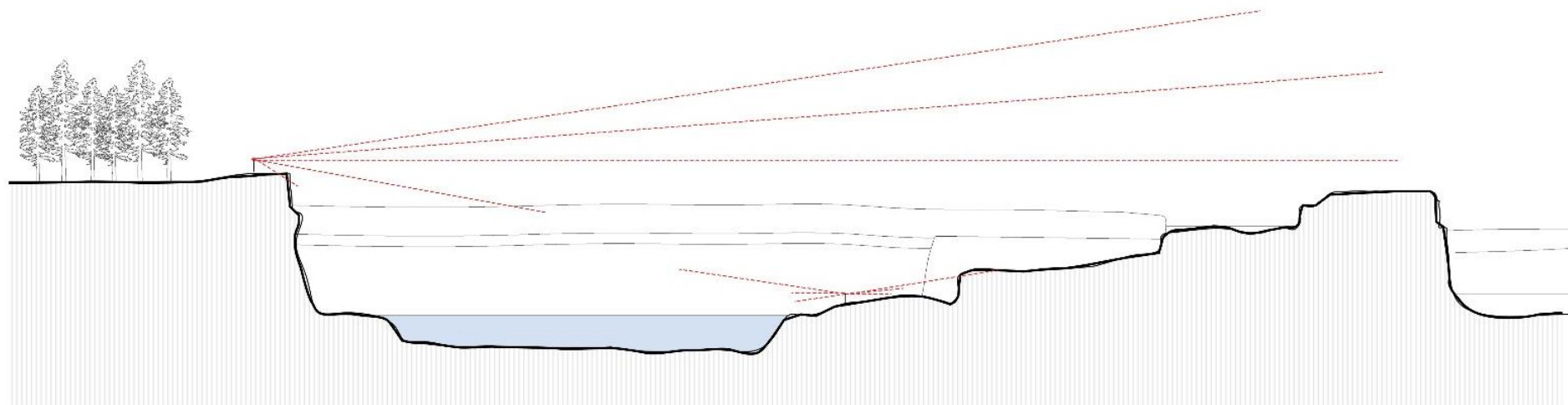
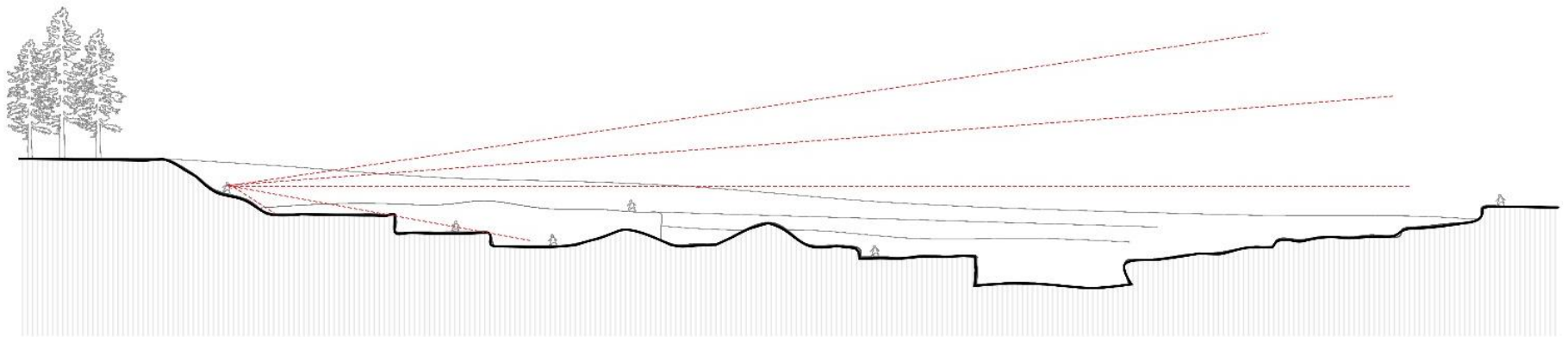
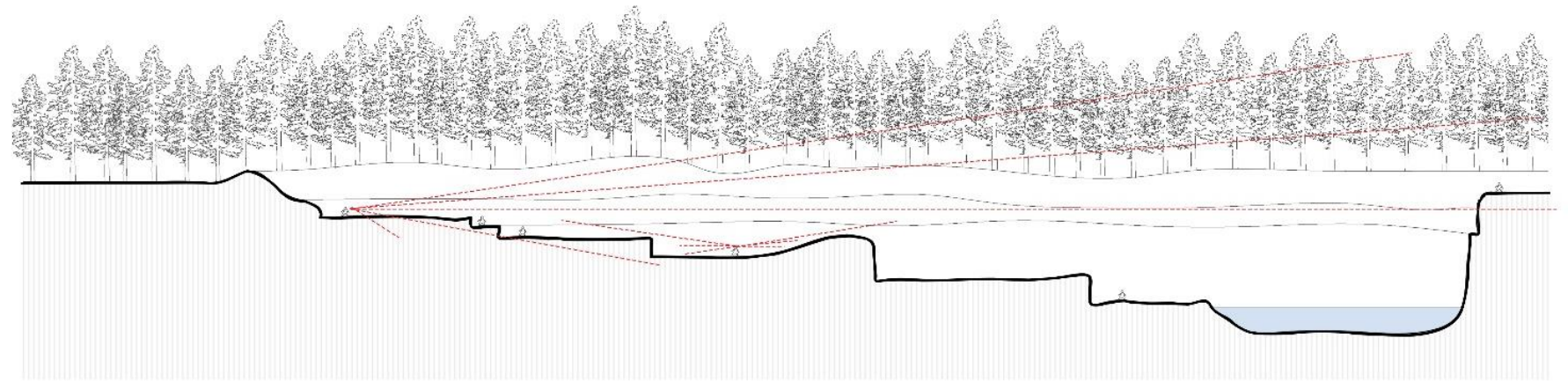
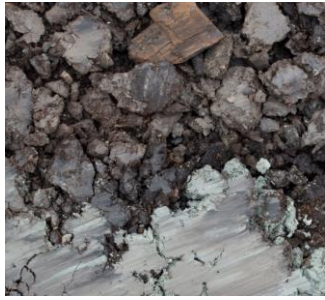
Precedents for understanding perception of openness



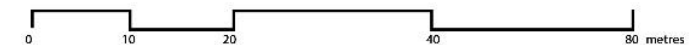
An experiment: Future  
excavation from 2018 to 2030 –  
a possibility based on  
Spatial relationships





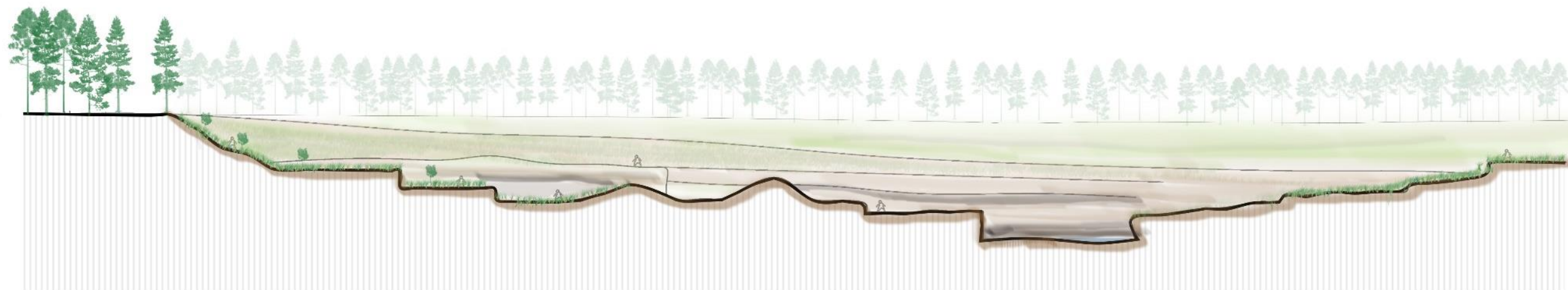


Analyzing the variety of proportions that the groundworks have to offer (at the end of excavation – no vegetation or minimal vegetation)

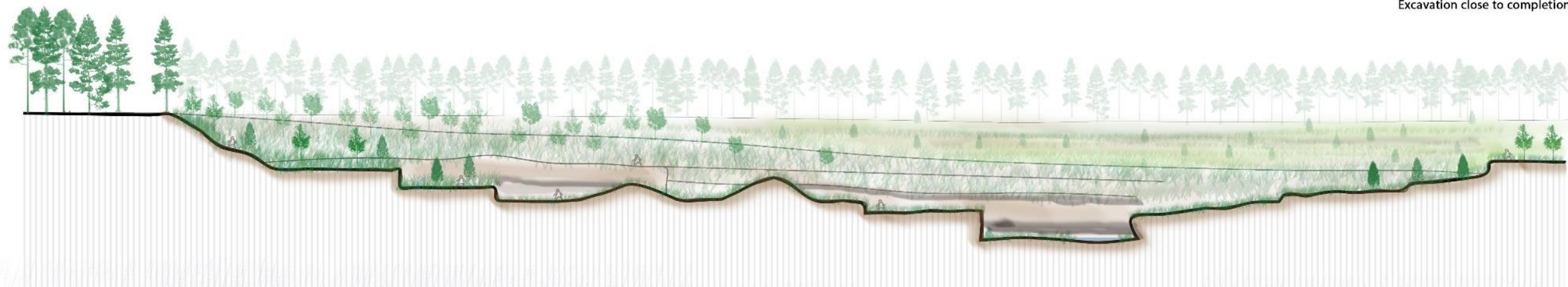




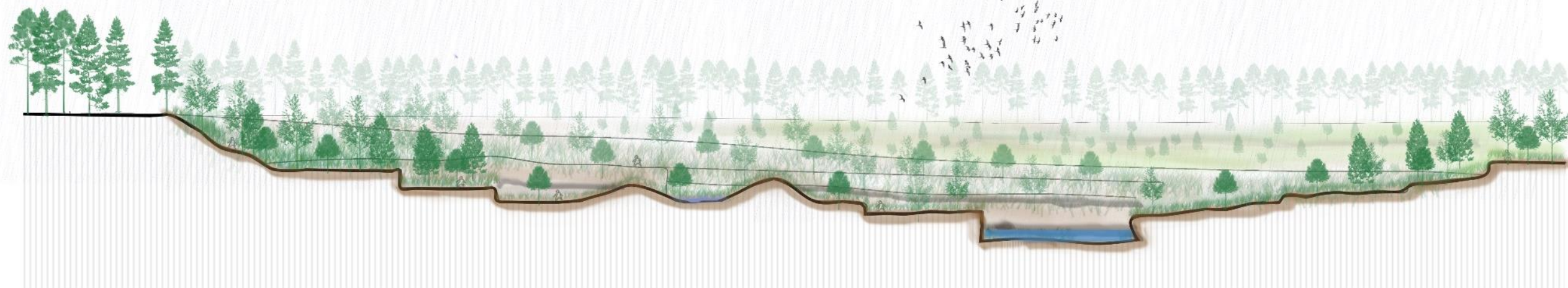




2026  
Excavation close to completion

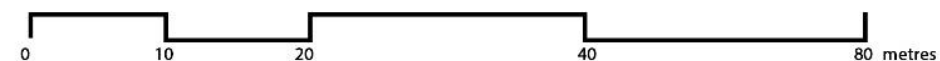


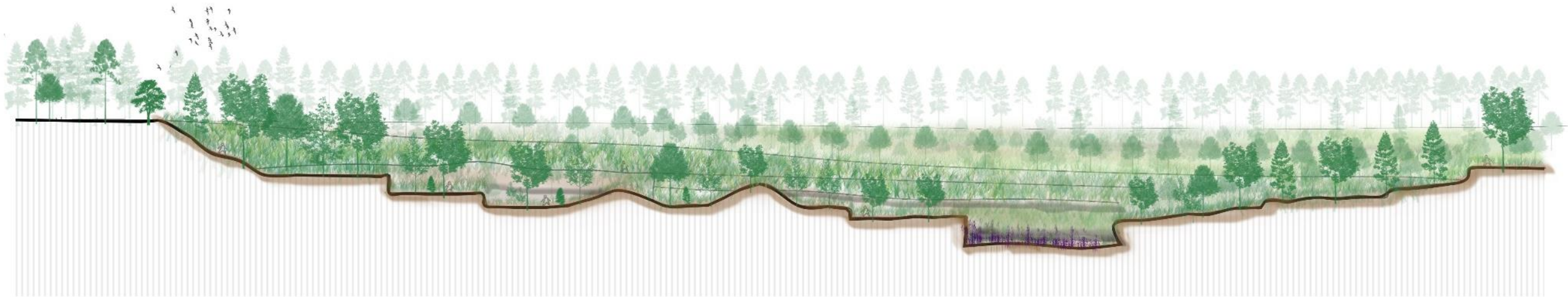
2030  
Year of completion of excavation (0 years)



2040  
+10 years

Future development of an ecologically rich environment which creates diversity





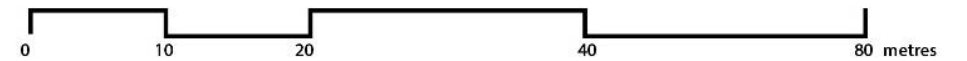
2050  
+20 years



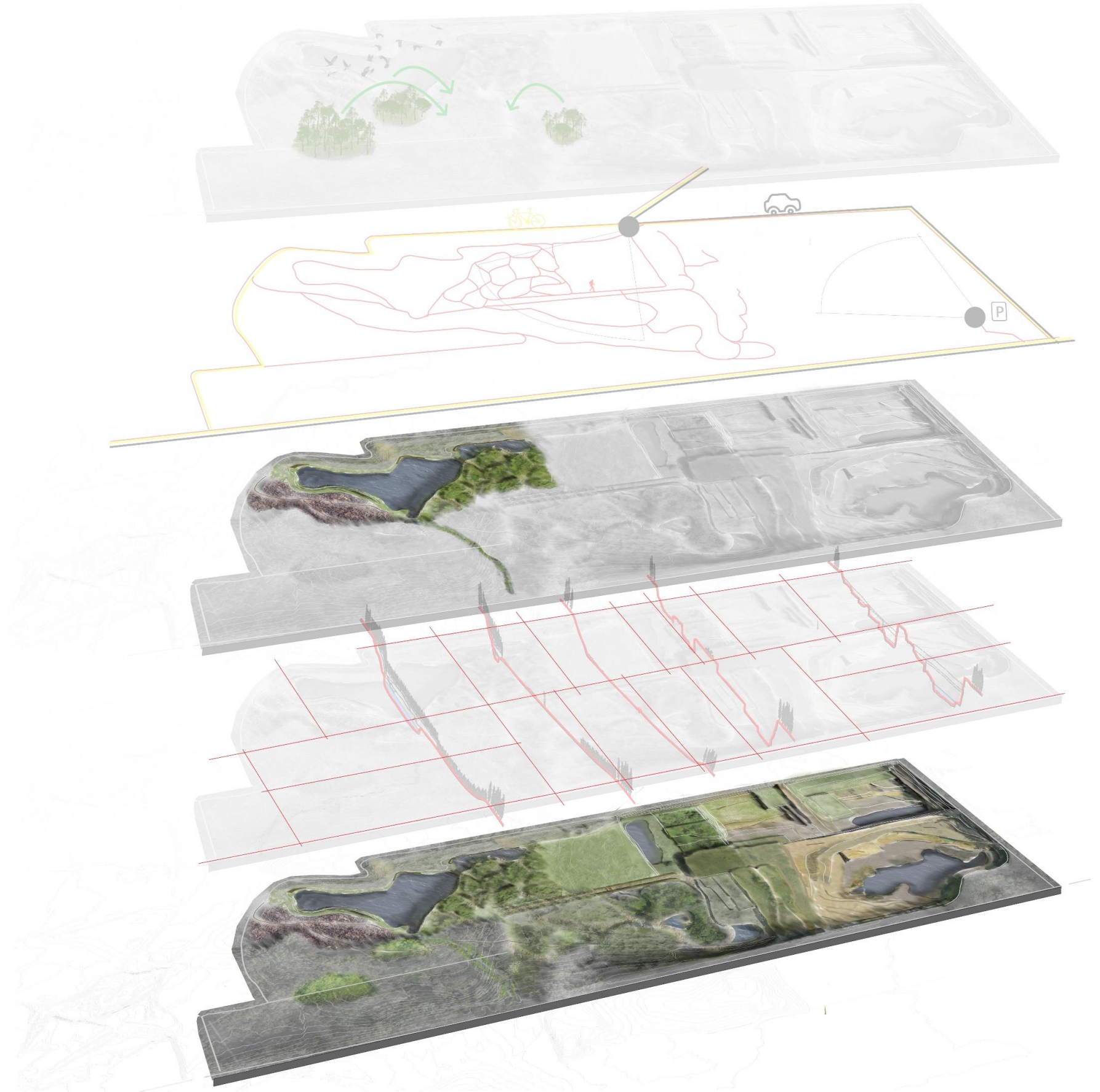
2080  
+50 years



2130  
+100 years



*The ramble*



- 1. Entrance into the heather field
- 2. Bench under the willow
- 3. The Hoher cafe
- 4. The bridge
- 5. The braided walk
- 6. Open grassland





Pond view in March





Lake and proportion comparison- Central Park



Lake and proportion comparison- Stourhead



After site visit 1

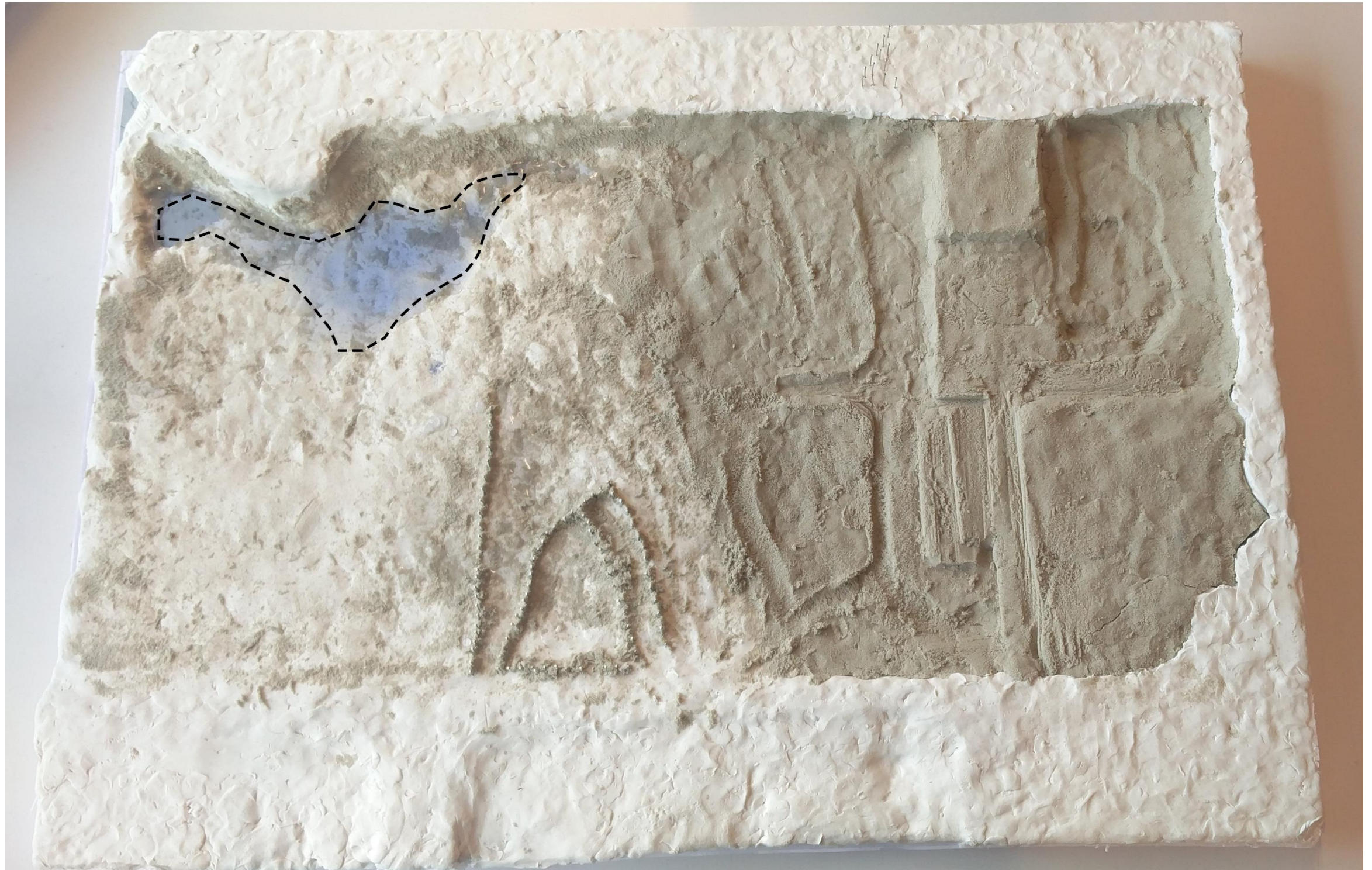


After site visit 2

Site model using clay and magic sand



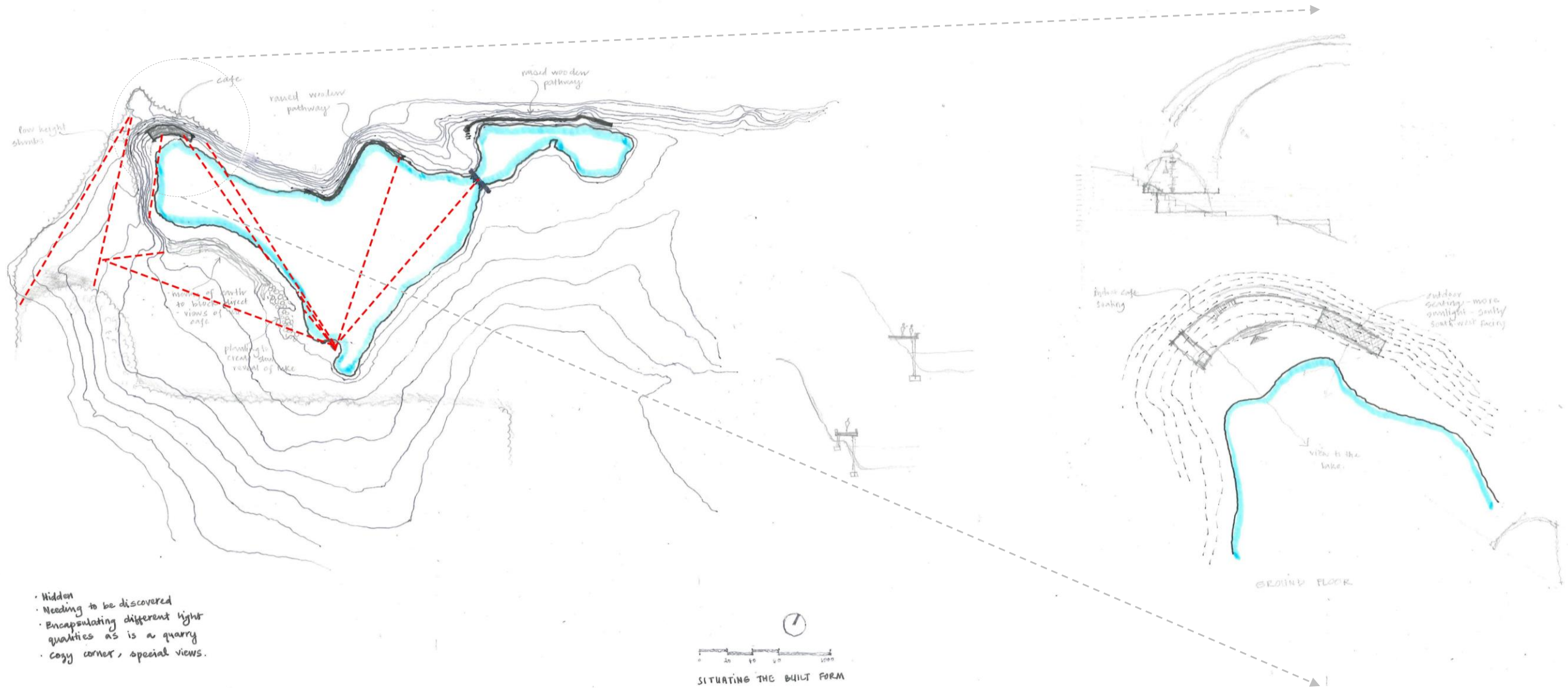
Current situation  
-1.5m



Homogeneous lake  
with some fluctuations  
-2.5m



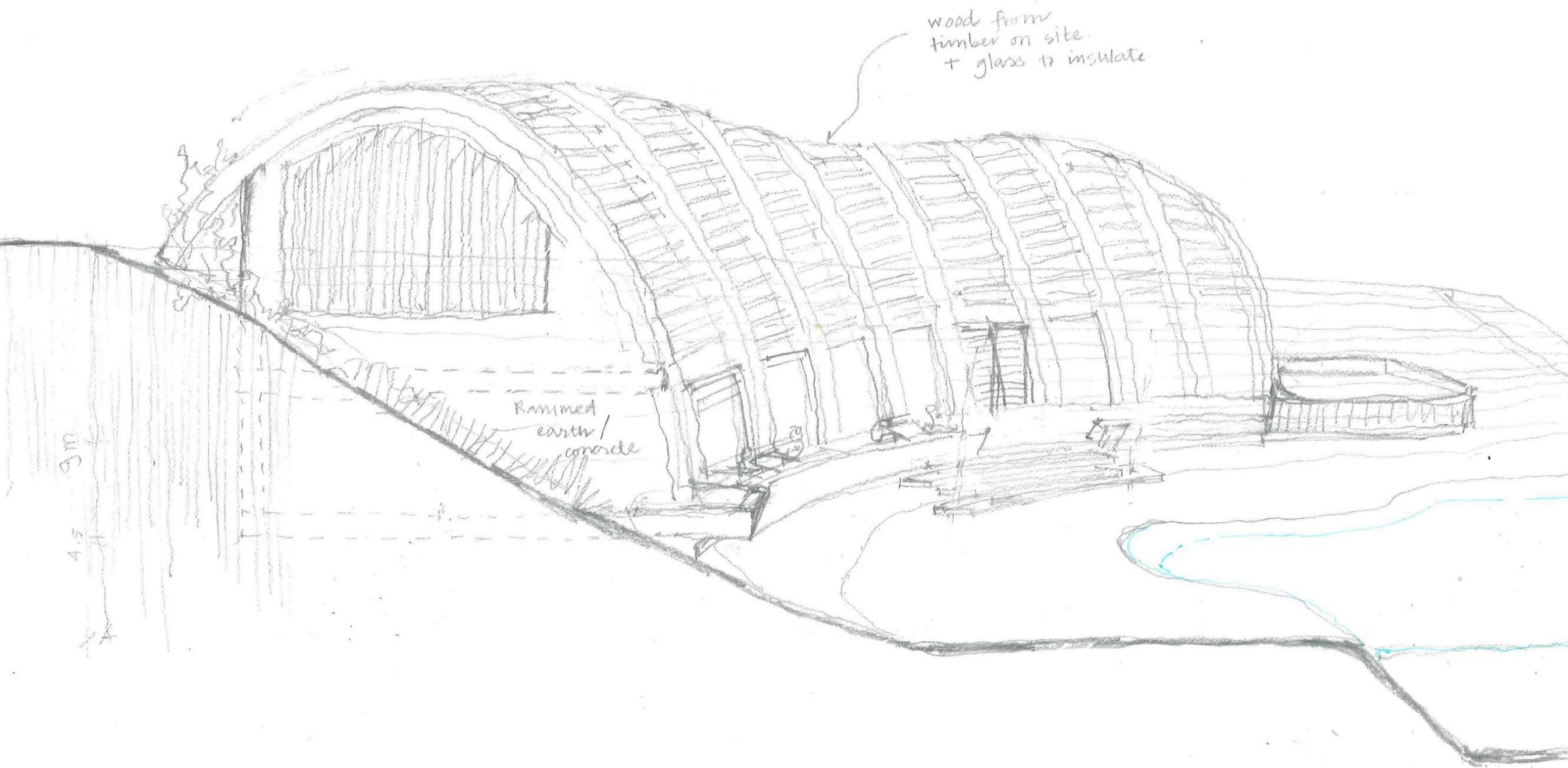
Homogeneous lake  
with minor fluctuations  
-3m

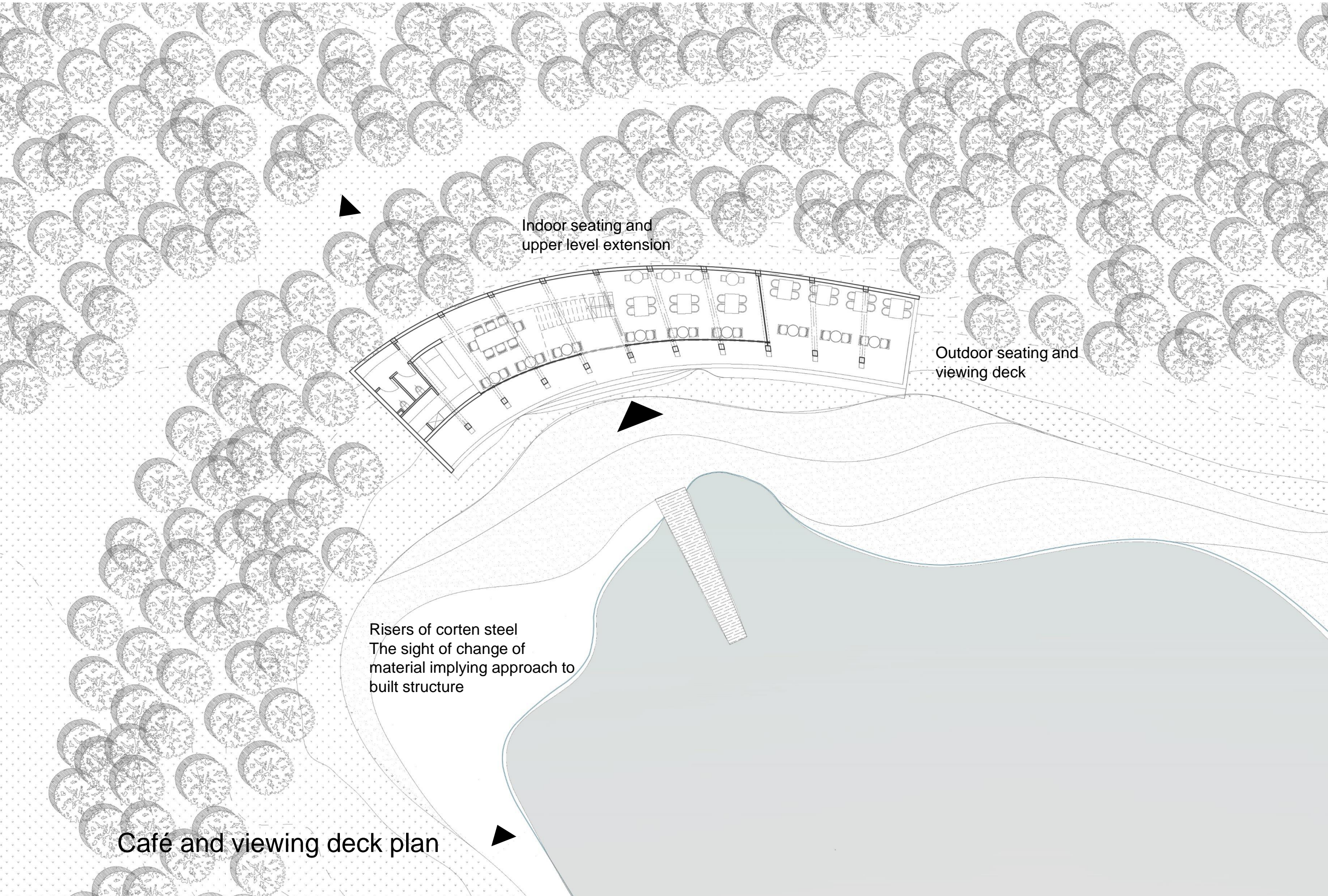


- Hidden
- Needing to be discovered
- Encapsulating different light qualities as is a quarry
- Cozy corner, special views.

Sightlines to decide position of building

Building ideas





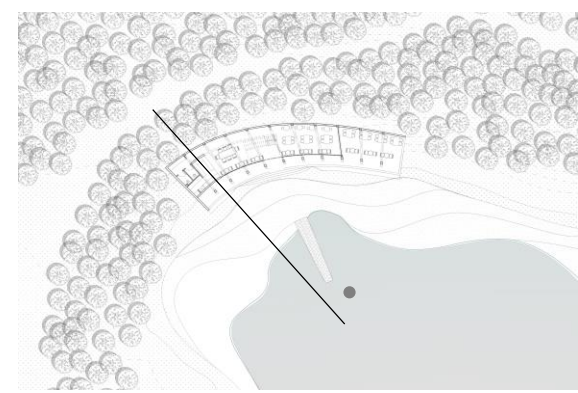
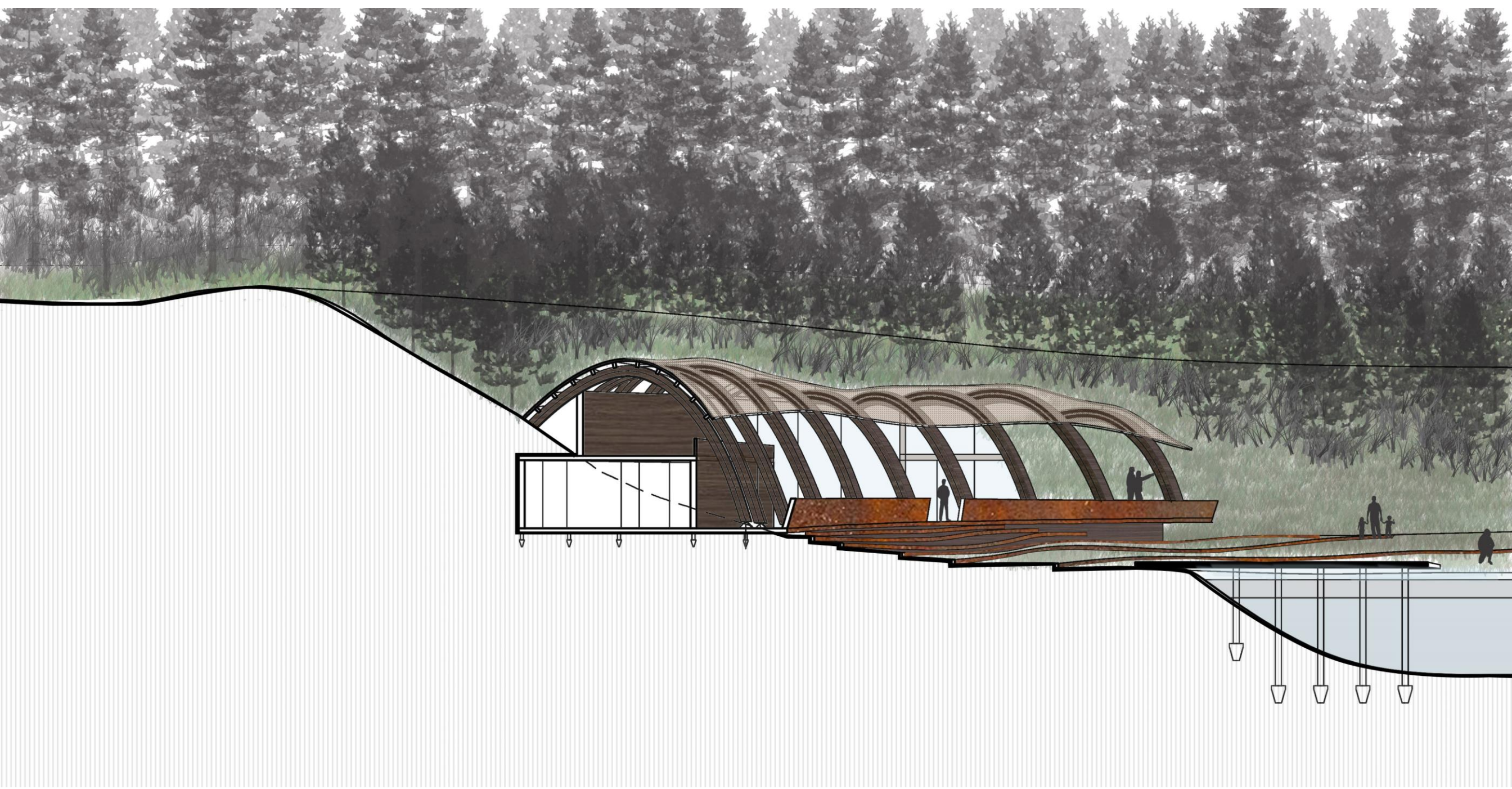
Indoor seating and upper level extension

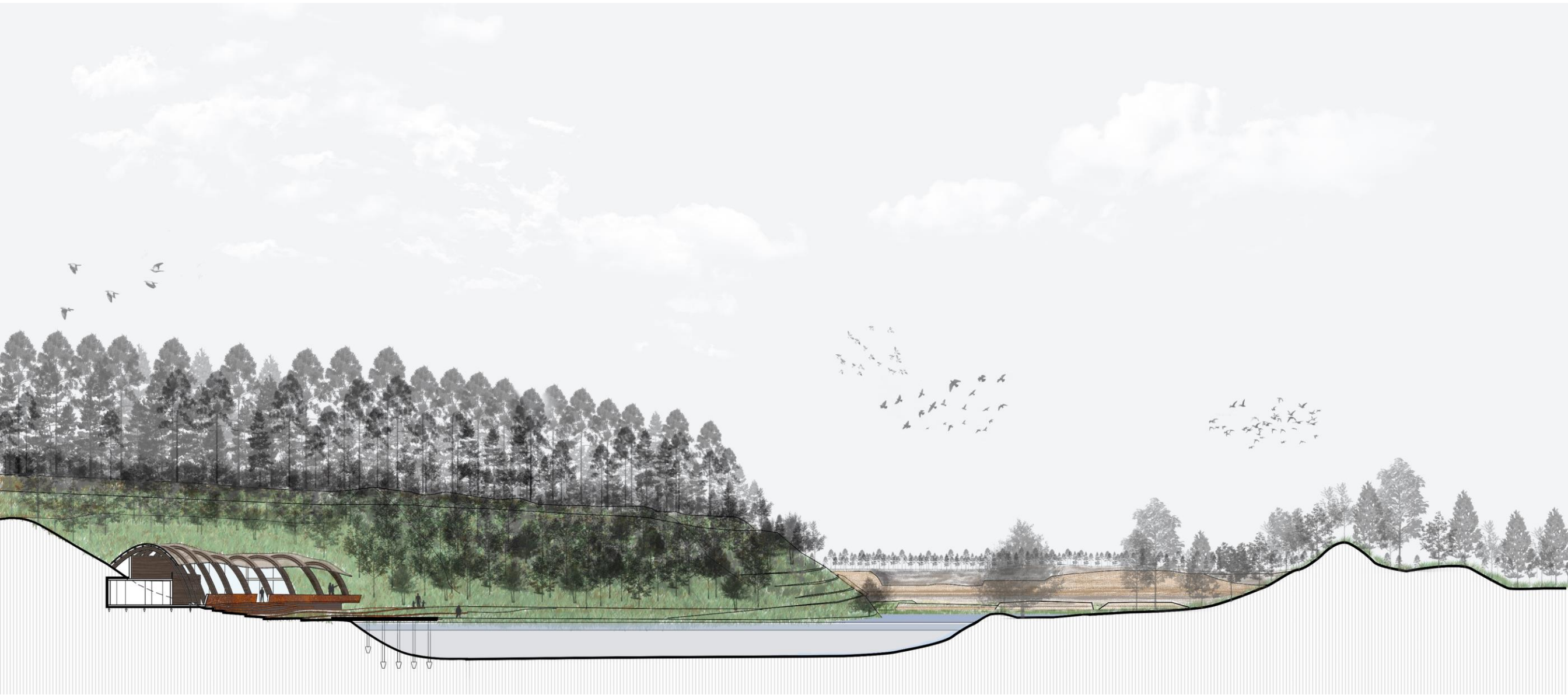
Outdoor seating and viewing deck

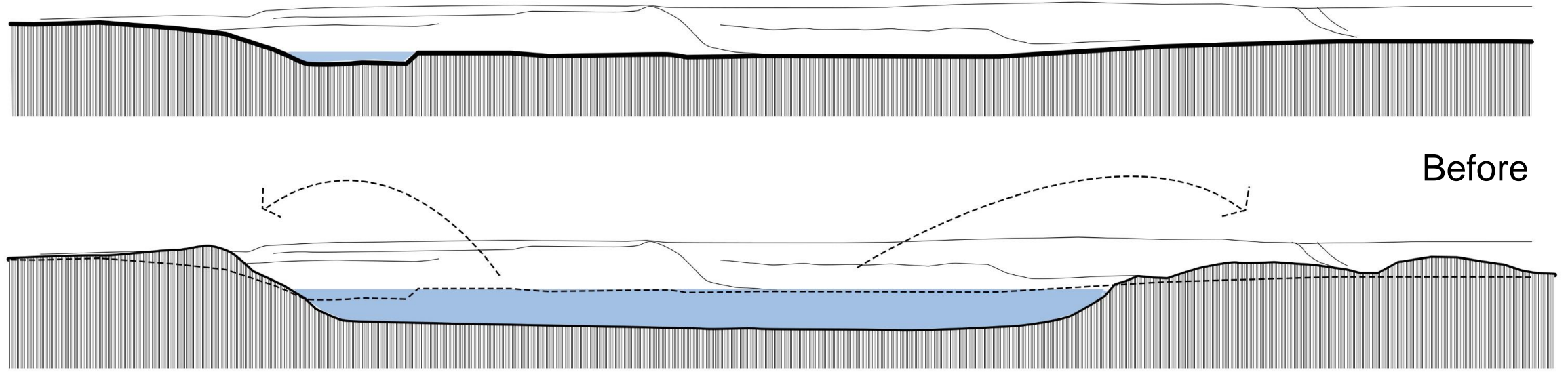
Risers of corten steel  
The sight of change of material implying approach to built structure

Café and viewing deck plan



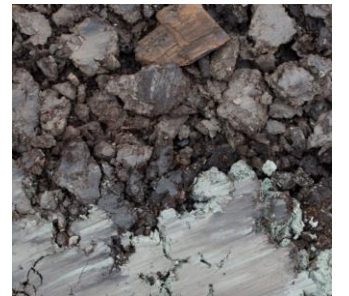
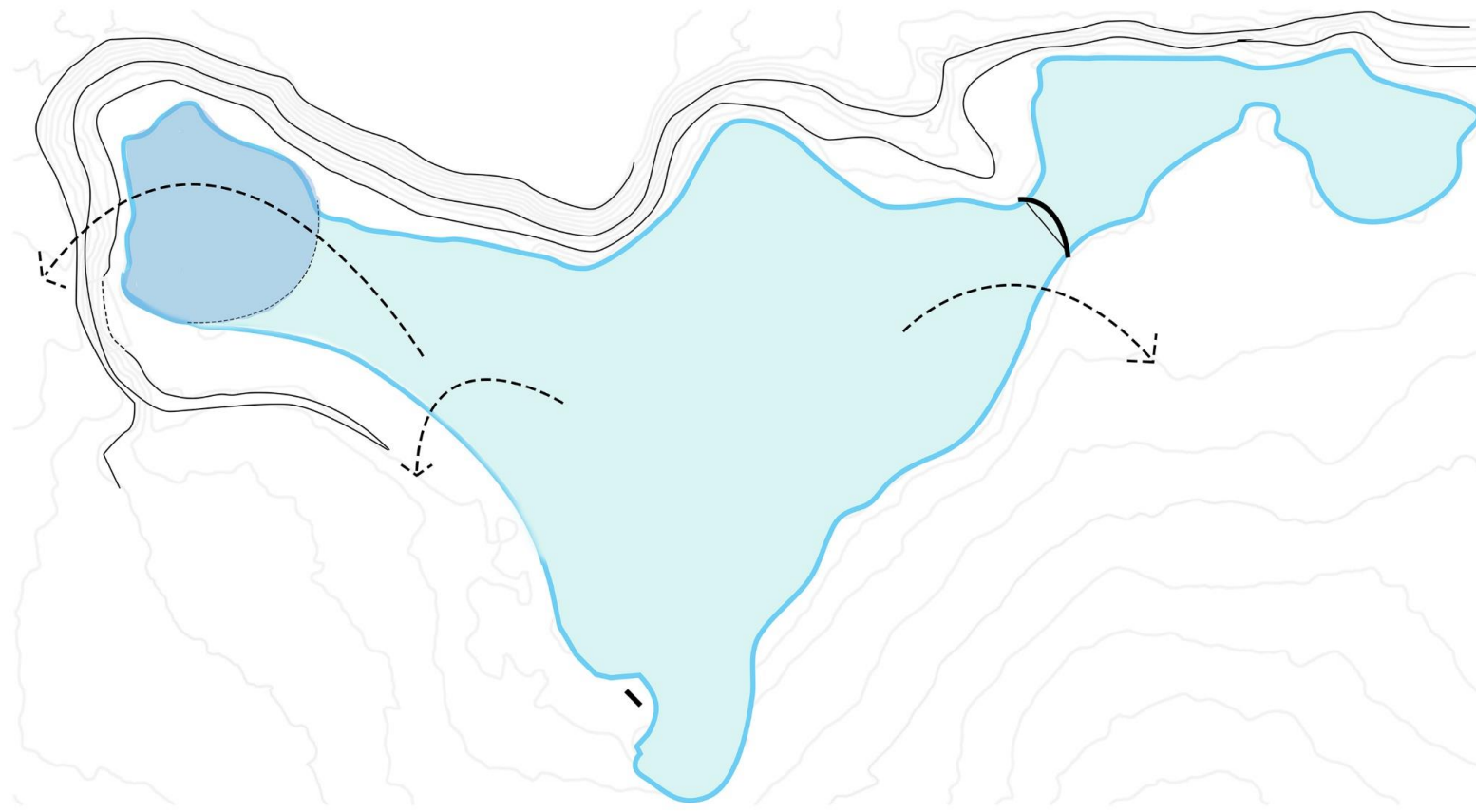






Before

After

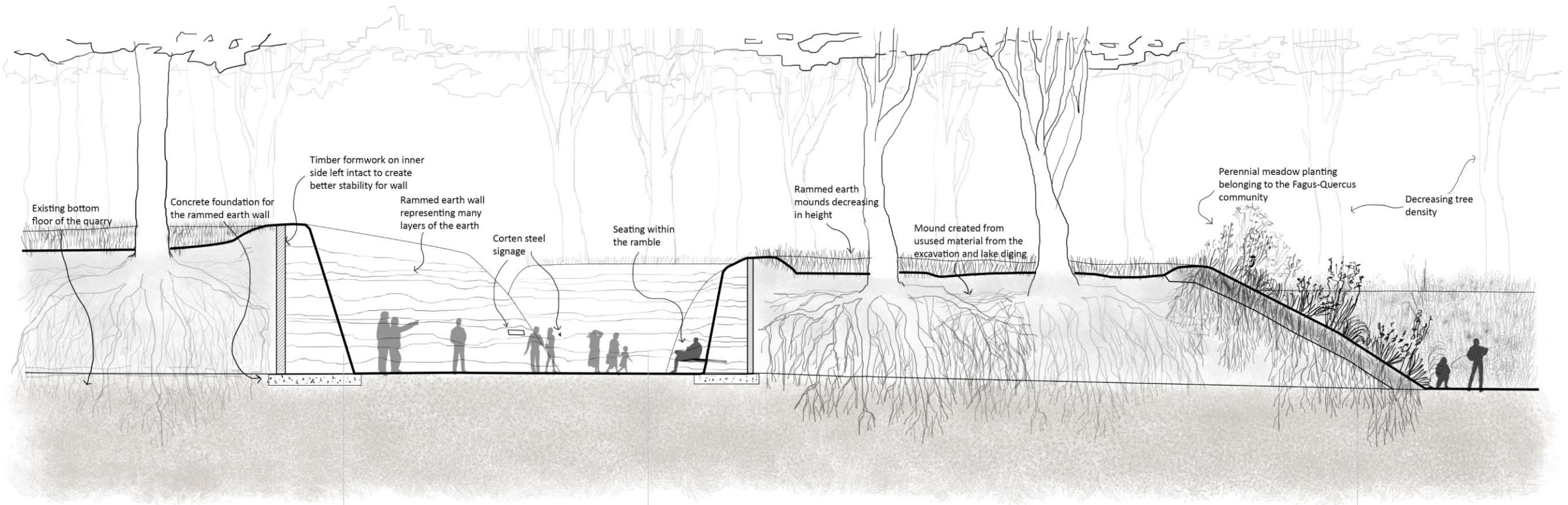


Cut and fill – creating thresholds and spaces based on sightlines

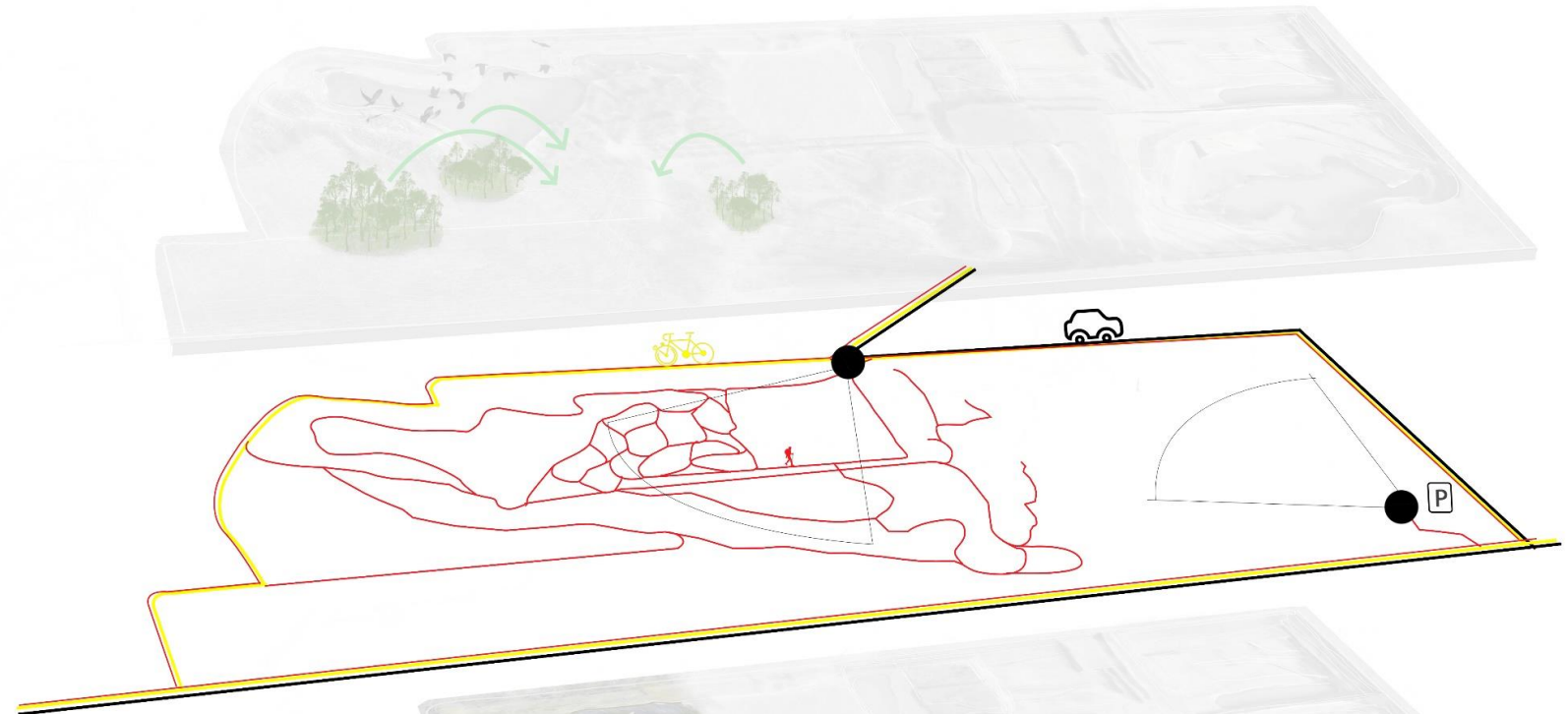
Increasing degree to openness



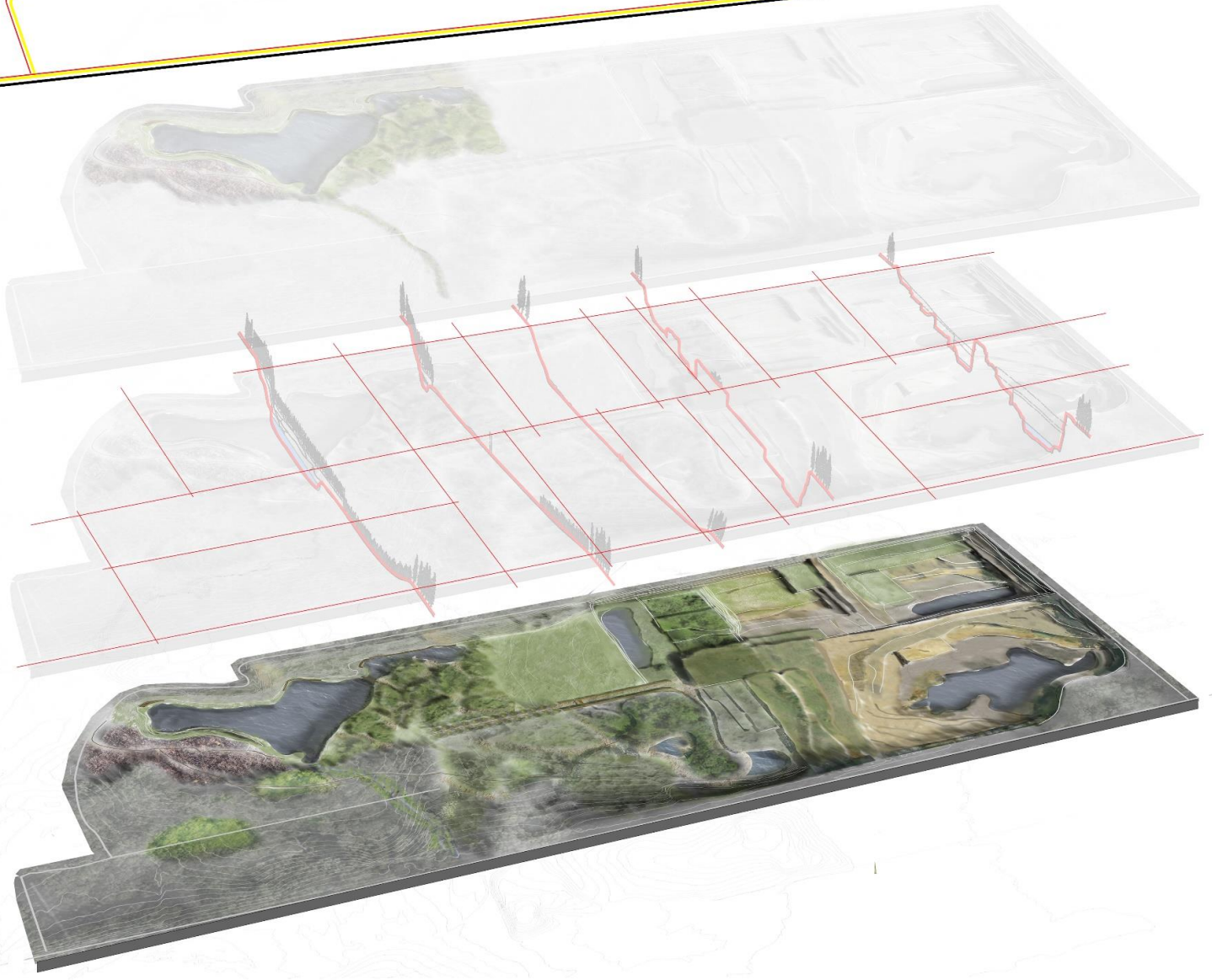
Mounds forming the braided walk  
around the lake



Creating awareness and reminding of the earth layers



*Paths of experience*



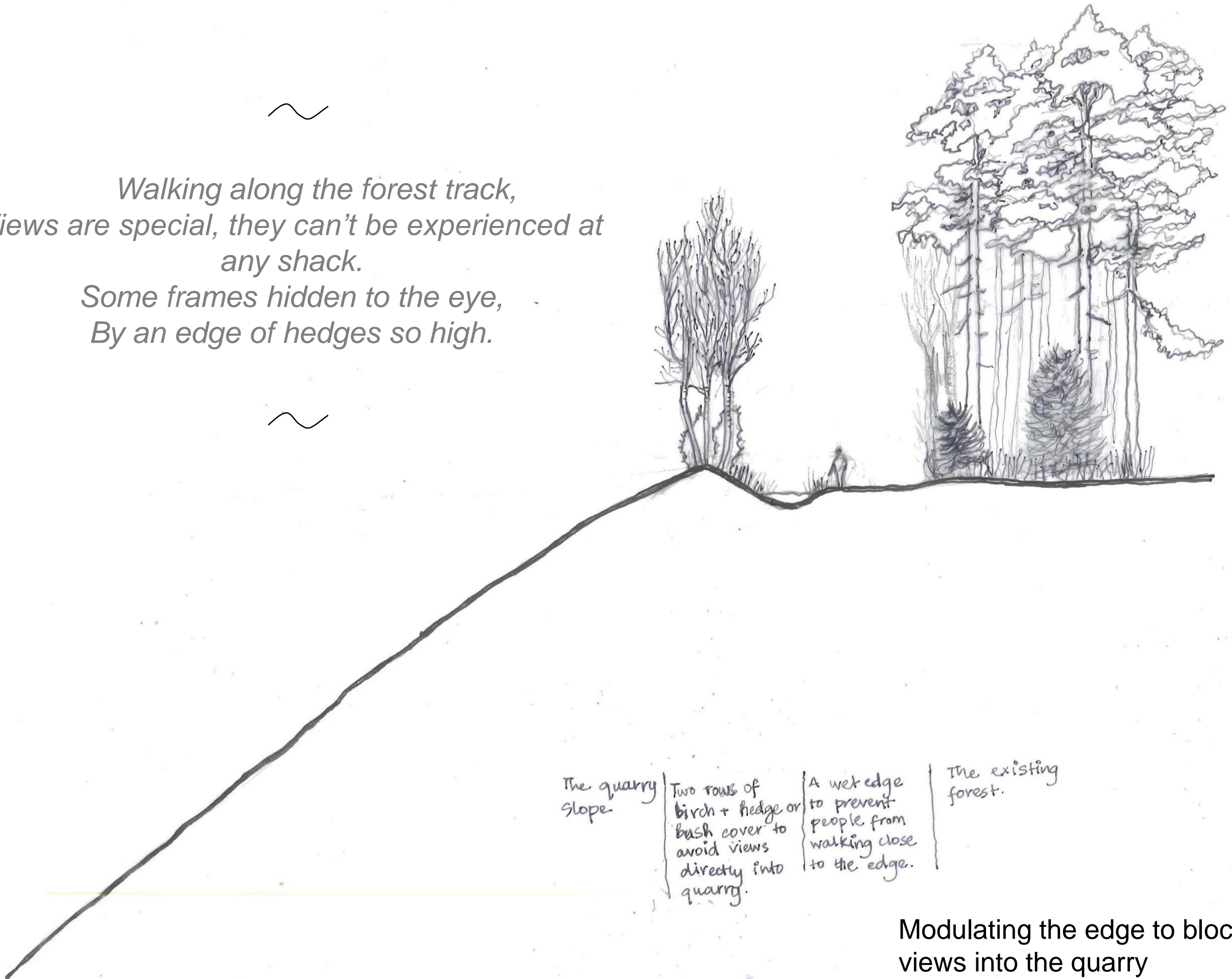


-  Pedestrian
-  Biking path
-  Vehicular
-  Viewpoint
-  Bike parking
-  Car parking

0 50 100 200 400 metres



Walking along the forest track,  
 Views are special, they can't be experienced at  
 any shack.  
 Some frames hidden to the eye,  
 By an edge of hedges so high.



The quarry  
 slope

Two rows of  
 birch + hedge or  
 bush cover to  
 avoid views  
 directly into  
 quarry.

A wet edge  
 to prevent  
 people from  
 walking close  
 to the edge.

The existing  
 forest.

Modulating the edge to block  
 views into the quarry





Machine view axis



Machine view on flat terrace (closer to it)



Champs-Élysées, Paris

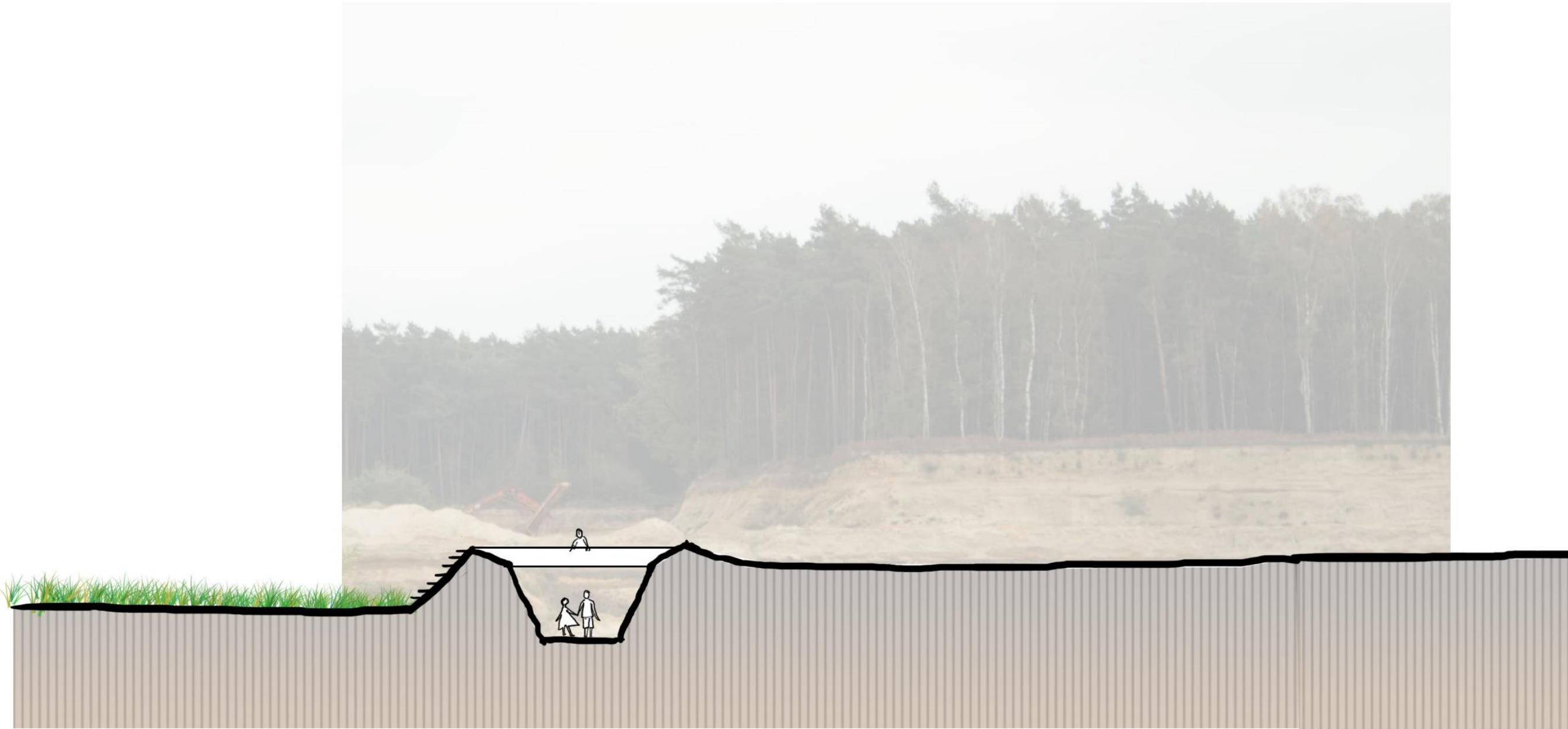


Memorial Park, DC

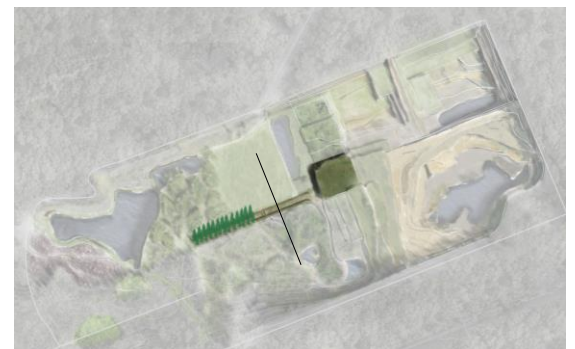


Poplar trees and a sunken pathway guiding towards the terrace with machine remnant

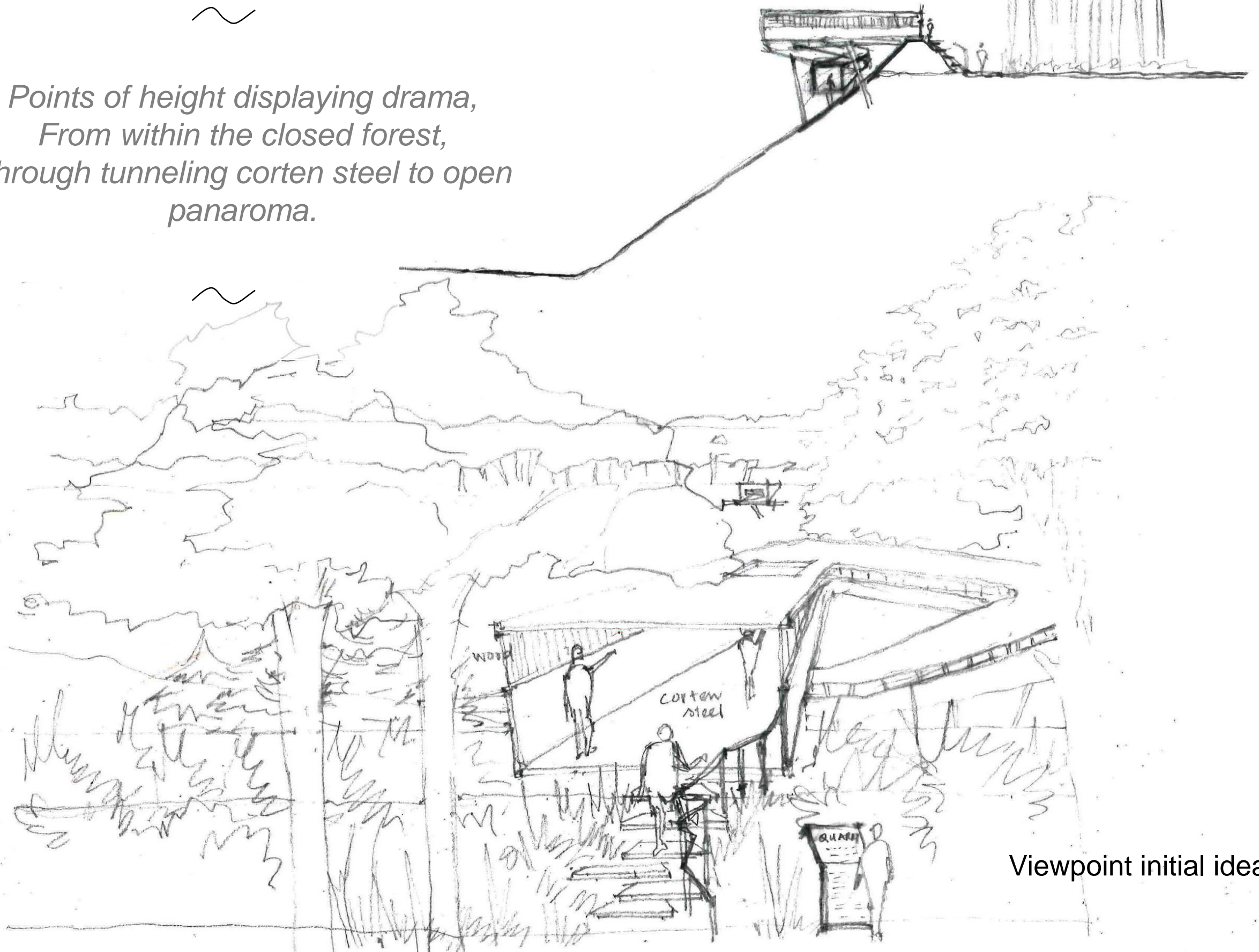




Part section of  
promenade



Points of height displaying drama,  
From within the closed forest,  
Through tunneling corten steel to open  
panaroma.



Viewpoint initial ideas





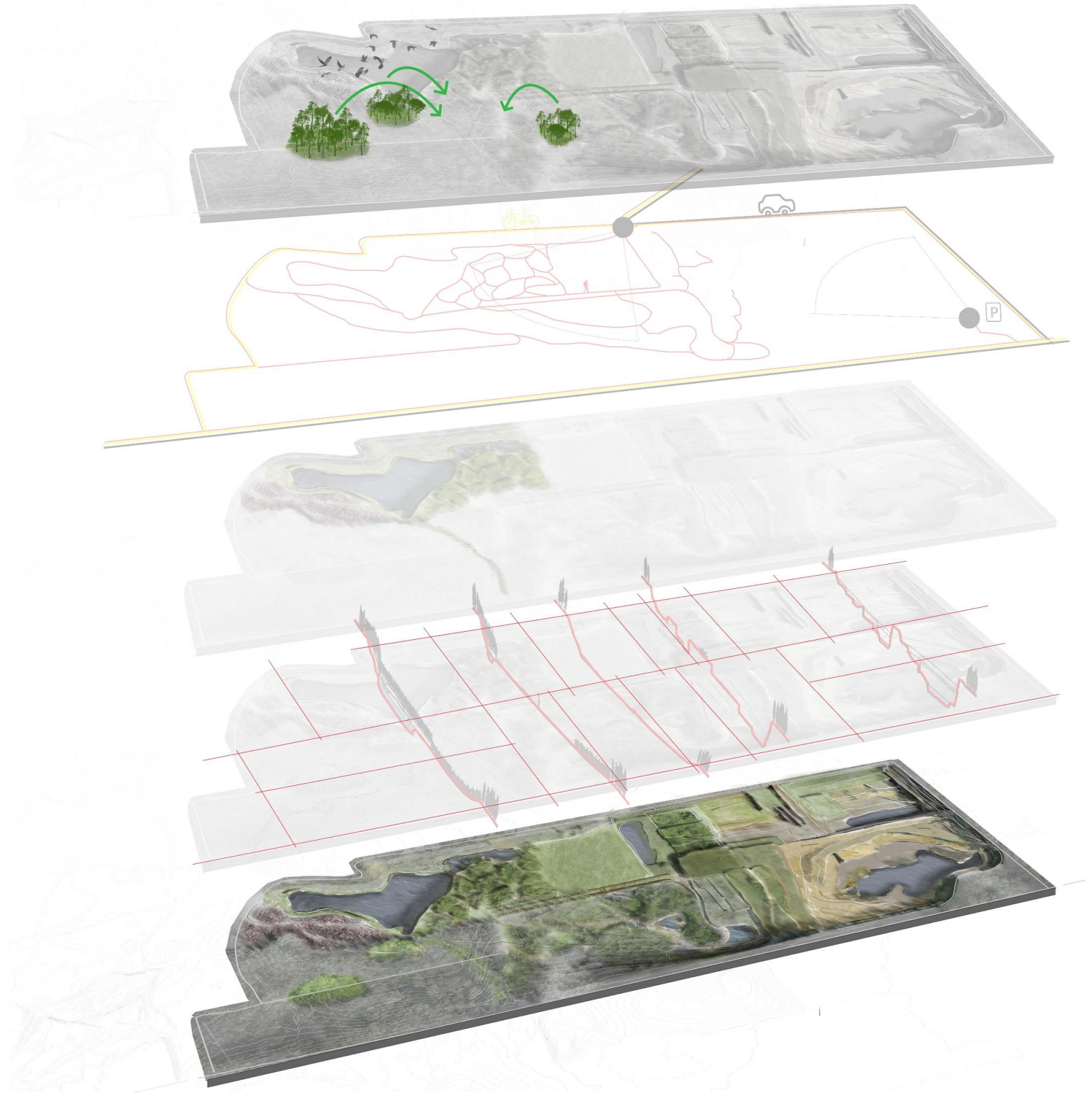
Quarry view in October



Quarry view in March



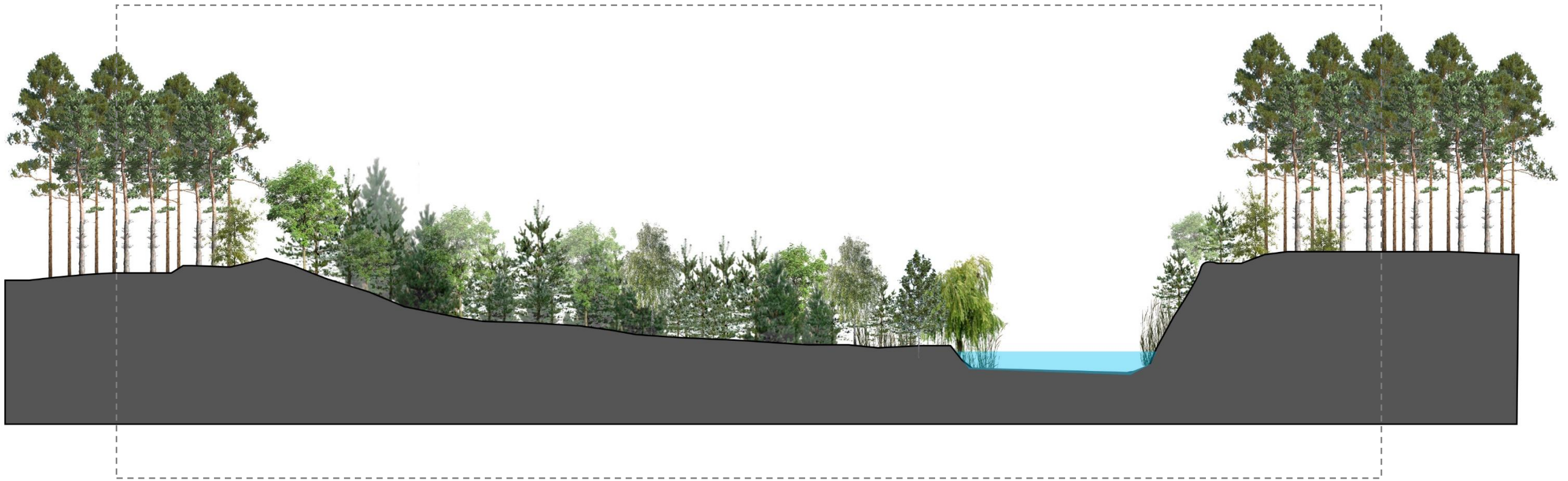
Ecological ripple



*Excavated landscape*

*Planting for economic needs*

*Post excavation lake*





What is. - A production forest  
BIRCH (PINE) FOREST (Betula-pinus)



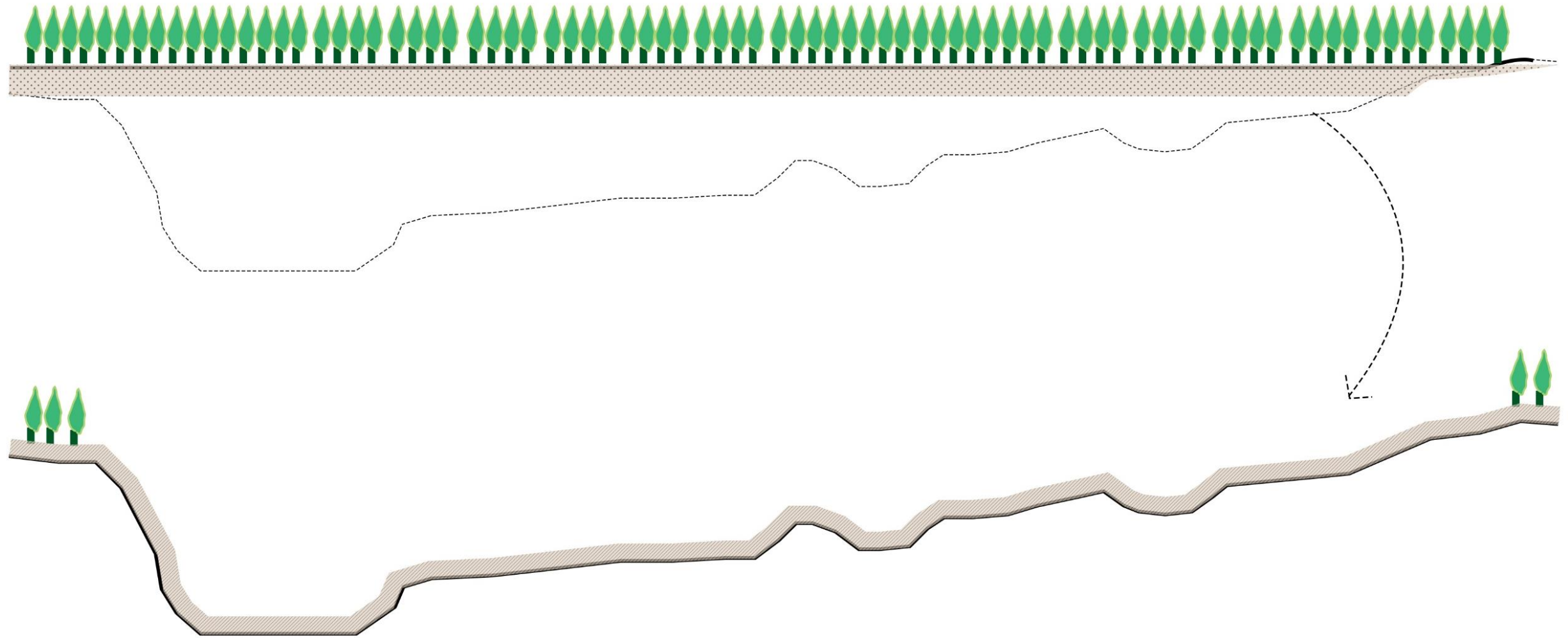
What could be.- Ecologically qualitative forest  
BEECH – OAK FOREST (Fagus-quercetum)



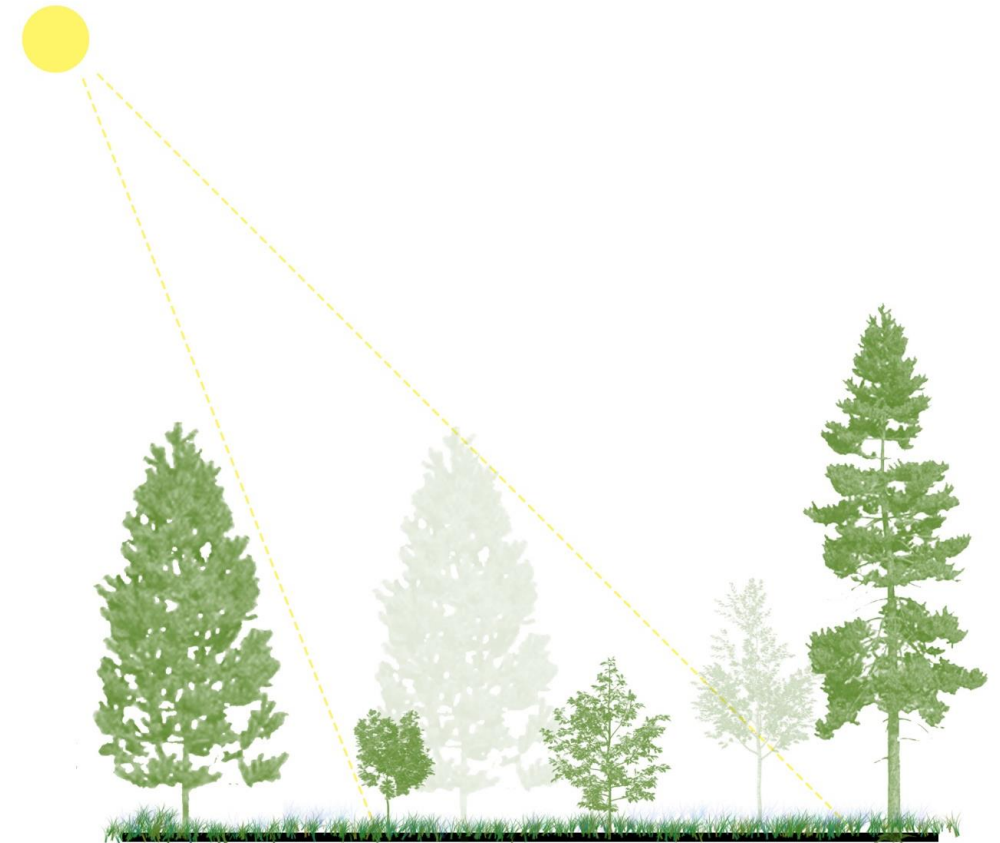
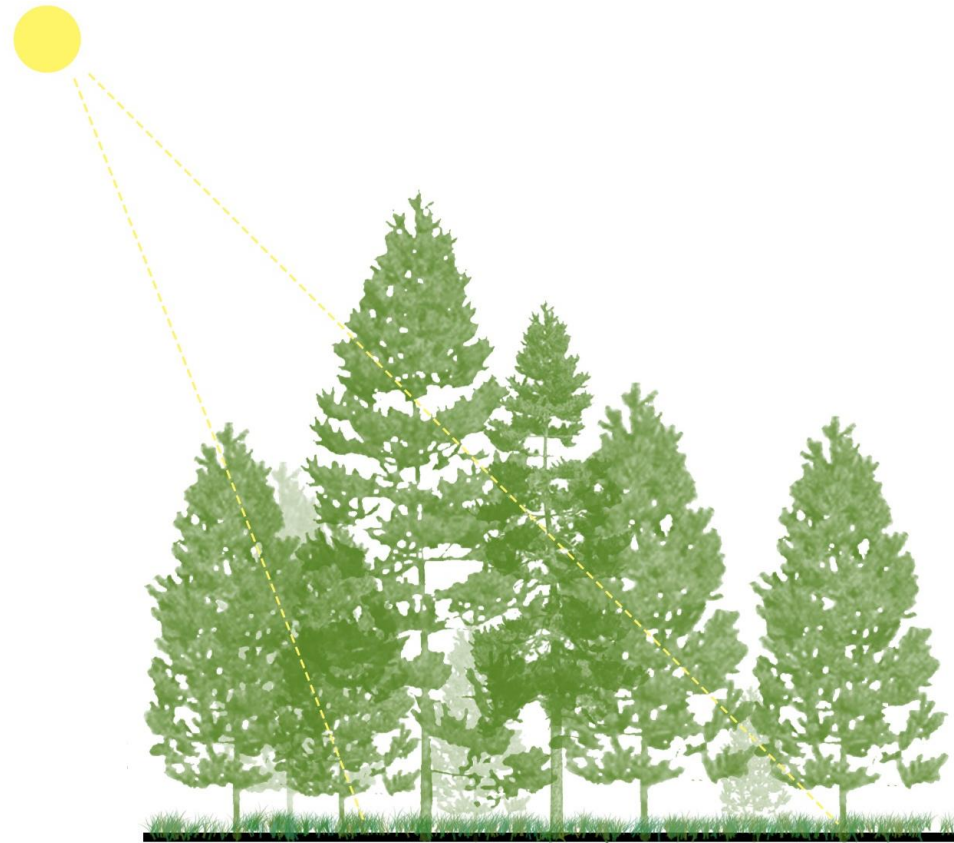
Primary succession



Secondary succession



A layer of top soil on bare stripped earth after mining is good for starting secondary succession



Spacing between 8-15m for oak regeneration

How to employ natural succession and ecological diversity in the already planted areas?



Tree spacing experiments

**PART 5**  
*Reflection*  
***Discussions and Remarks***

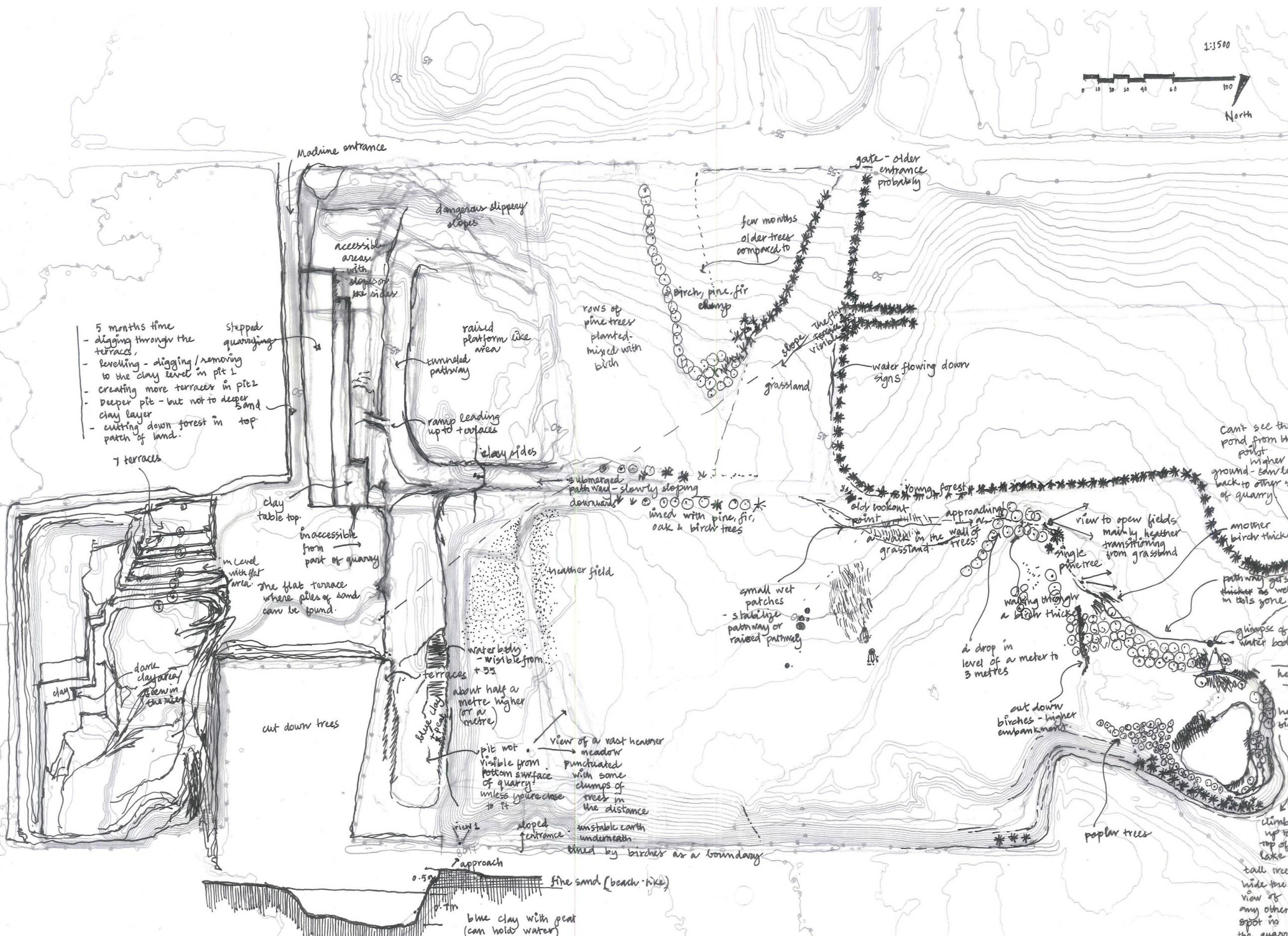
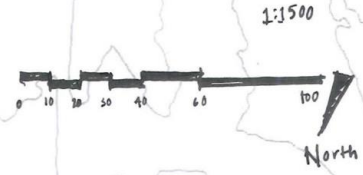
***DID THE PROJECT RESPOND TO THE INITIAL RESEARCH OBJECTIVE?***

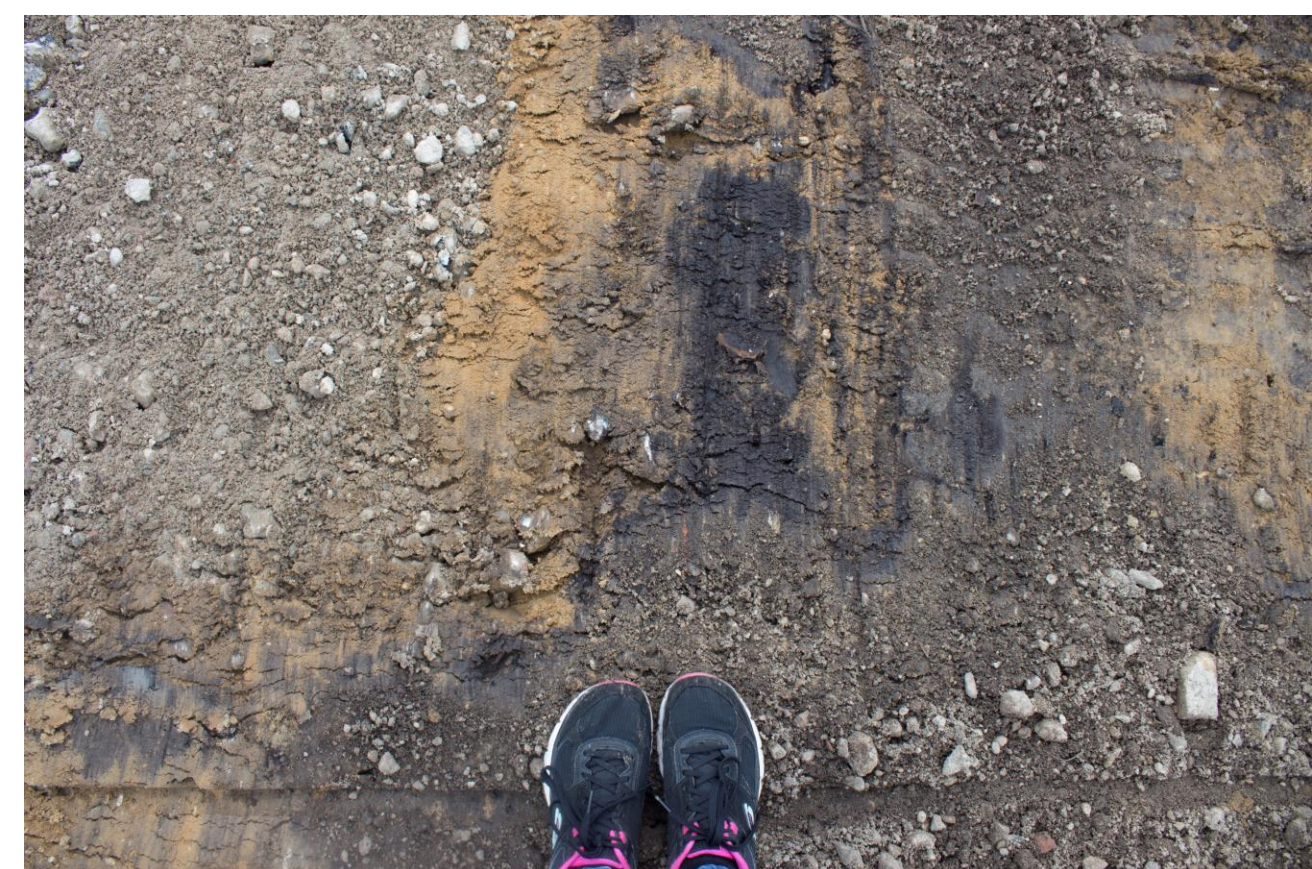
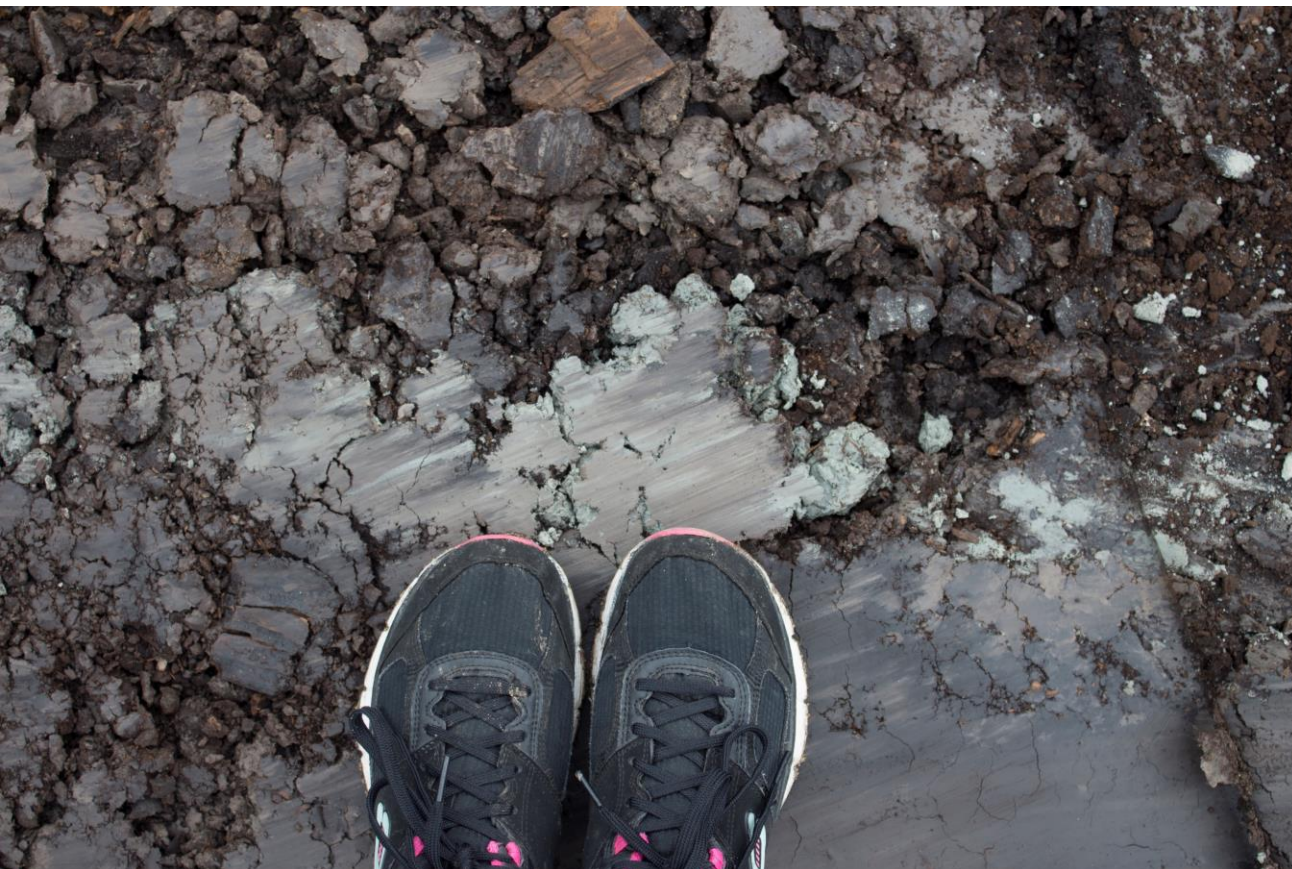
*To identify and explore excavation approaches and principles for landscape construction with the intention of facilitating ecological and recreational development in excavation sites across multiple scales while creating awareness about them.*

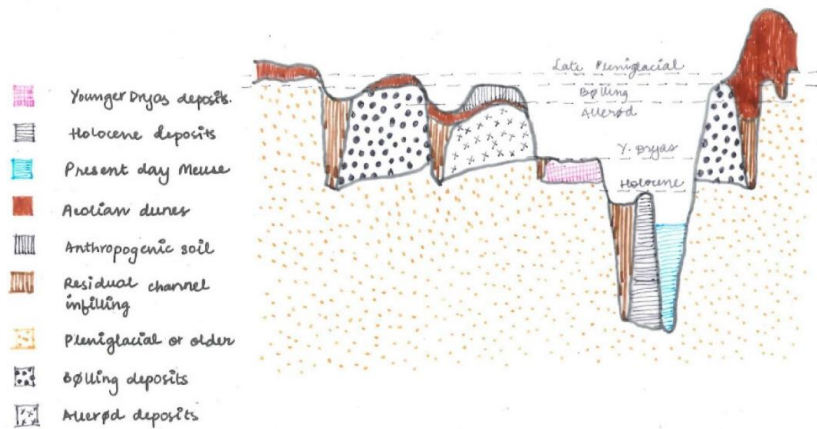
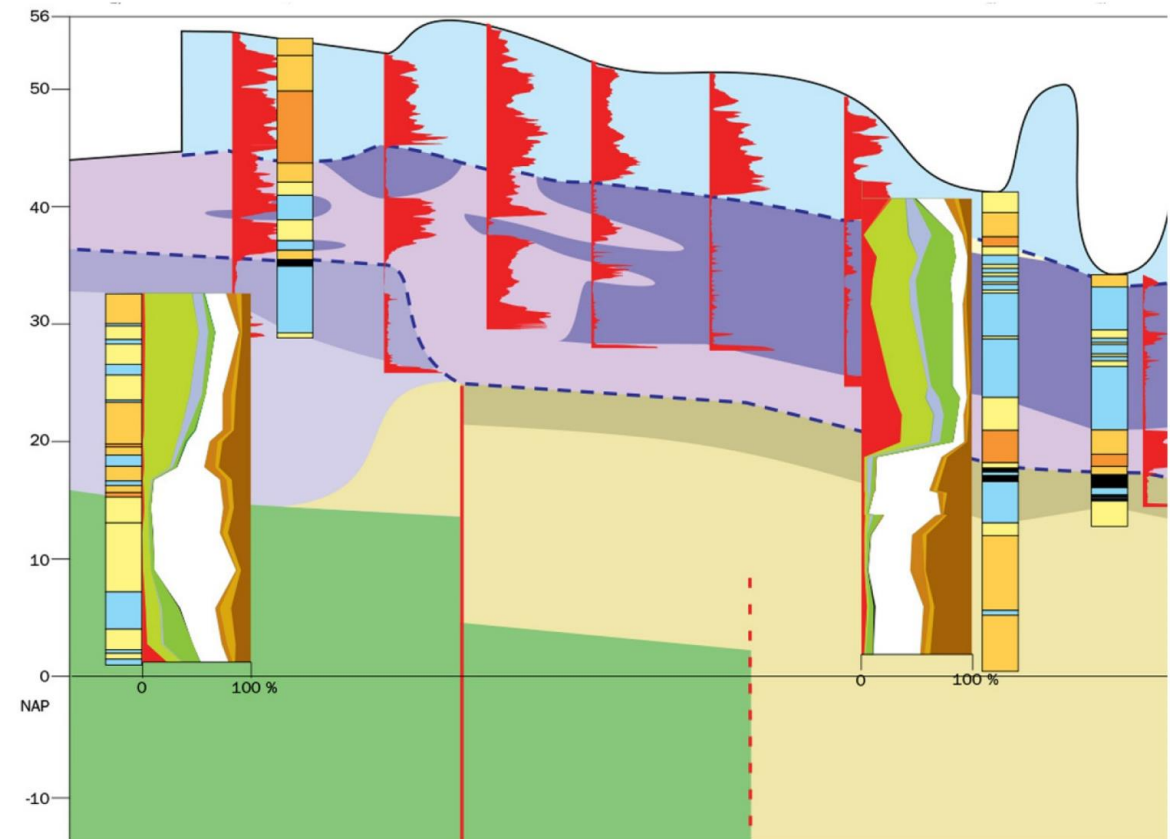
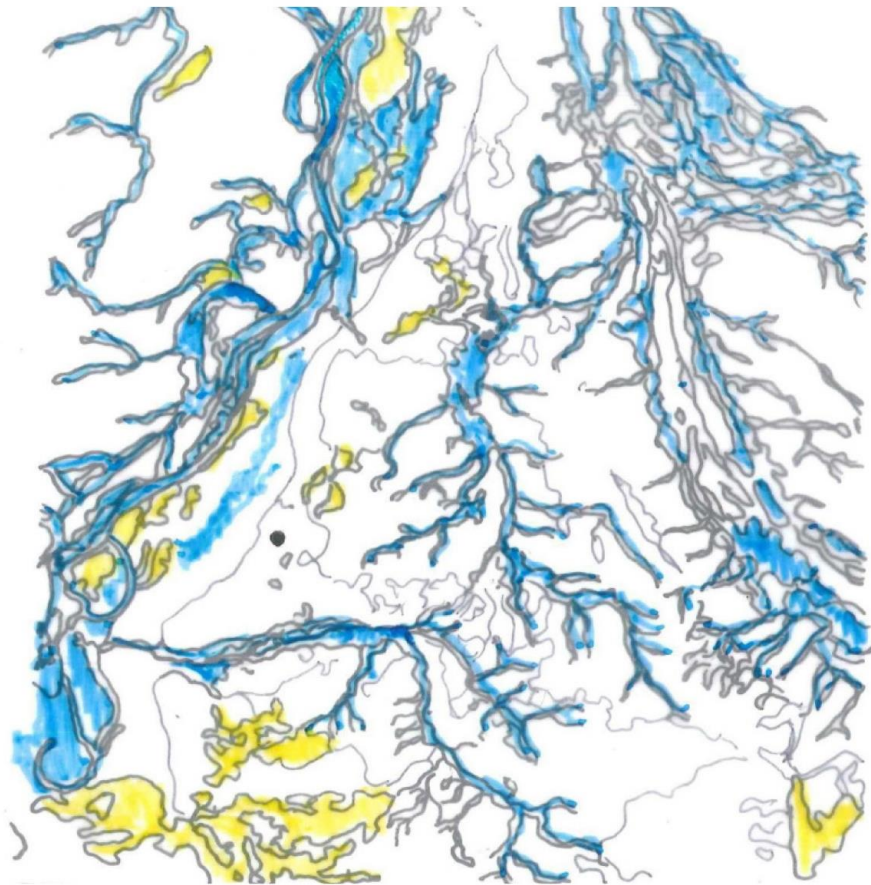
***CAN THIS BE APPLIED TO OTHER SUCH SITES?***

***HOW IS THIS DIFFERENT FROM OTHER WAYS OF DEALING WITH SUCH LANDSAPES?***







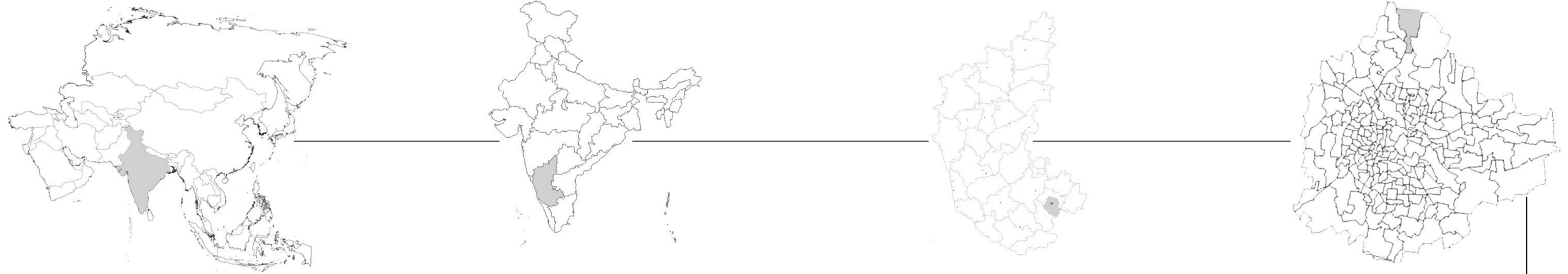


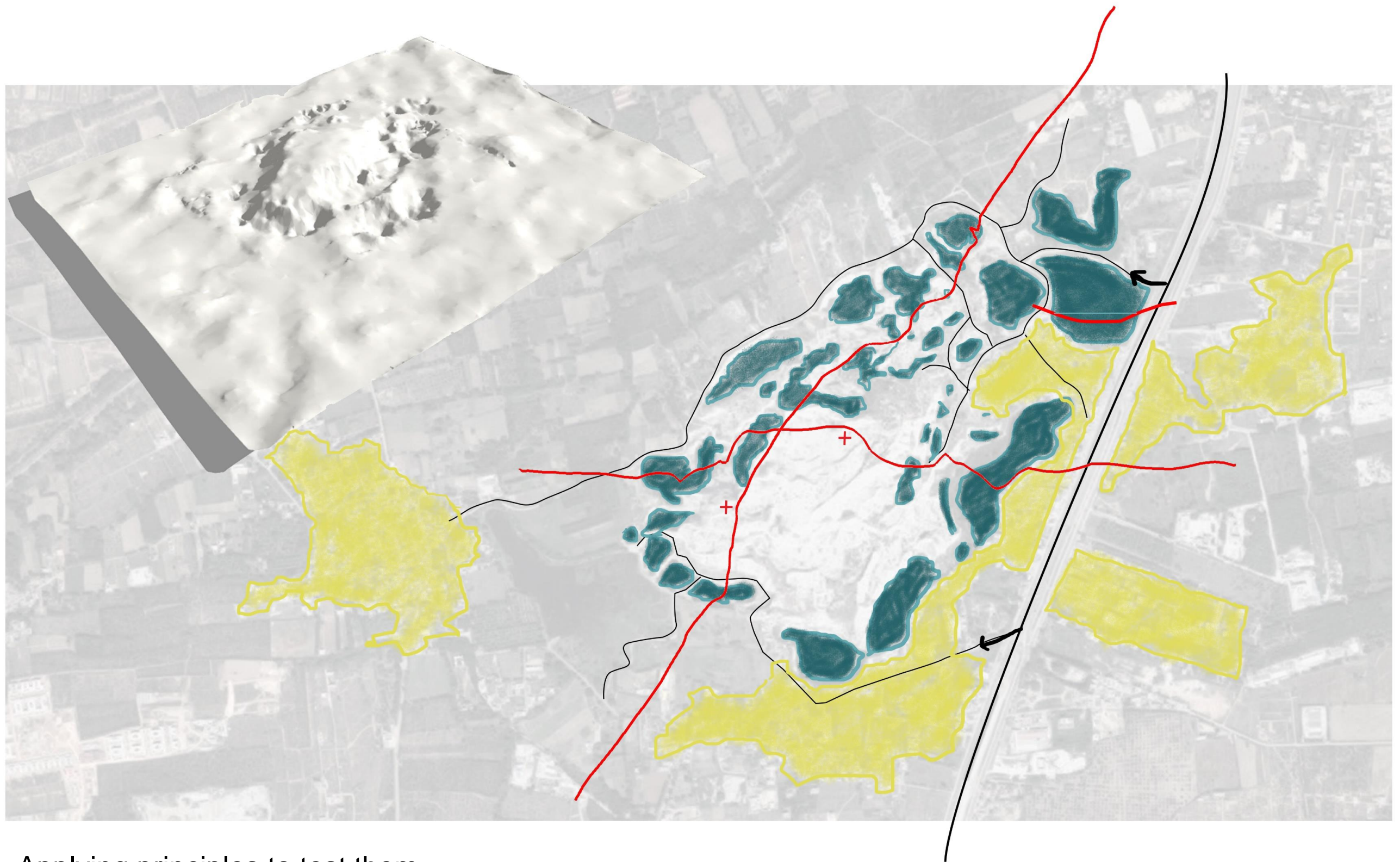
Lithostratigraphy

	Sand and gravel	Sterksel Formation	
	Sand	Stramproy Formation	
	Clay	WA-1/Oebel beds	Waalre Formation
	Sand		
	Clay	Tegelen Member	
	Sand and gravel		
	Sand	Kieseloolite Formation	
	Clay/Reuver Bed		
	Fine sand	Breda Formation	

Borehole lithology

	Peat
	Clay
	Fine sand
	Coarse sand
	Gravel and gravel-bearing coarse sand
	Unconformity
	Cone Penetration Test



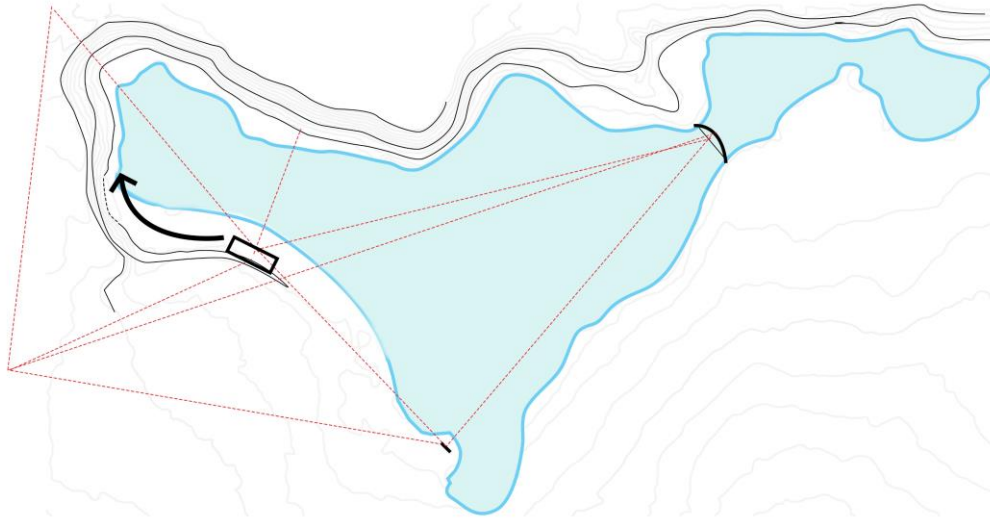


Applying principles to test them

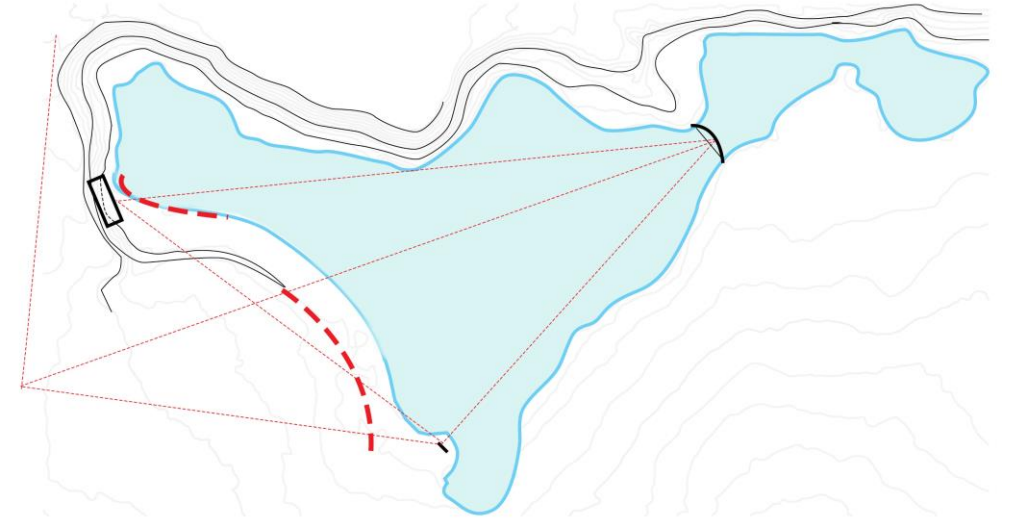


Can the principles be applied to other sites?





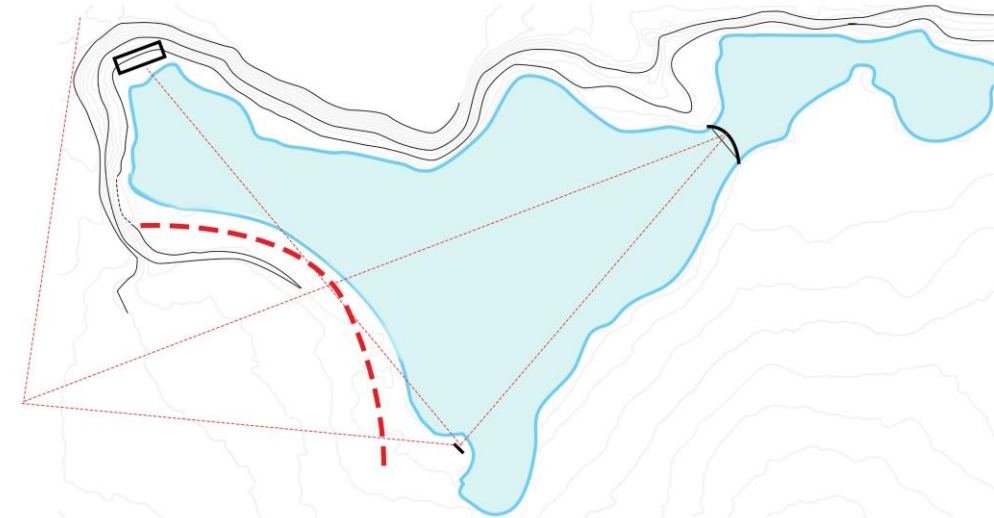
Option 1



Option 2



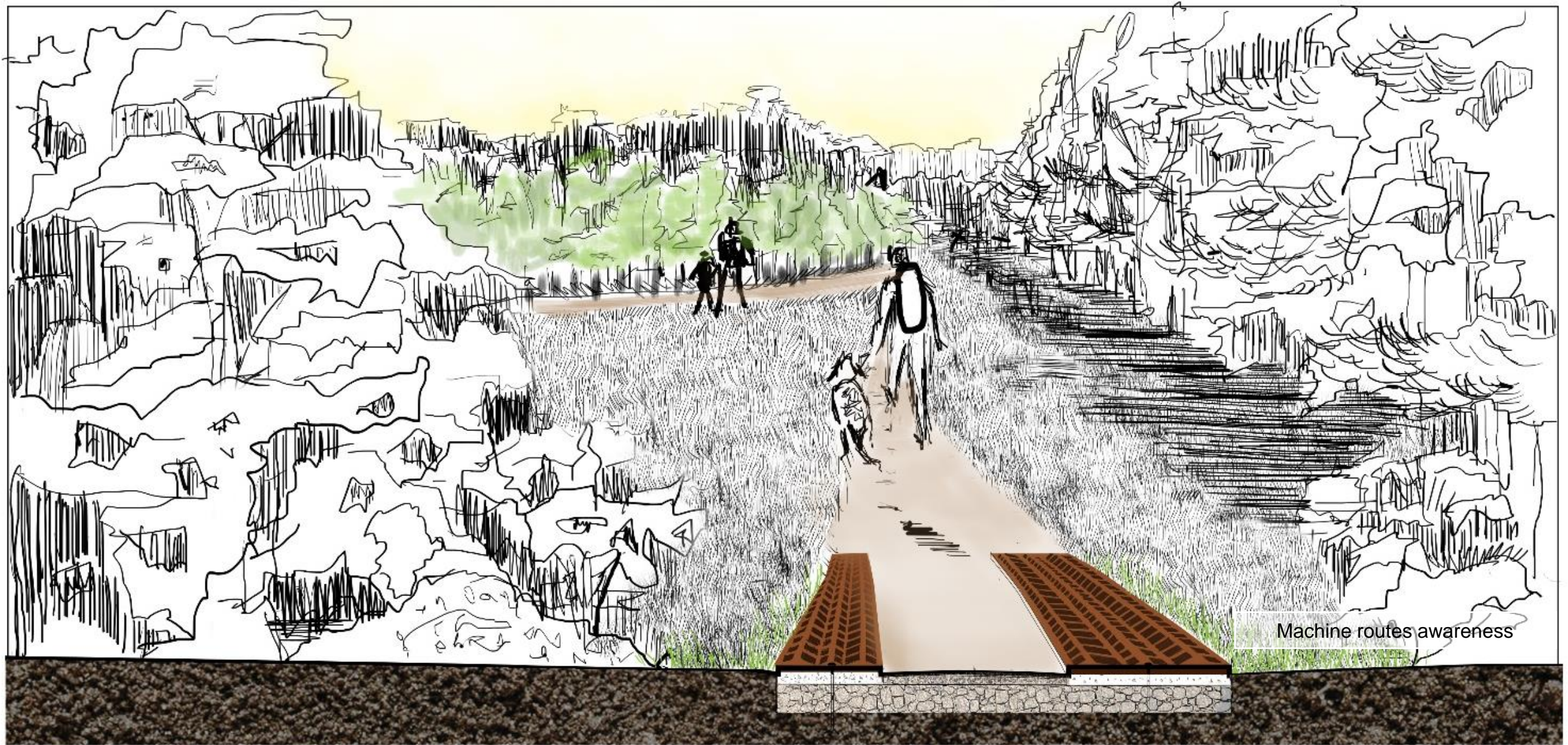
Option 3



Option 4

Experiments while design of the lake ensemble  
**Research through Design**





*A long forest walk,  
Changing altitudes and carefully navigated pathways.*



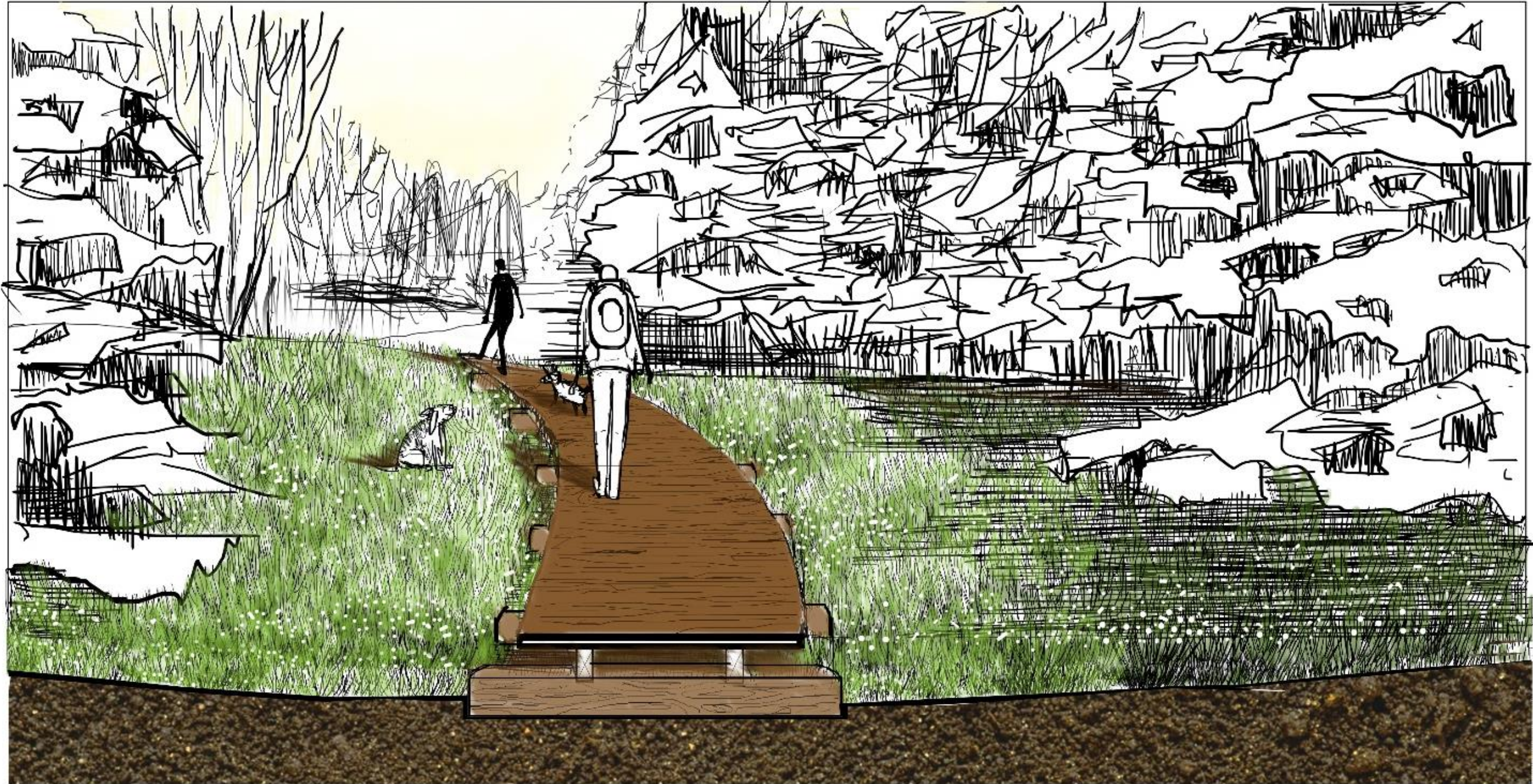
*The sound of machines in the far distance intertwined with wind, birds and talk..*

*A unique mix of landscapes- open, closed, light and dark,*

*Nothing you have seen in any winding park.*



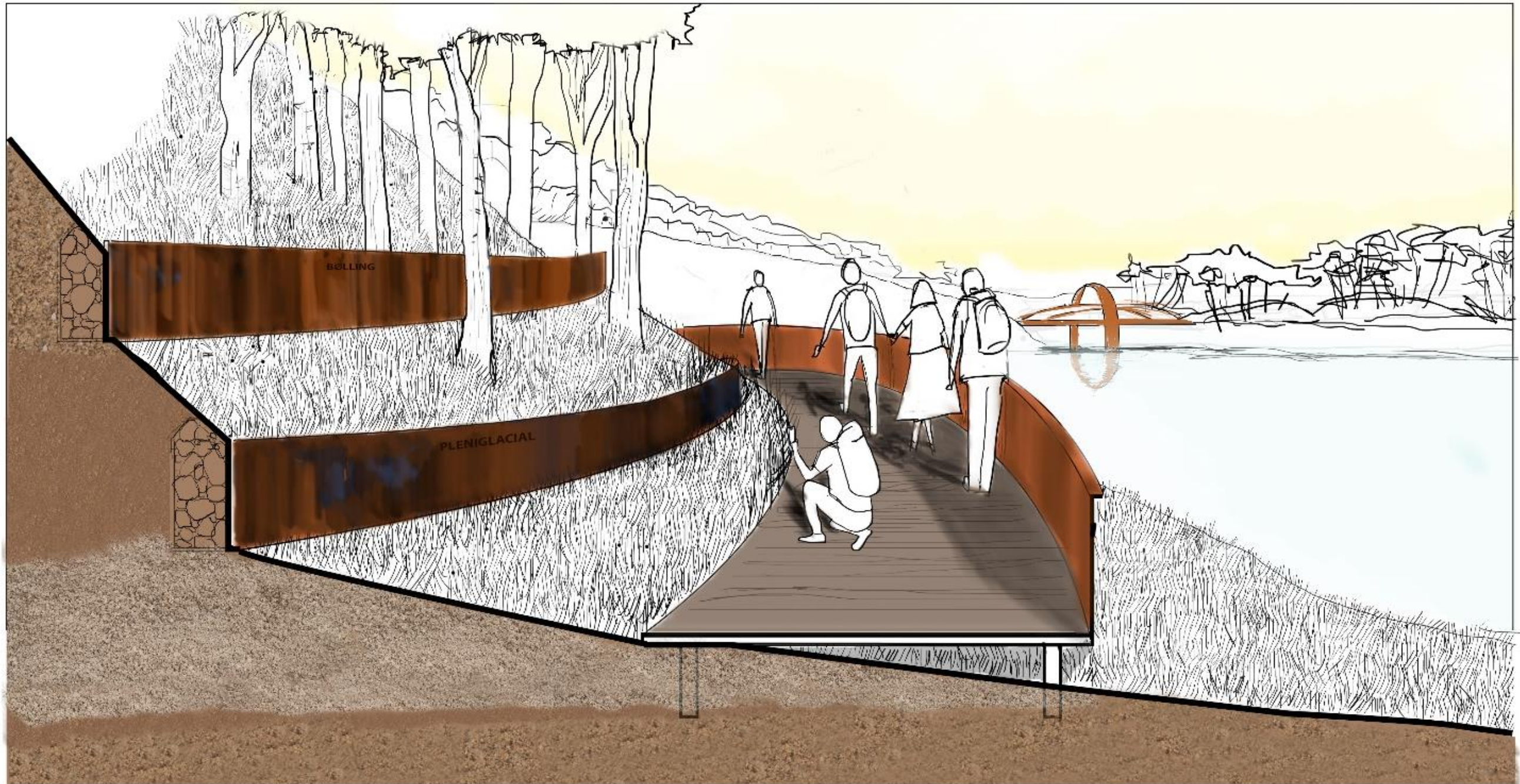
*Where once stood a destroyed land  
Now stands nature, and no, not destroyed land, constructed land.*



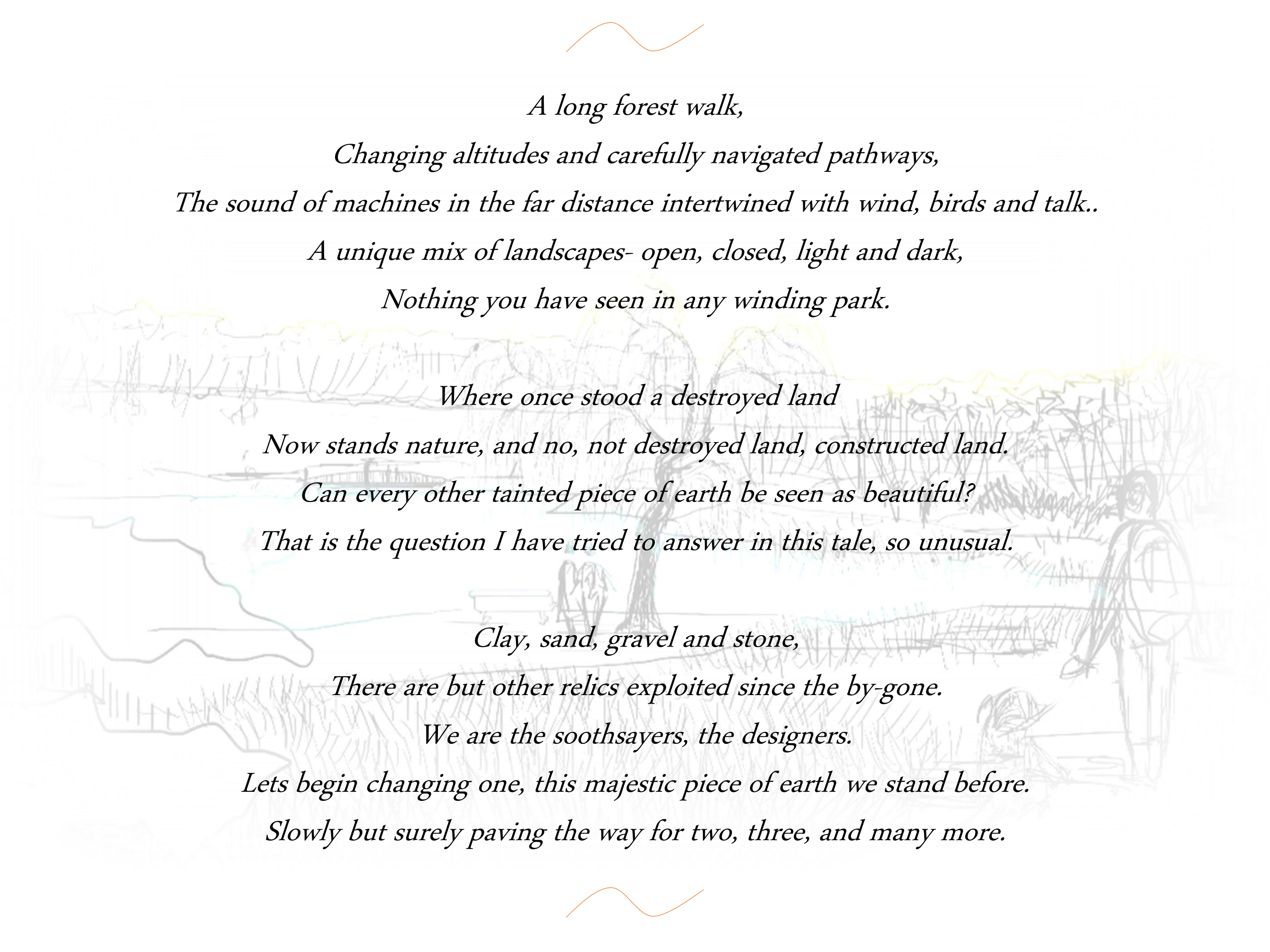
*Can every other tainted piece of earth be seen as beautiful?  
That is the question I have tried to answer in this tale, so unusual.*



*Clay, sand, gravel, and stone  
There are but other relics exploited since the by-gone.*



*We are the soothsayers, the designers.  
Lets begin changing one, this majestic piece of earth we stand before,  
slowly but surely, paving the way for two, three and many more.*



*A long forest walk,  
Changing altitudes and carefully navigated pathways,  
The sound of machines in the far distance intertwined with wind, birds and talk..  
A unique mix of landscapes- open, closed, light and dark,  
Nothing you have seen in any winding park.*

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