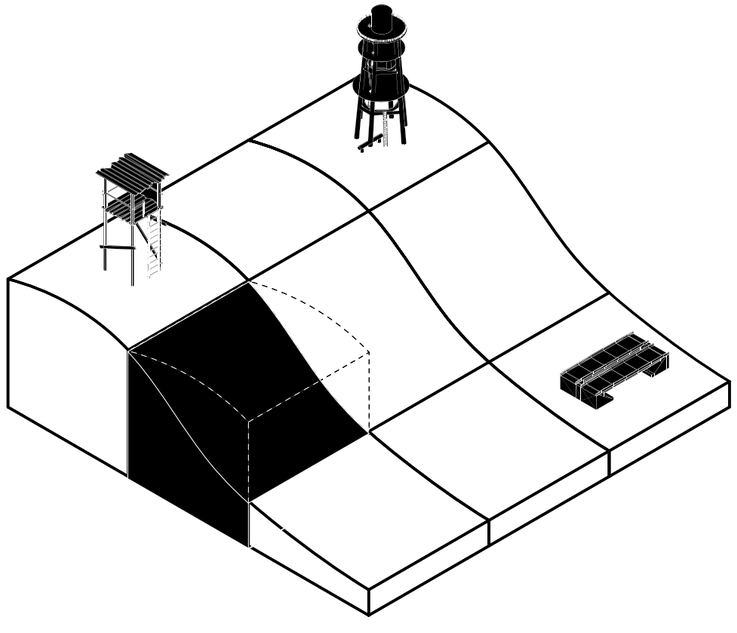
Shifting Sands

On gradual demolition and pariticipatory nature

A proposal to repurpose Sibleco Sand mine into a bird sanctuary

Architectural Engineering
Harvest_BK - proposals for IBA Parkstad 2020

Tutors: Annebregje Snijders, Engbert van der Zaag, Nico Tillie
External Examiner: Ronald van Warmerdam



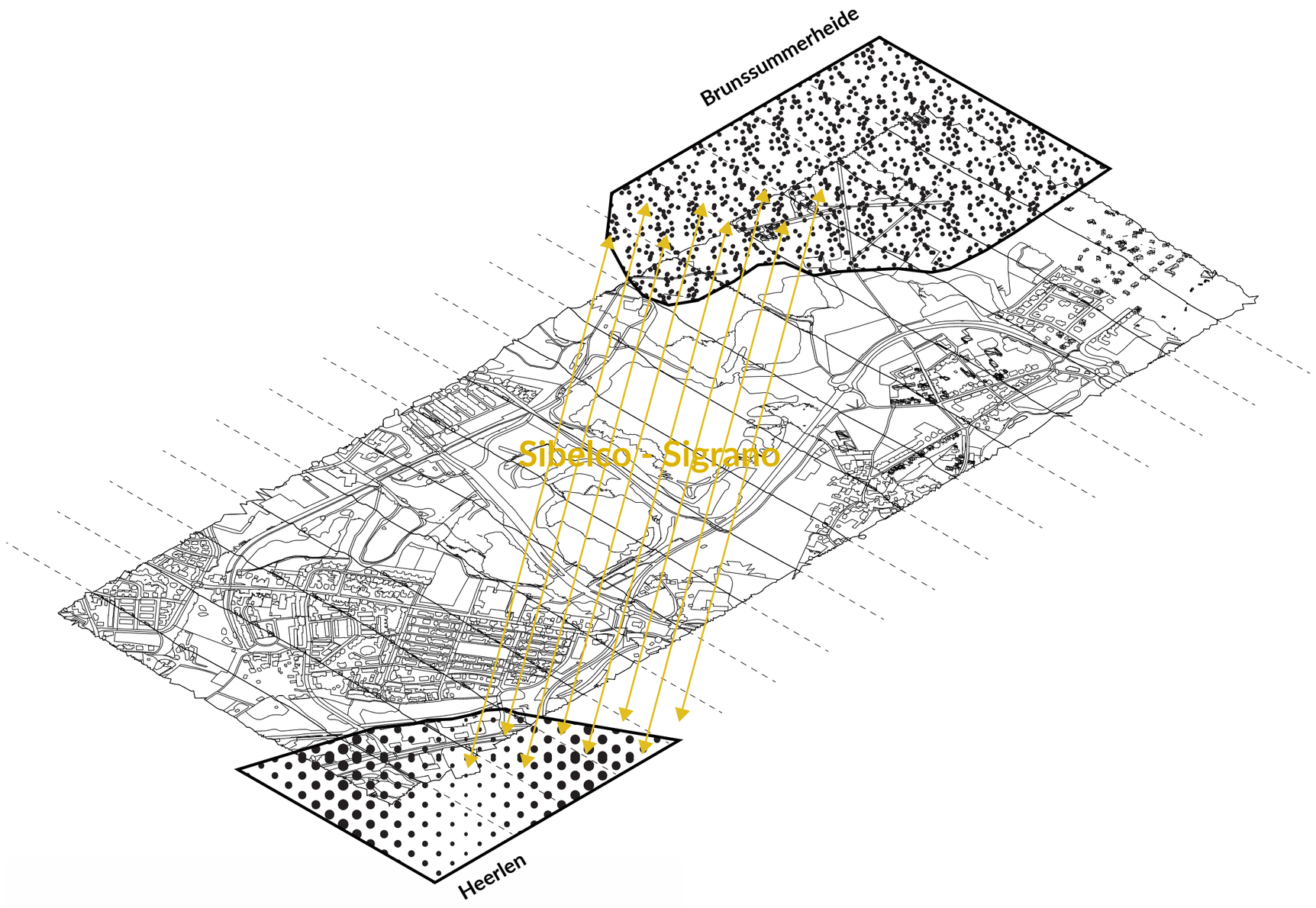
Analysis

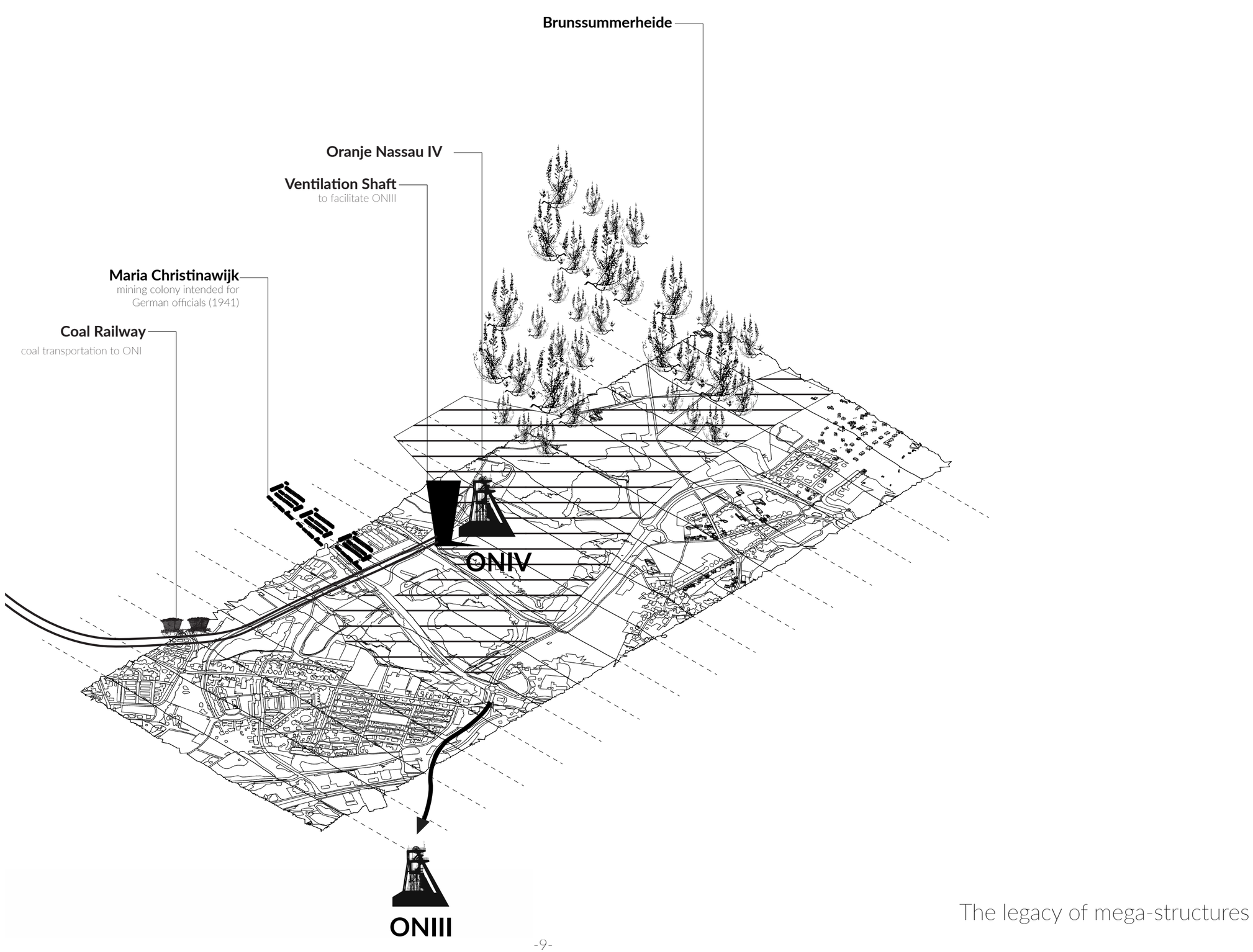
COAL

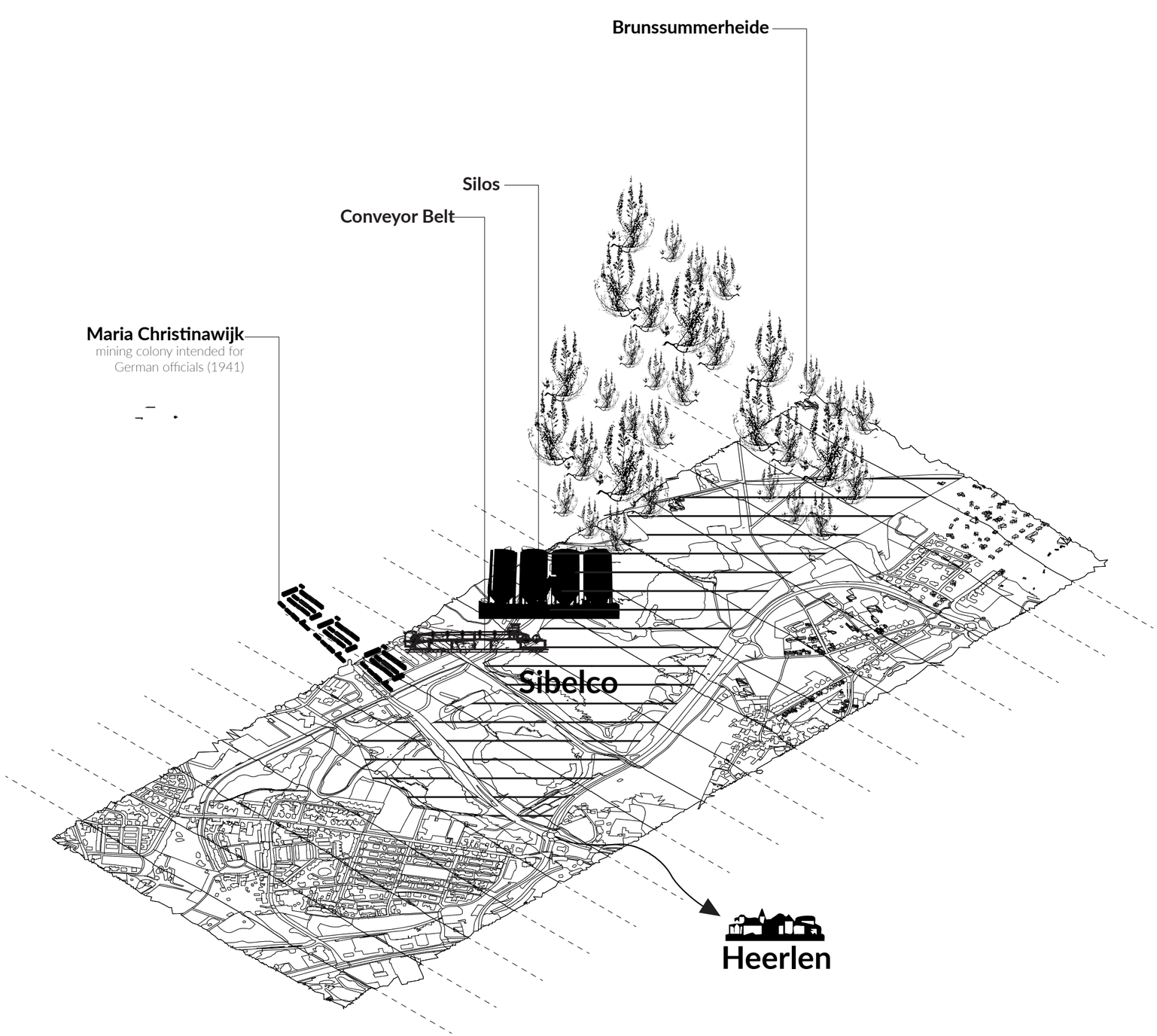
SAND

?

Transition


Brunssummerheide
Sibelco - Sigrano
Heerlen


Brunssummerheide
Oranje Nassau IV
Ventilation Shaft
to facilitate ONIII
Maria Christinawijk
mining colony intended for
German officials (1941)
Coal Railway
coal transportation to ONI
ONIV
ONIII


Brunssummerheide
Silos
Conveyor Belt
Maria Christinawijk
mining colony intended for
German officials (1941)
Sibelco
Heerlen

1700
Undistrubed Heather Fields

1800
Agriculture and Cow Breeding

1912
Oranje Nassau IV - Shaft Construction in order to ventilate ON-III

1920
Heksenberg - start of the operation of a small scale sand mine

1927
Oranje Nassau IV - mining activity begins

1966
Oranje Nassau IV - underground connection to ON-III opens. The overground operation at ON-IV declines

1968
Sigrano Quarry - 200ha permit issue - including Steenberg

1973
Oranje Nassau III - mining activity ends

1912
Stainless Steel Invented

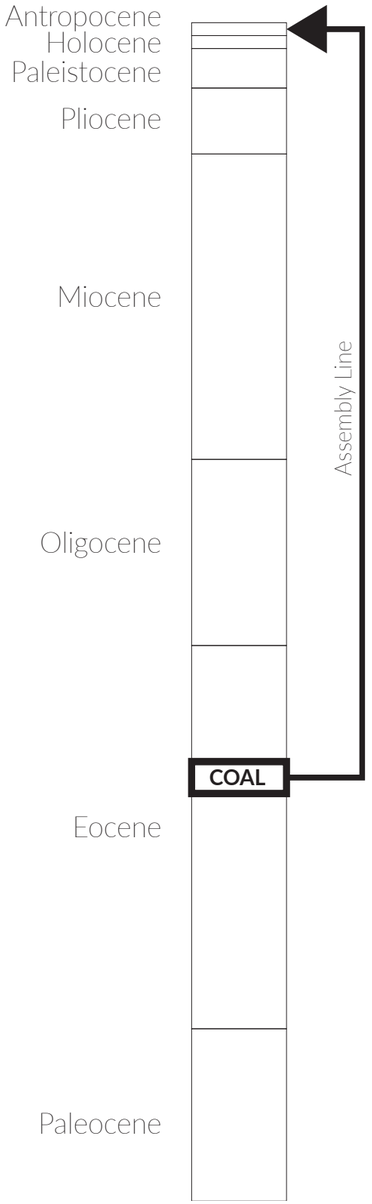
1913
First assembly line production system introduced by Ford

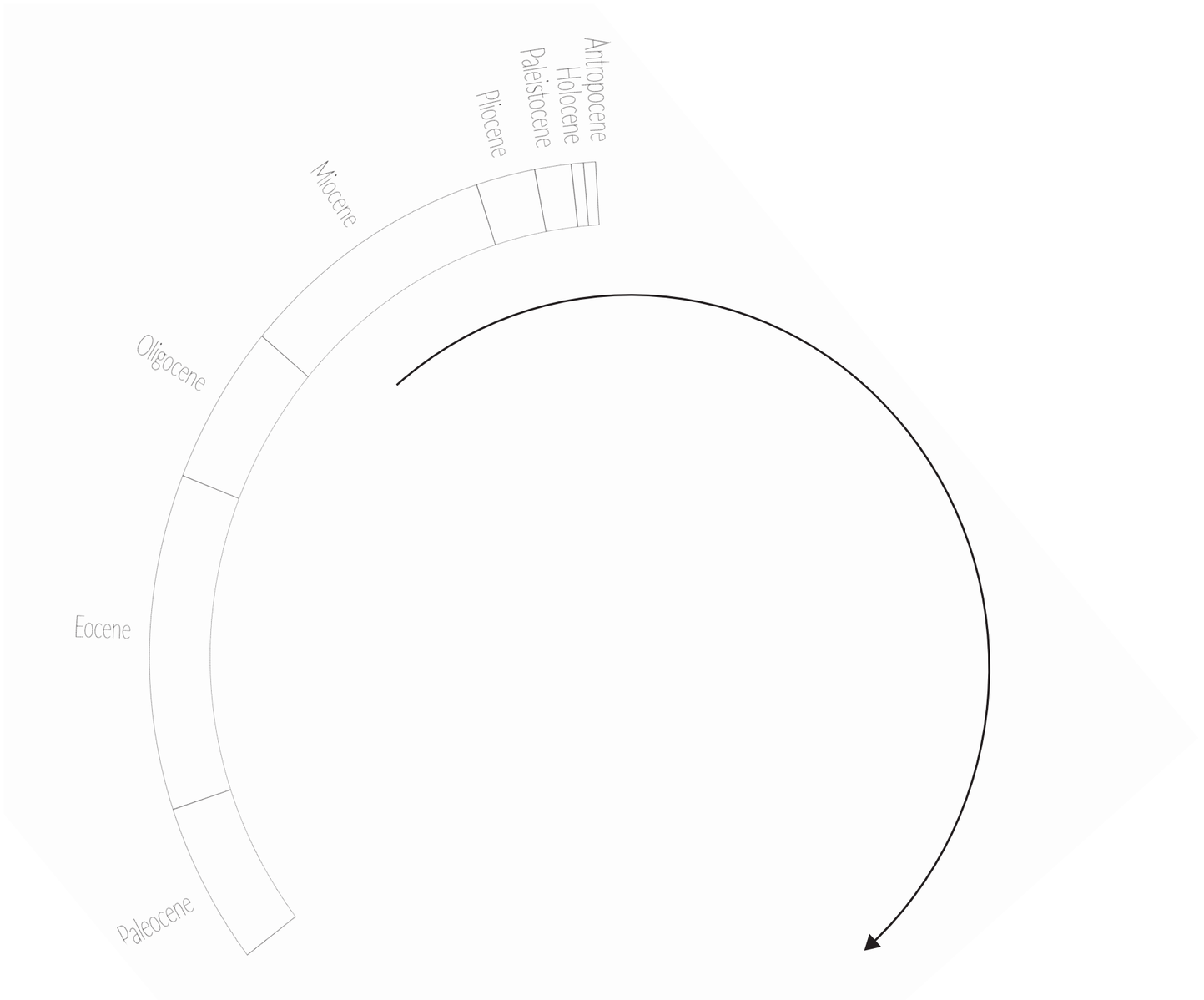
1924
Production line plate flass first manufactured at the Ford Factory

1933
Synthetic wood glues introdued in Germany, leding to mass-production of plywood and wood fibre products.

Polyethylene (the most common plastic) discovered by ICI in England

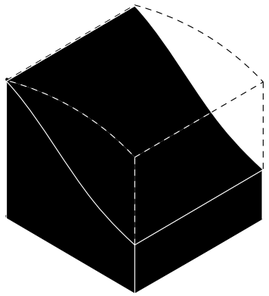
1952
Experiments leading to the float glass production method begun at the Pilkington Factory, UK


Antropocene
Holocene
Paleistocene
Pliocene
Miocene
Oligocene
Eocene
Paleocene
COAL
Assembly Line

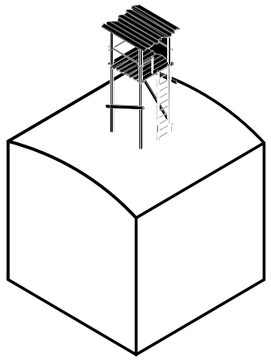

Antropocene
Holocene
Paleistocene
Pliocene
Miocene
Oligocene
Eocene
Paleocene

Research

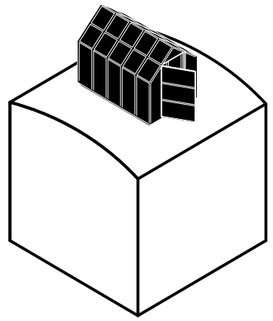
Drosscape - designed landscape which accommodates for waste in the man made urban voids



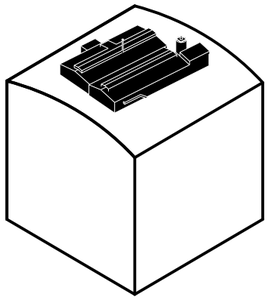
topography change - producing



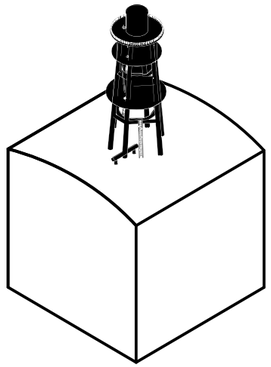
watchtower - repelling



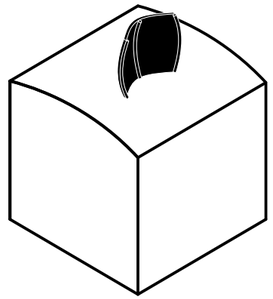
greenhouse - producing



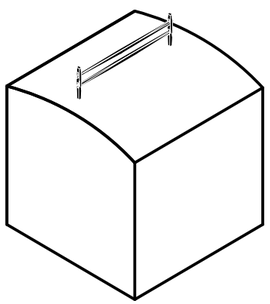
thermal mass - heating



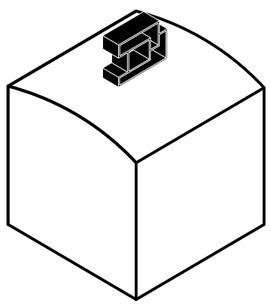
bat tower - incubating



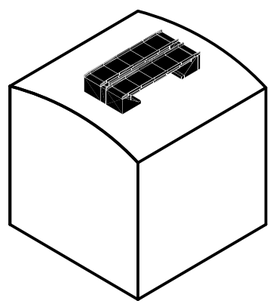
windbreak - protecting



legislation - negotiating

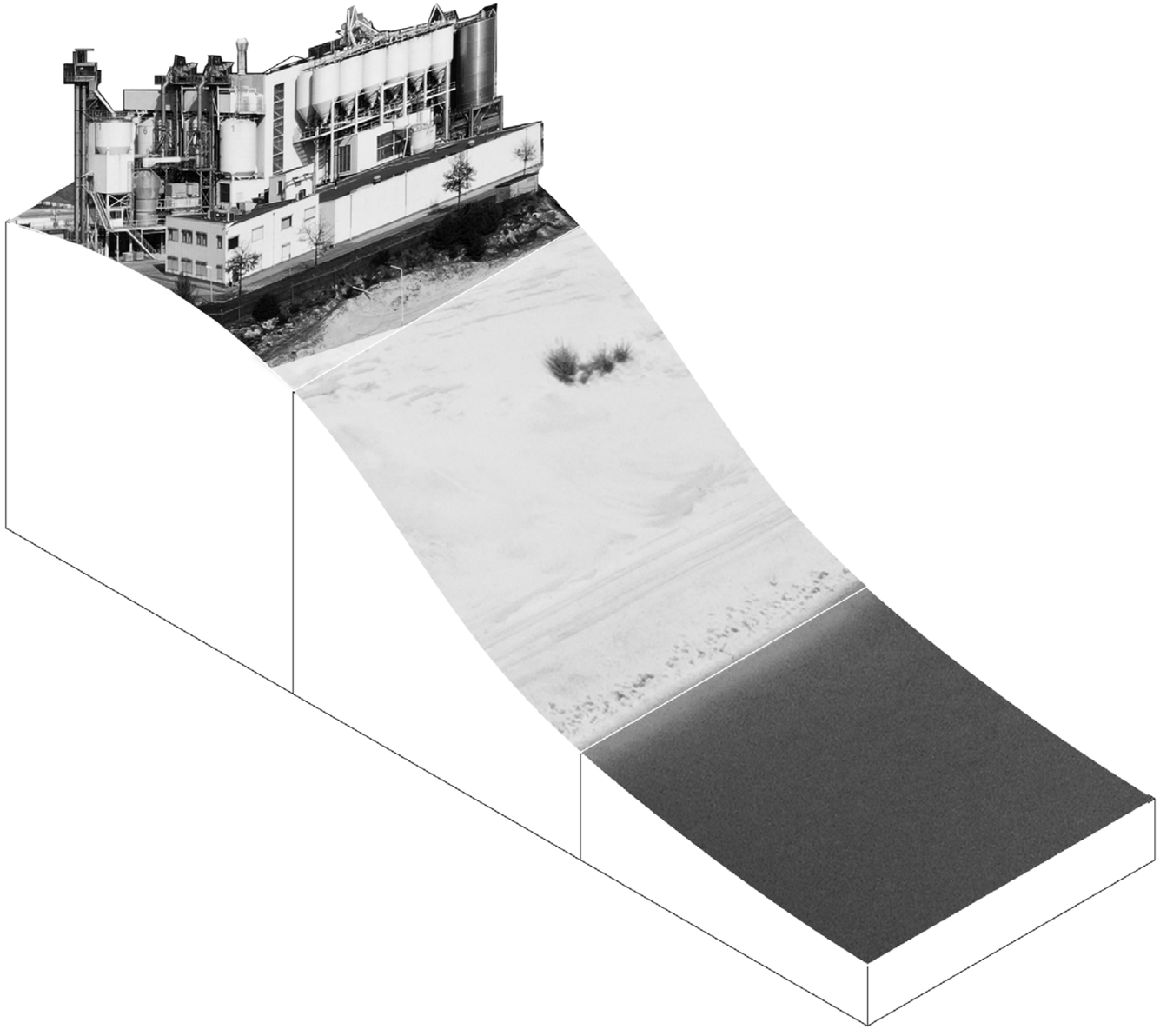


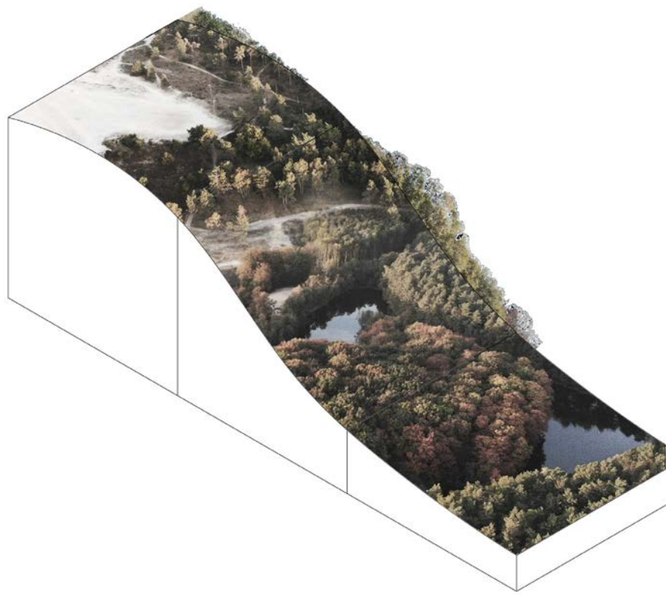
stile - fitering



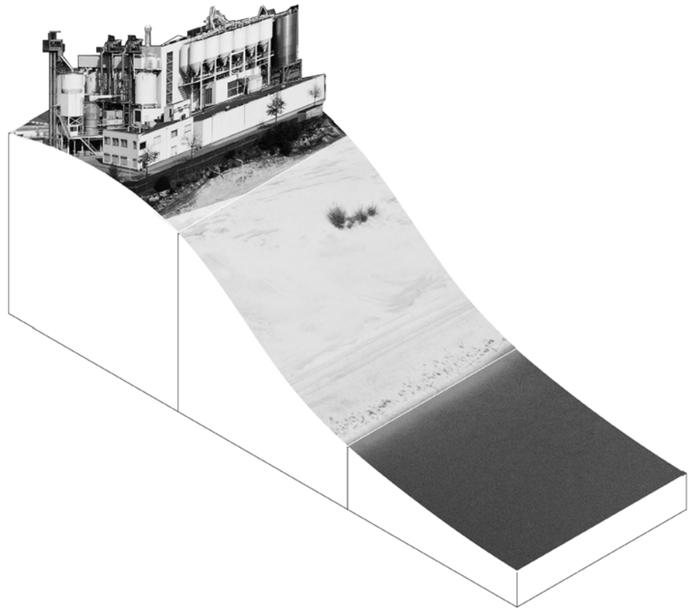
ecoduct - merging

Role of the devices

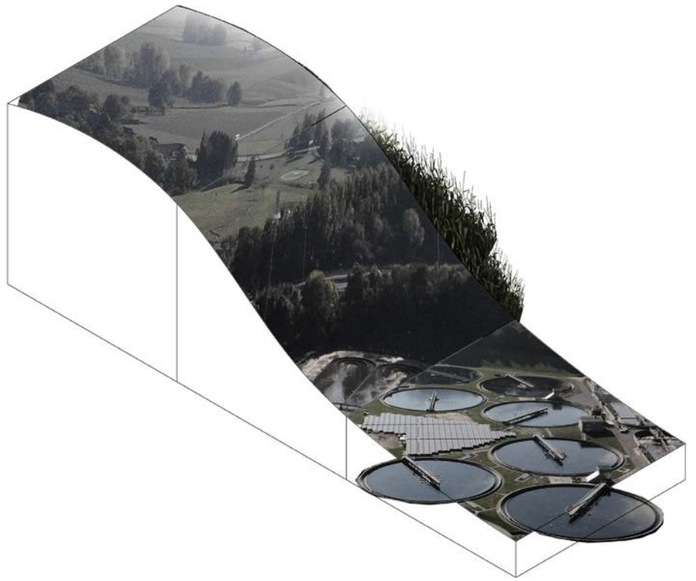




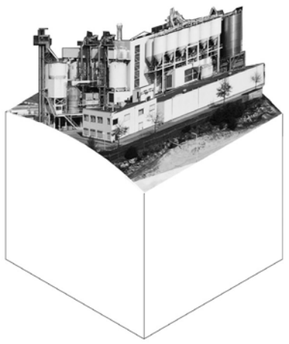
natural landscape

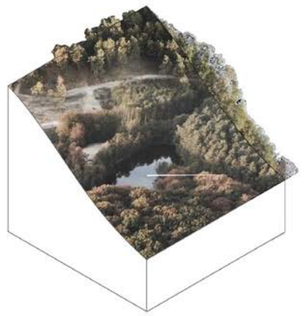


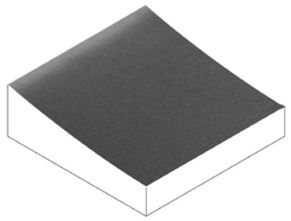
drosscape

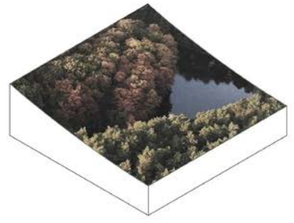


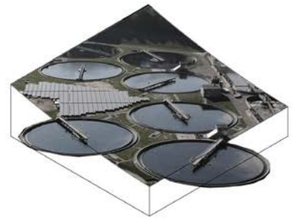
energy landscape



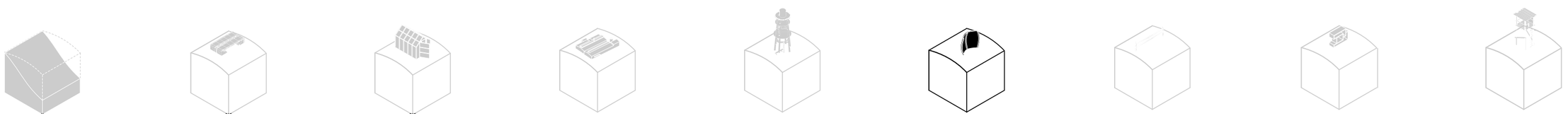


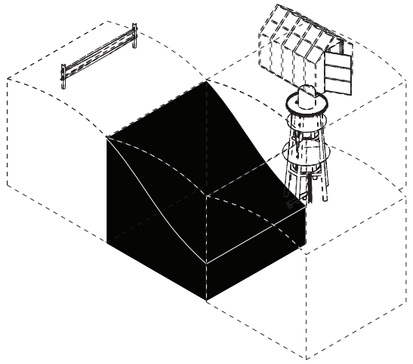


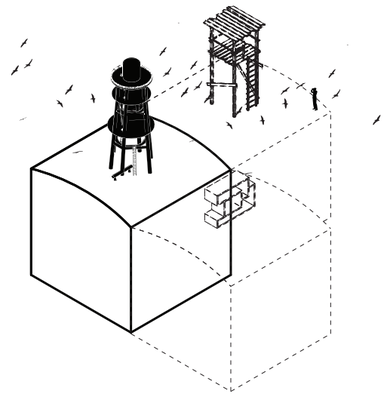


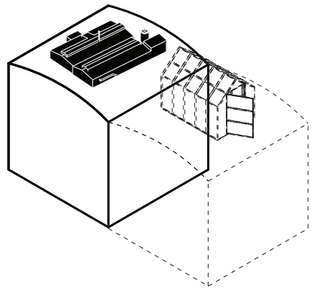


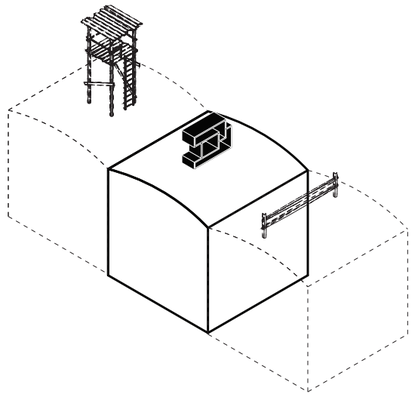
Windbreak

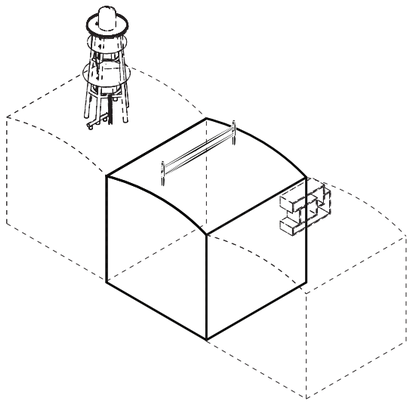


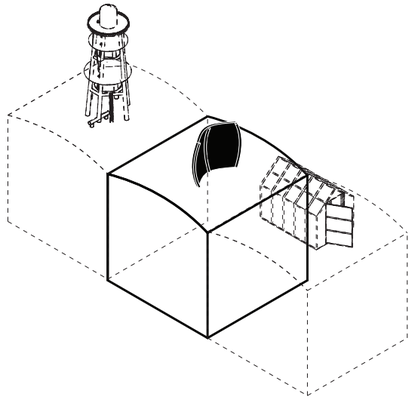








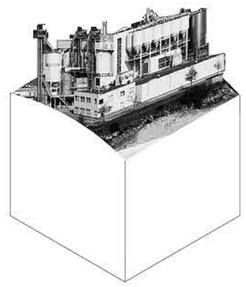




Welcome to the **Opensource Library of Tools for the Ecology Restoration**

Shifting Sands Project is a database, which seeks how to relocate resources to activate the wastelands.

Share your experience of Drosscape* and help us to develop the archive

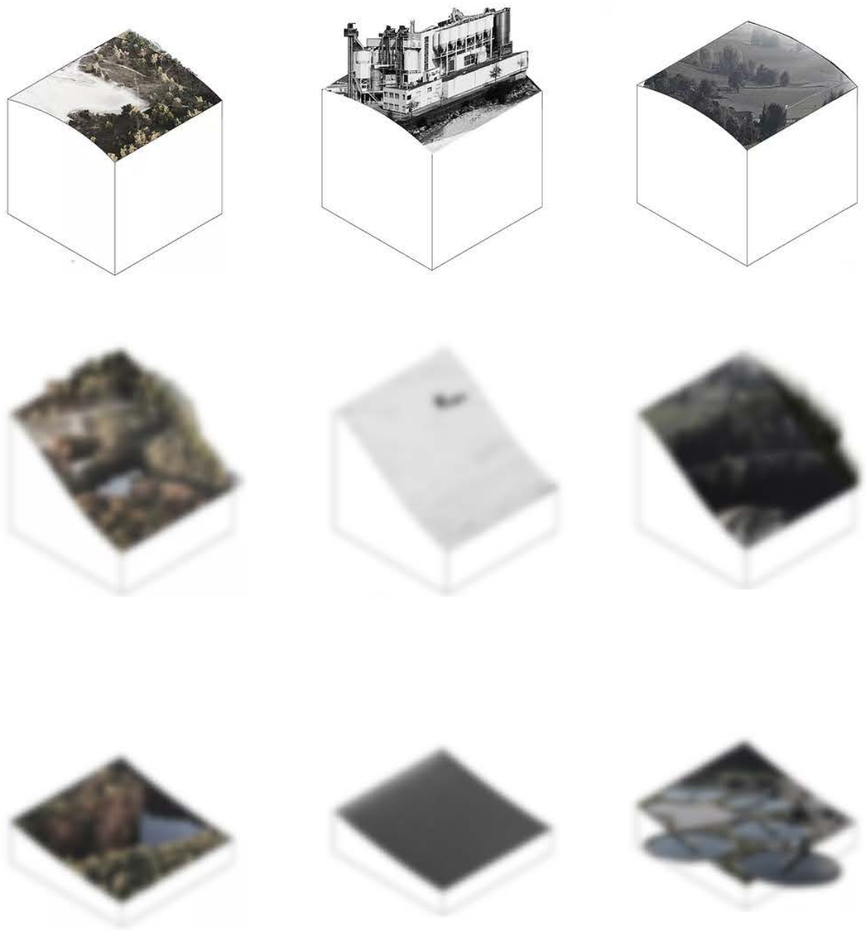


Left-over infrastructure

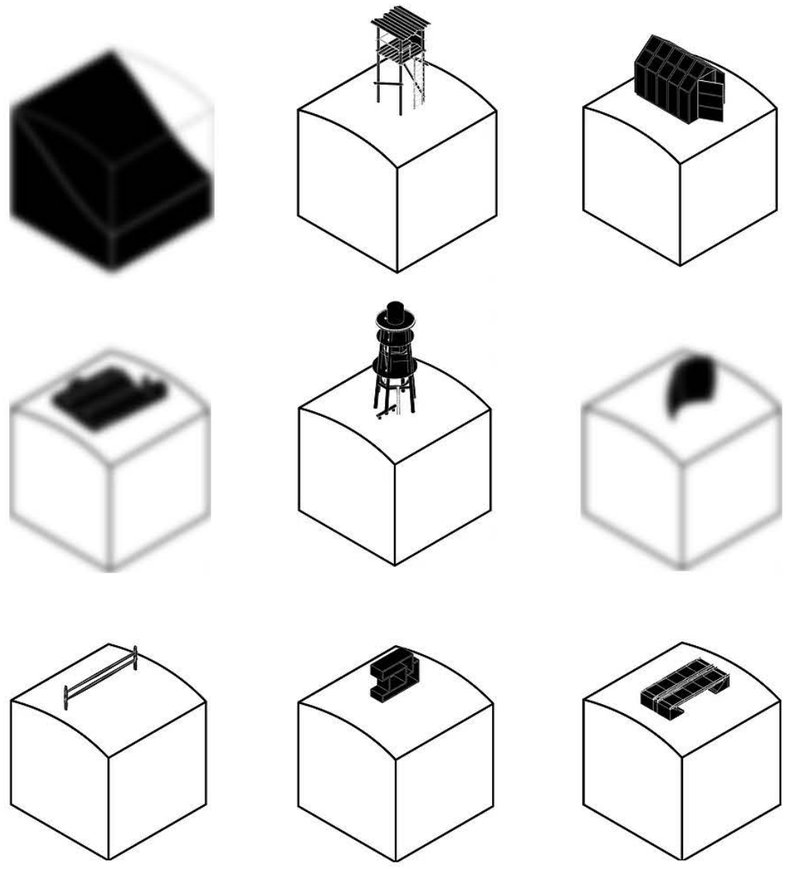
Varied topography

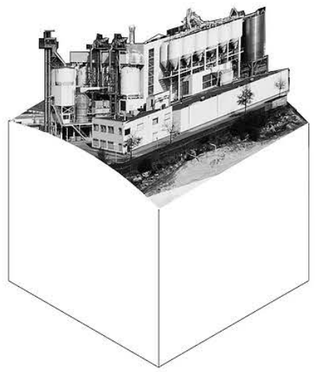
Excavated Reservoir

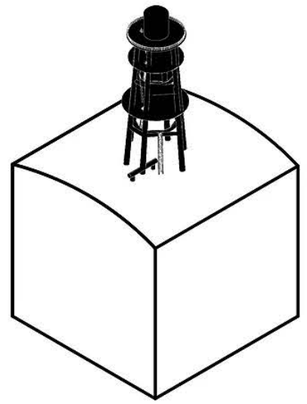
Choose the ambition for the transformation of the infrastructural left-overs.



Try these tools to transform the infrastructural left-overs into a natural landscape.







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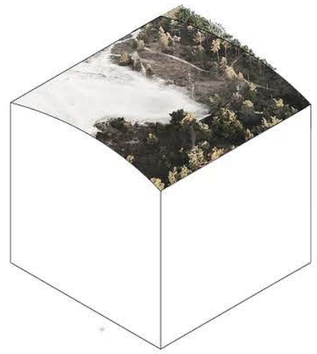
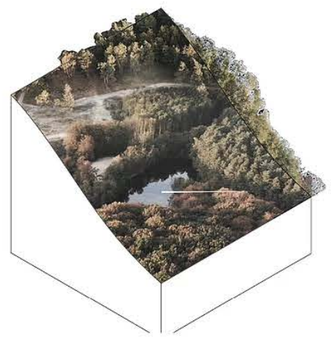
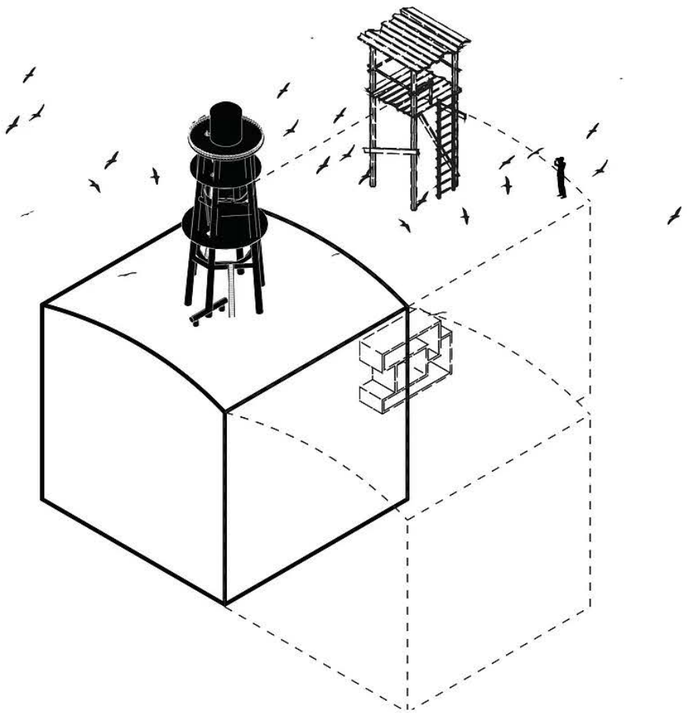


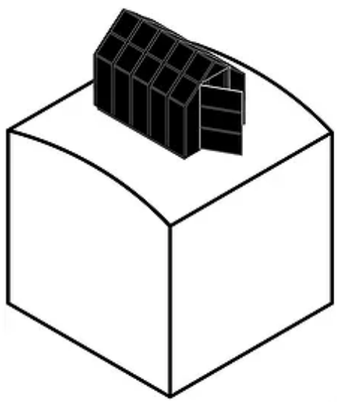


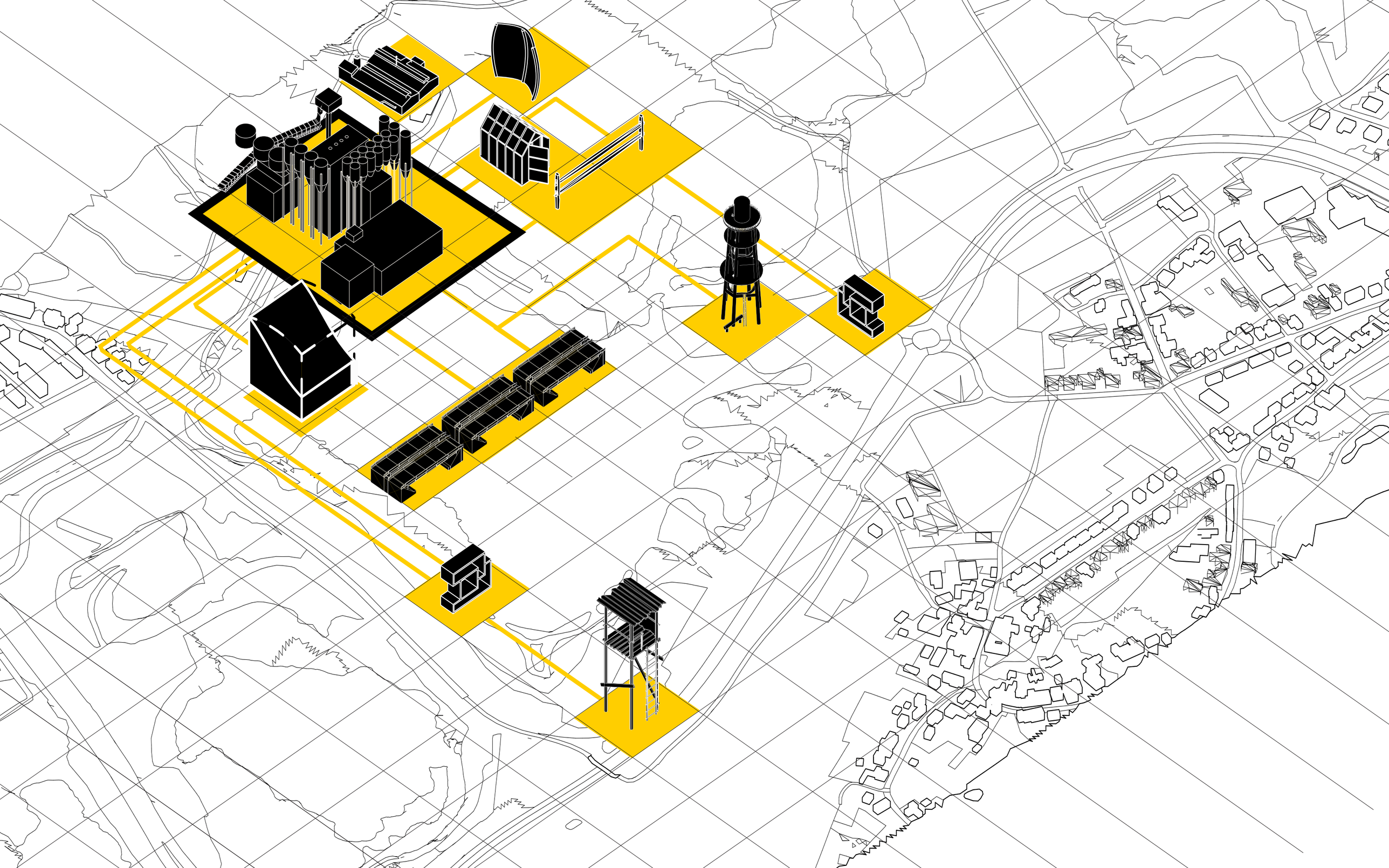
Animal hideaways are a tool to protect and strengthen the presence of endangered species.

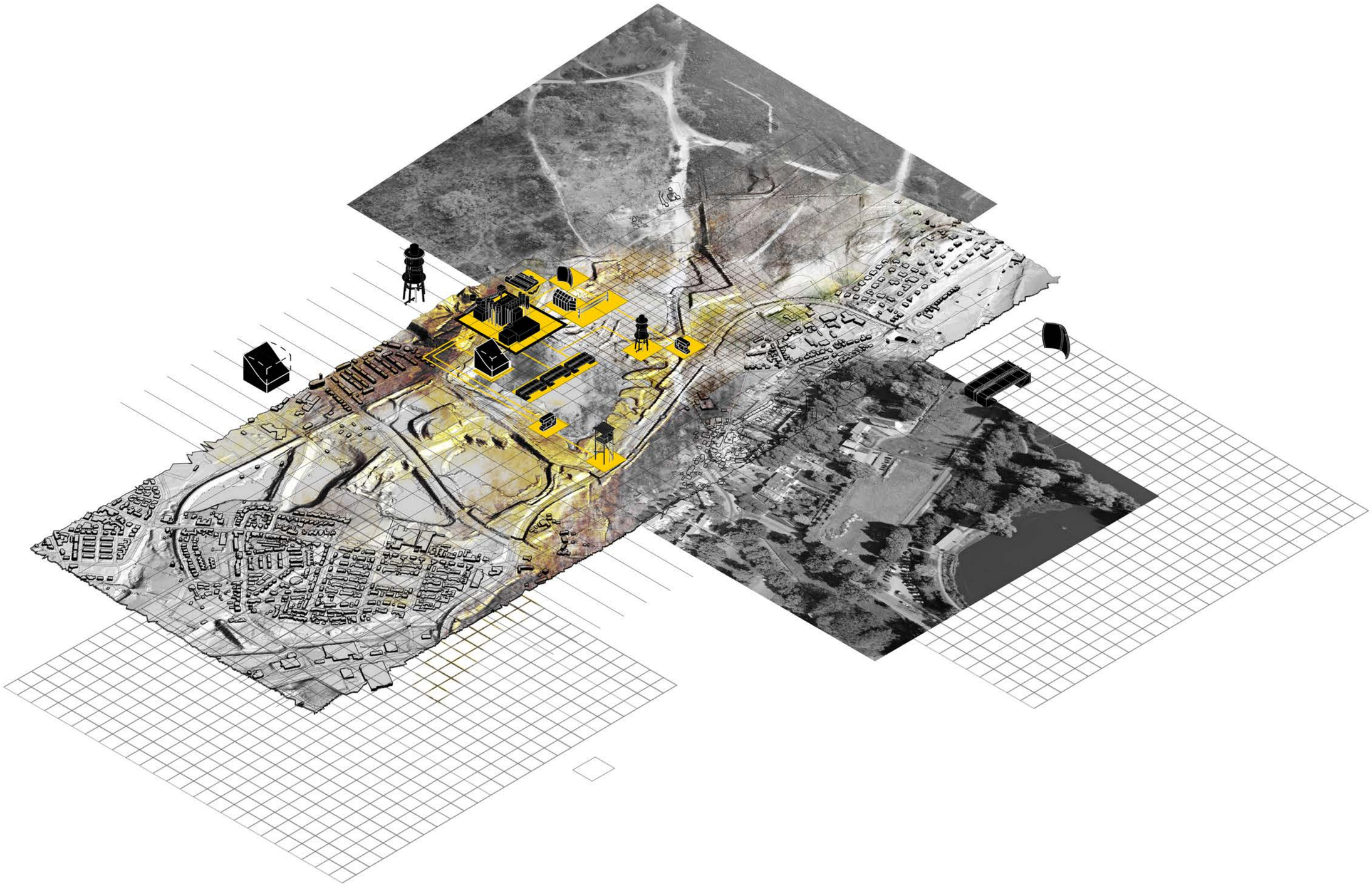
Next to the bat tower

This quiet architectural structure is a low-tech instrument to stimulate the growth of agriculture and animal population. Such hideaways are an example of an animal infrastructure as well as agricultural device. The Sugarloaf Key Bat Tower was built with an intention of tackling the mosquito problem, therefore prevent the spread of malaria. At the same time, surrounded by herbs such as chives and oregano it served the bat population as a hiding and feeding place. On the other hand bird towers are an instrument to harvest fertilizer.

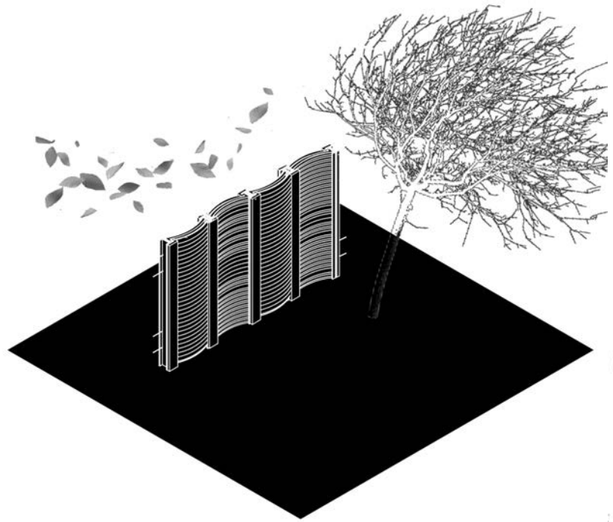


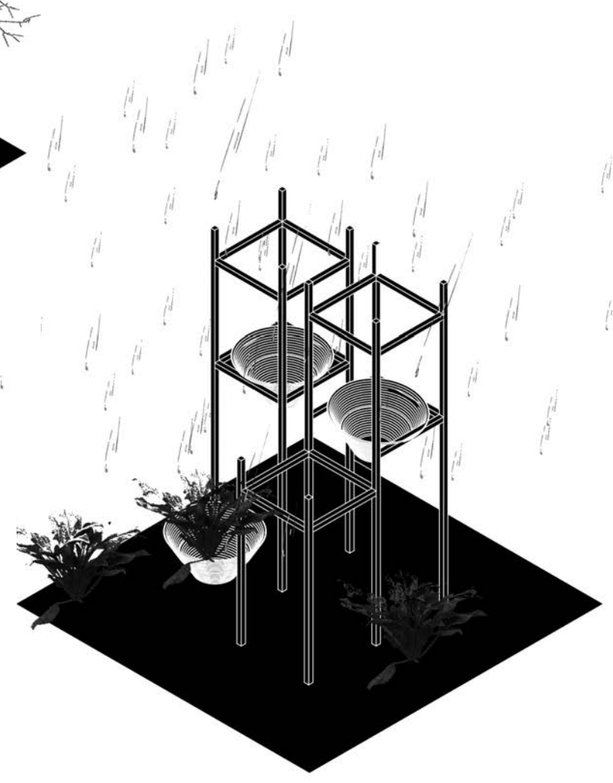


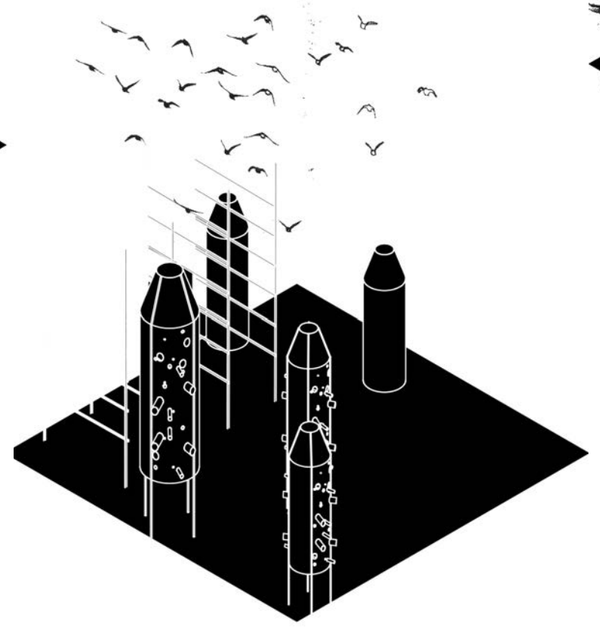


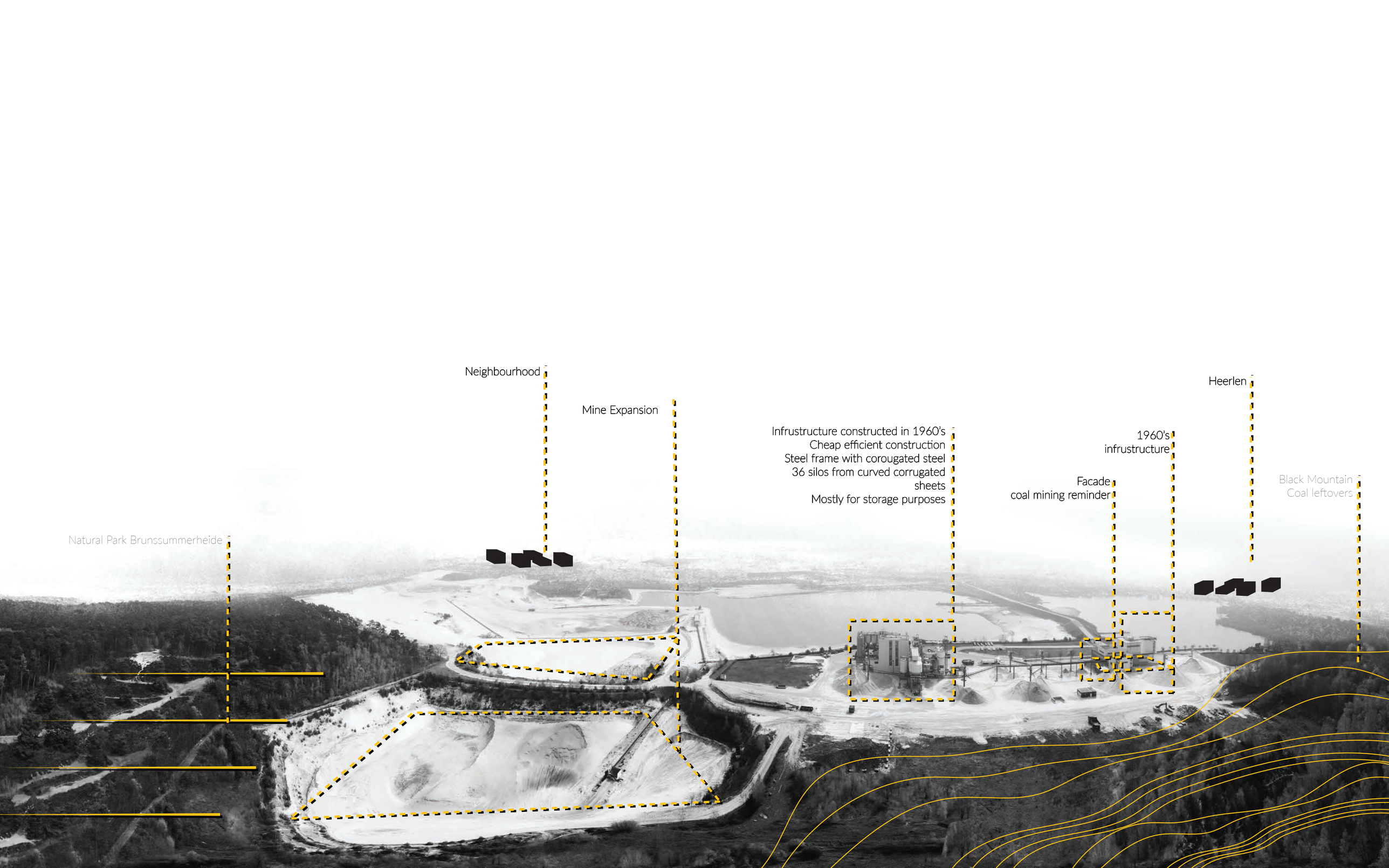


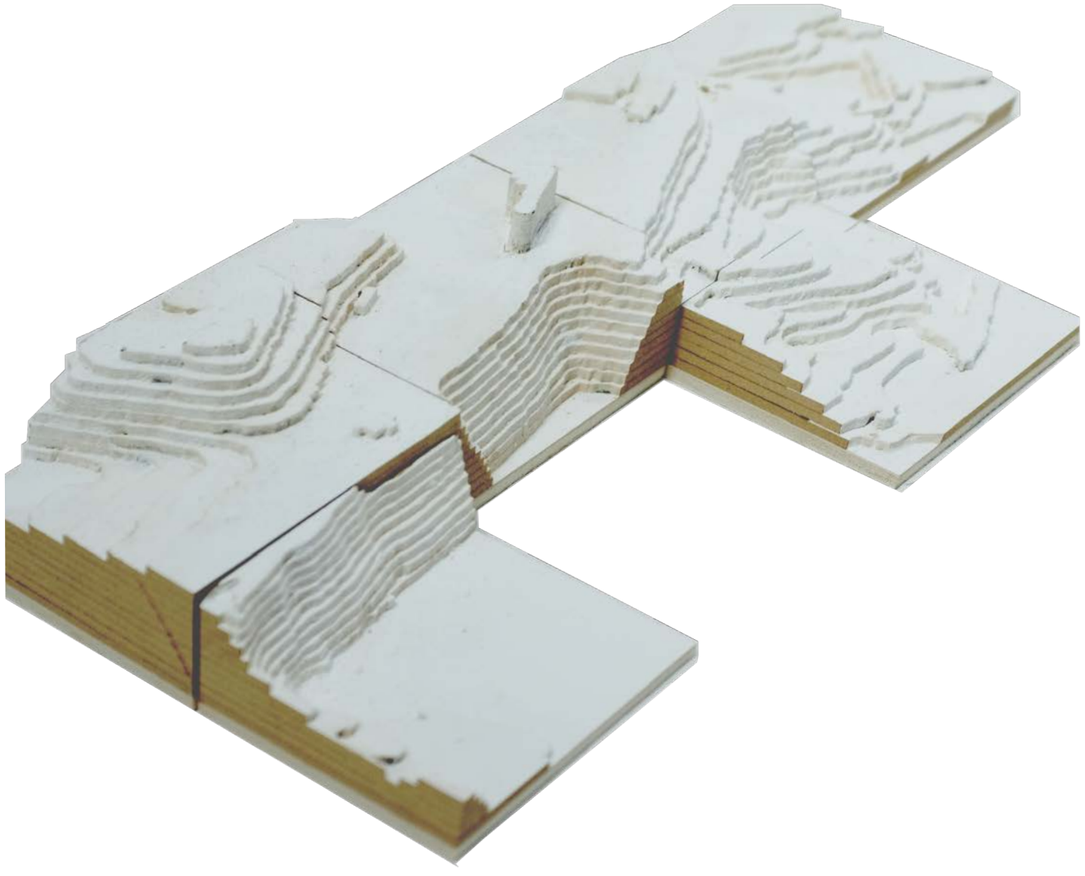
Design








Neighbourhood
Mine Expansion
Infrustructure constructed in 1960's
Cheap efficient construction
Steel frame with corougated steel
36 silos from curved corrugated sheets
Mostly for storage purposes
1960's infrustructure
Facade
coal mining reminder
Heerlen
Black Mountain
Coal leftovers
Natural Park Brunssummerheide



Northern Shoveler

WINTER


Non Migrant


Full Migrant

THREATS


Habitat Loss


Collisions with Power Lines


Nest Predation


NRG Production & Mining


Agricultural Intensification -Pesticides

HABITAT


Grassland/ Shrubland


Artificial/ Terrestrial


Grassy Banks


Hedgerows


Aquatic


Burrows, erosion to create new nest


Moorlands


Vegetated Lakes


Muddy Shores


Artificial Waters Bordered by Grasslands


Nest in Close Proximity


Forrest


Free Draining Soils


Lowland Heaths


Young Forrestry


Industrial Waste Tips


Schrub Steppe

Shingle


Quarries


Man-made habitats (Roads, Railway, Building Excavations)

ACTIONS


Grazing in Artificial Grasslands


Subsidies for Farmers


Create Beattle Banks


Reduce Pesticide


Grass Buffer Strips


Provide Windbreaks


Remove Midstory Vegetation


Breeding Sites-Quarry Sites

Collareed Sand Martin

WINTER


Non Migrant


Full Migrant

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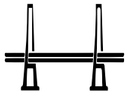

Man-made habitats (Roads, Railway, Building Excavations)

ACTIONS


Grazing in Artificial Grasslands


Subsidies for Farmers


Create Beattle Banks


Reduce Pesticide


Grass Buffer Strips


Provide Windbreaks


Remove Midstory Vegetation


Breeding Sites- Quarry Sites

White Stork

WINTER

Non Migrant

Full Migrant

THREATS

Habitat Loss

Collisions with Power Lines

Nest Predation

NRG Production & Mining

Agricultural Intensification -Pesticides

HABITAT

Grassland/ Shrubland

Artificial/ Terrestrial

Grassy Banks

Hedgerows

Aquatic

Burrows, erosion to create new nest

Moorlands

Vegetated Lakes

Muddy Shores

Artificial Waters Bordered by Grasslands

Nest in Close Proximity

Forrest

Free Draining Soils

Lowland Heaths

Young Forrestry

Industrial Waste Tips

Schrub Steppe

Shingle

Quarries

Man-made habitats (Roads, Railway, Building Excavations)

ACTIONS

Grazing in Artificial Grasslands

Subsidies for Farmers

Create Beattle Banks

Reduce Pesticide

Grass Buffer Strips

Provide Windbreaks

Remove Midstory Vegetation

Breeding Sites- Quarry Sites

permanent shallow fresh-water wetlands

surrounded by dense stands of reeds whilst being free of overhanging tree

4-6m above the ground managed lowland wet grassland

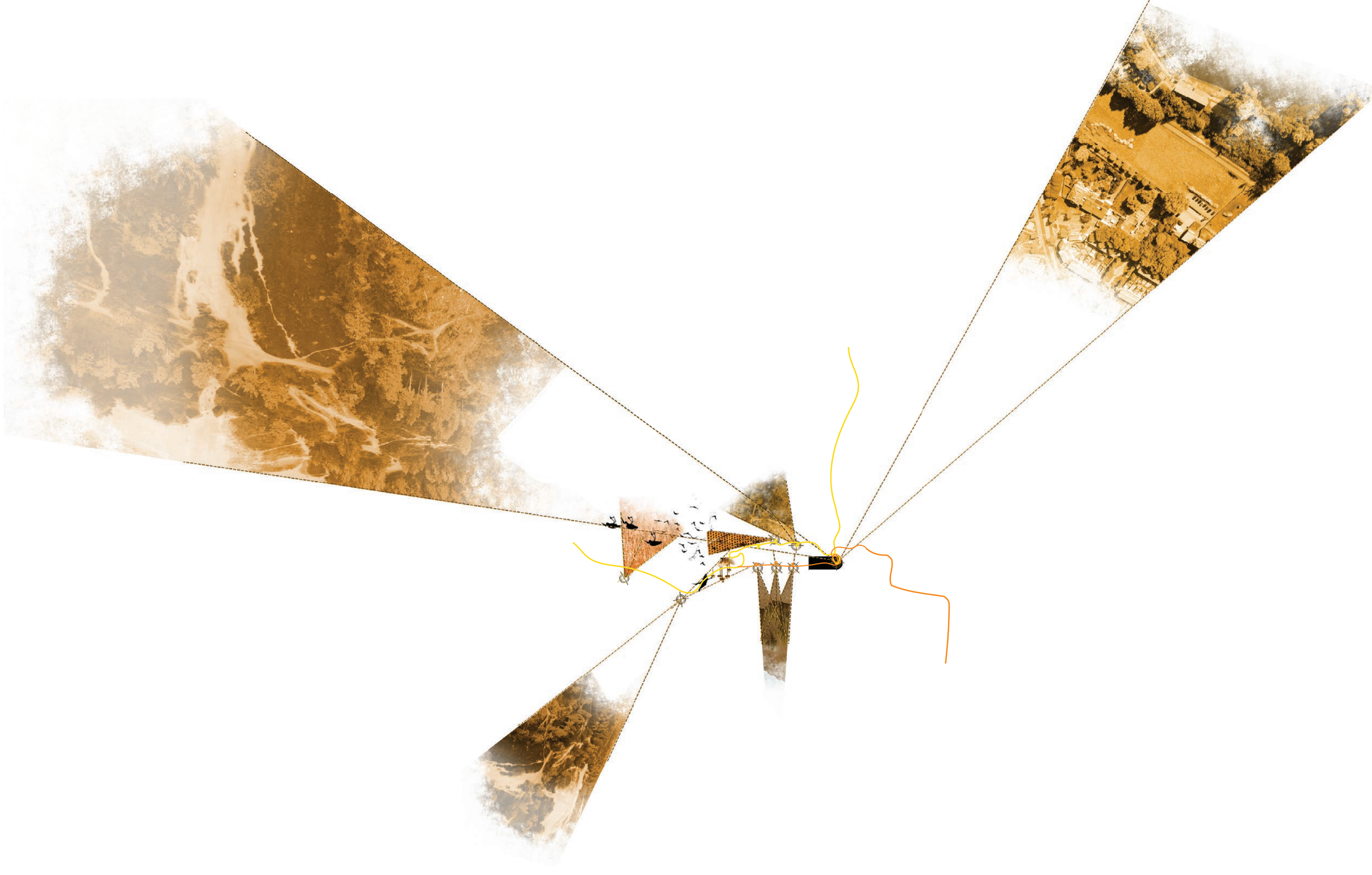
settle on man-made structures

steep sandy banks with perforrations

retaining wall-like structures with cracks

in proximity of water


Maria Christinawijk Estate
Brunsummerheide
Parking - Start for the visitors
Sibelco Expansion
Entrance to the Natural Park
Brunsummerheide
Parking - Start for the visitors
Heerlen

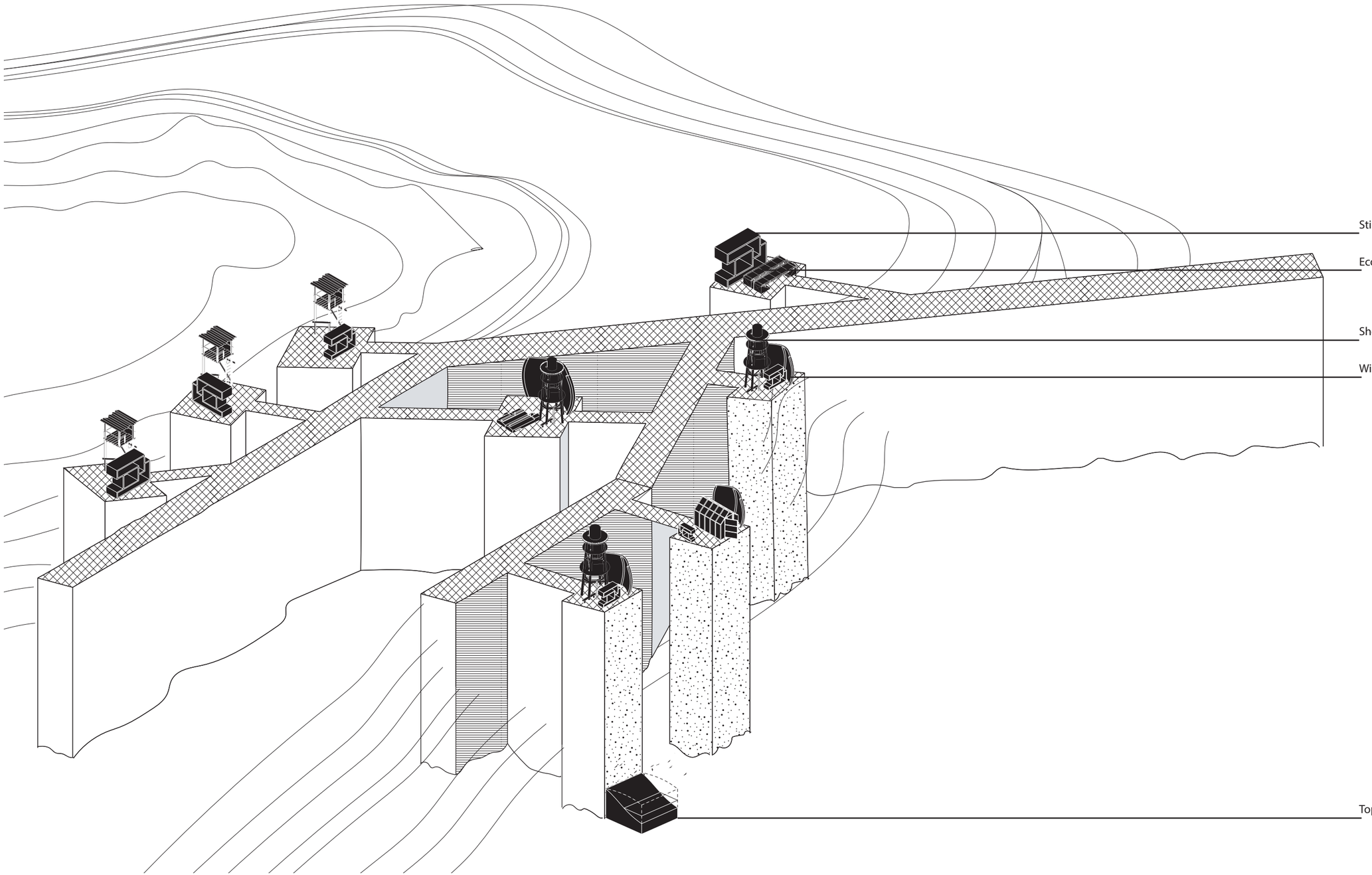


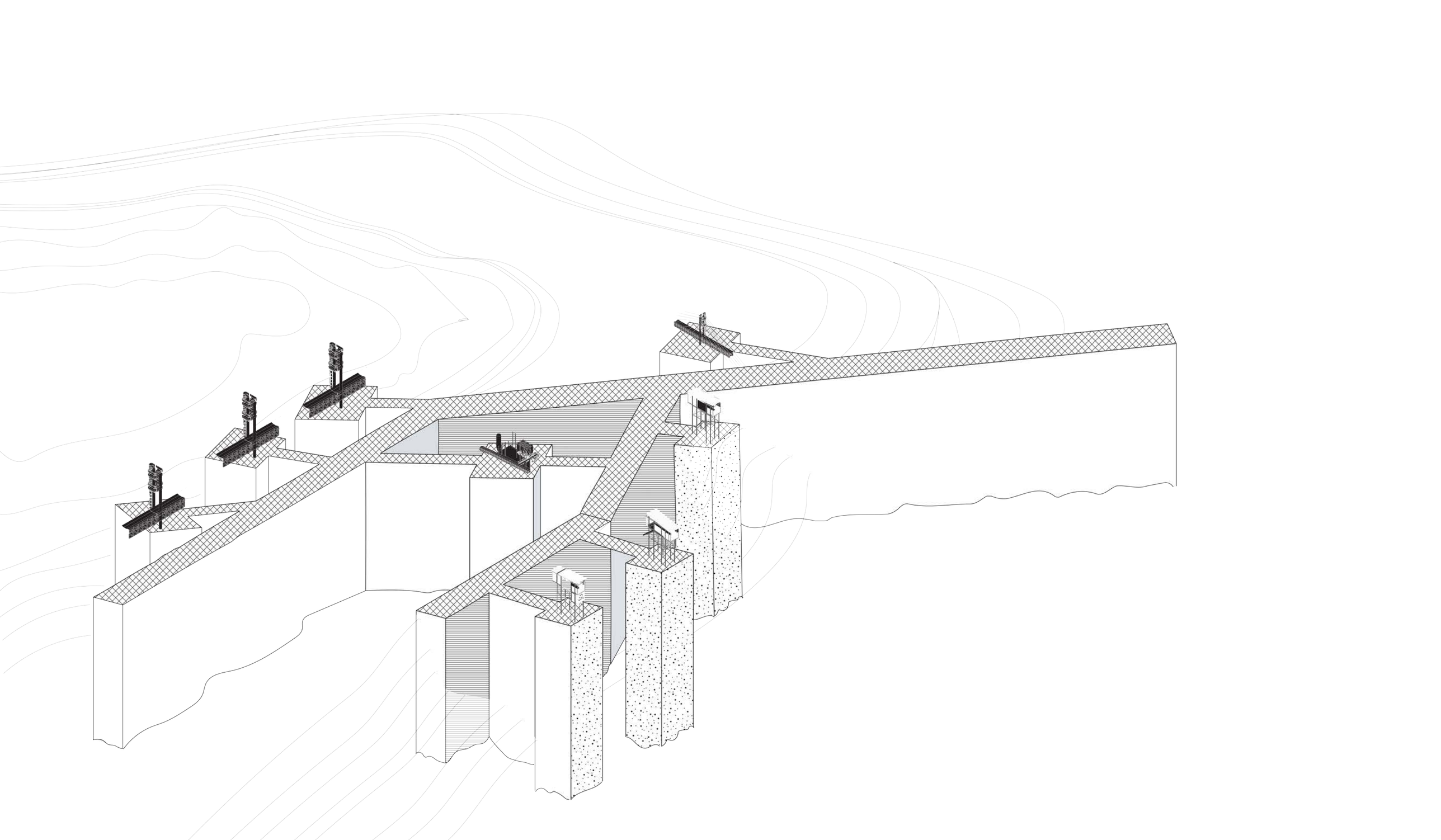
Watchtowers
Repurposed Infrustructure: Conveyor belt control boxes
View: Coal Mountain Monument

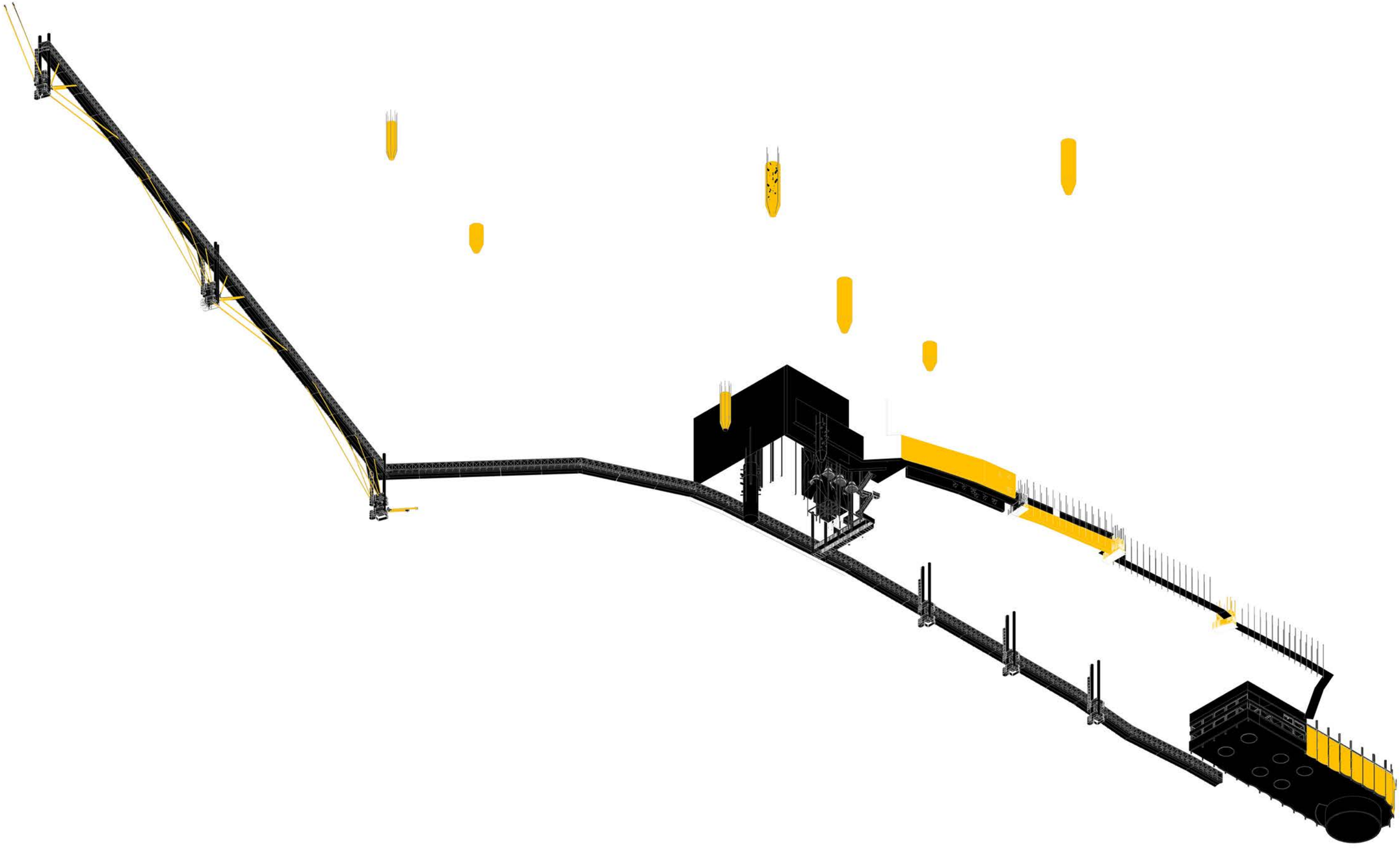
Retaining Wall
Repurposed Infrustructure: Silo cones into tensile structures
Habitat: vertical rhythm, high man-made platforms
Species: Storks

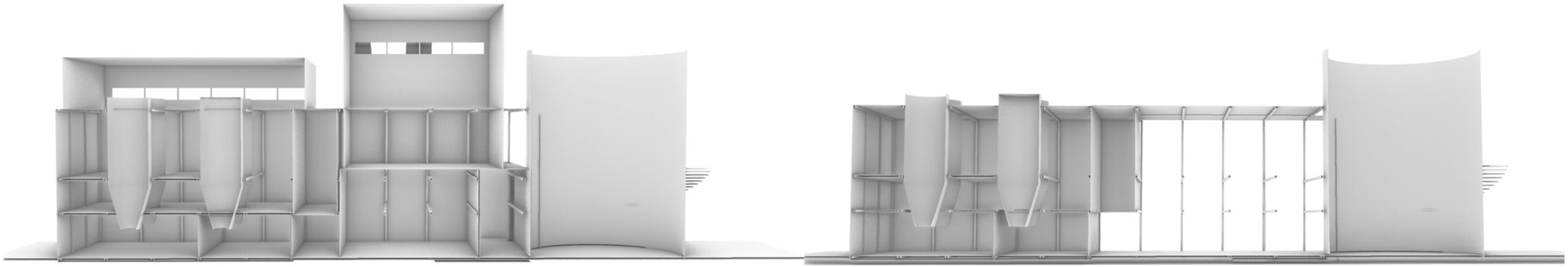
Bridge
Repurposed Infrustructure: Resupported Conveyor Belt
Habitat: Artificial Wetlands
Species: Northern Shoveler

Retaining Wall
Repurposed Infrustructure: Curved Cladding from Silos
Habitat: Protective Enclousures, Steep Cliff
Species: Swallows


Stiles - physical boundaries
Ecoduct - separating human acces to rebuilt a natural corridor
Shelter tower - Animal enclousures
Windbreak - creating novel climate for fauna and flora
retaining wall
natural banks
conveyor belt
Topography change - create new water reservoirs







2018

Fully operating mine

2022

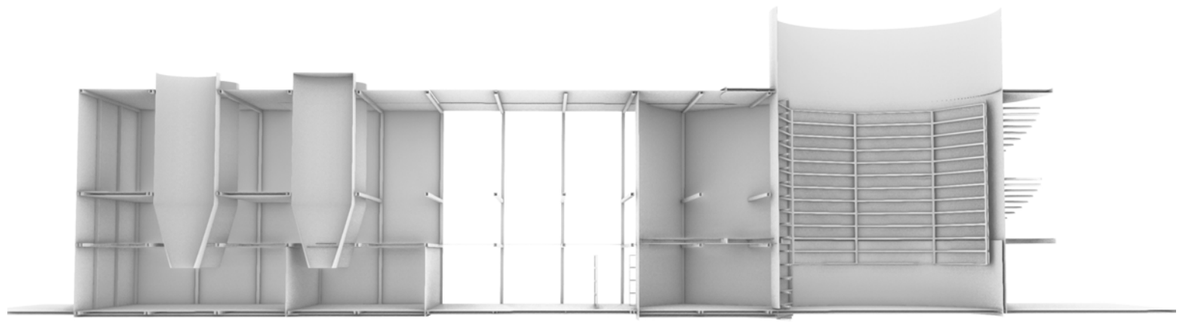
Reduced Capacity - mine

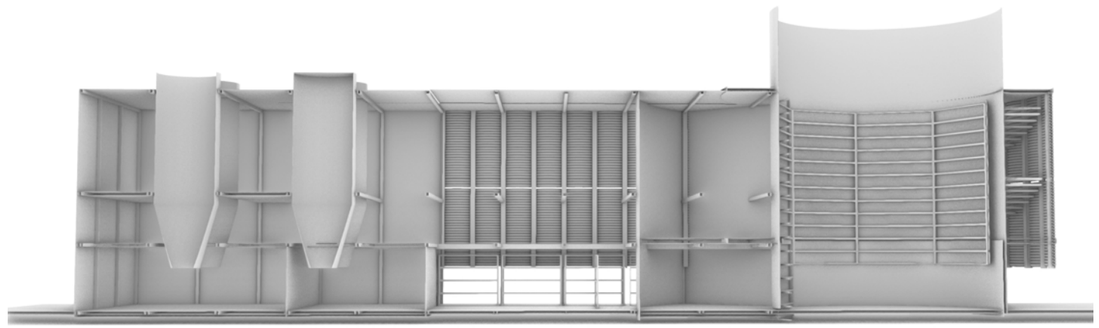
Dissassembly of the Grand Silo begins - corrougated steel sheeting taken apart

Tower available for visitors

Works on the Retaining wall begin

Reuse of the steel sheeting





2028

Industry

Reduced Capacity mine

Grand Silo Demolition continues

Silos distributed to blend into the vertical for-rest-like landscape

Recreation/Education

Tower available for visitors

Regular events in the lecture room

Novelty landscape - habitat towers

Visiting route Swallows becomes open

2030

Research

Science labs, residencies, conferences

Recreation/Education/Research

Tower available for visitors

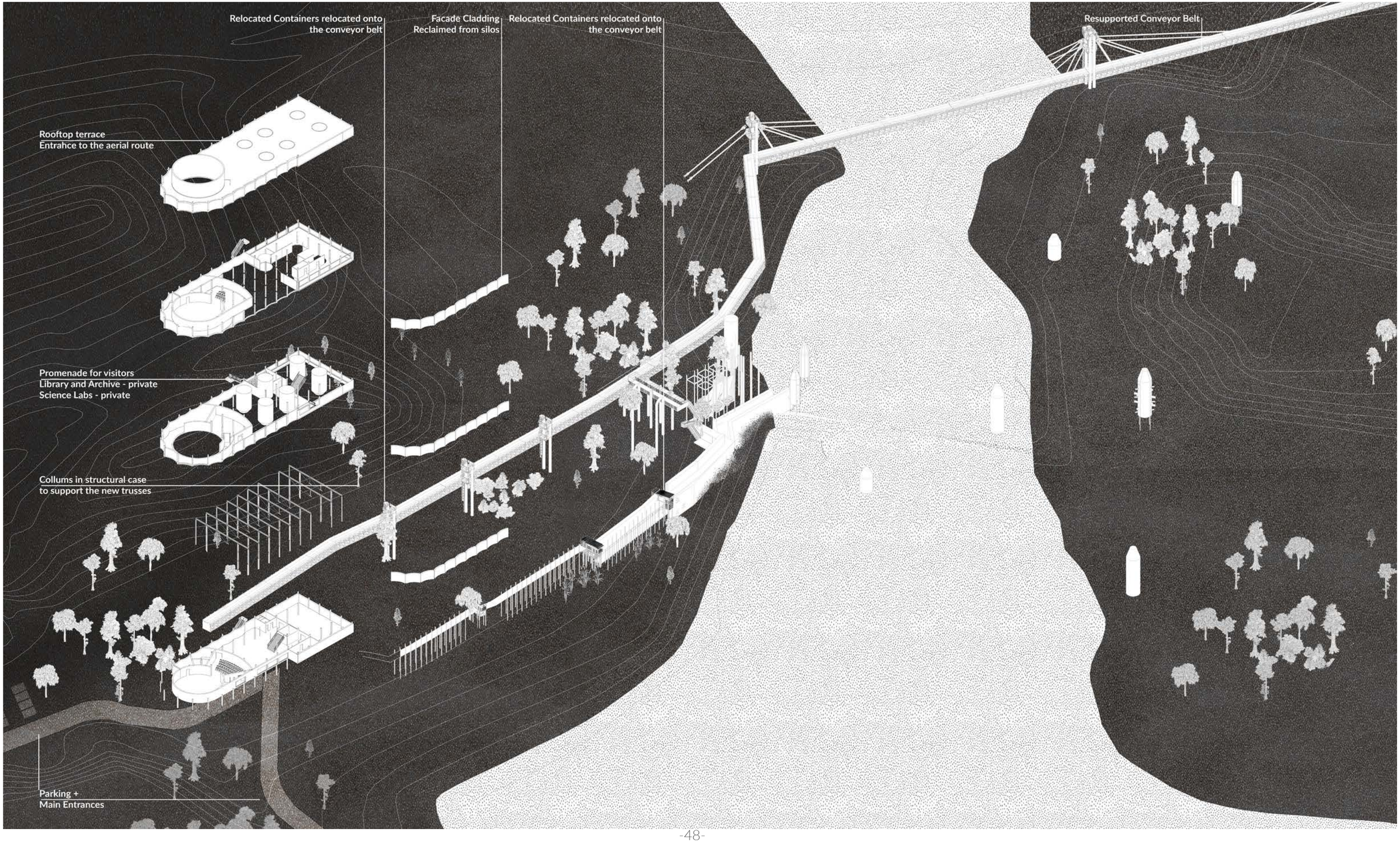
Regular events in the lecture room

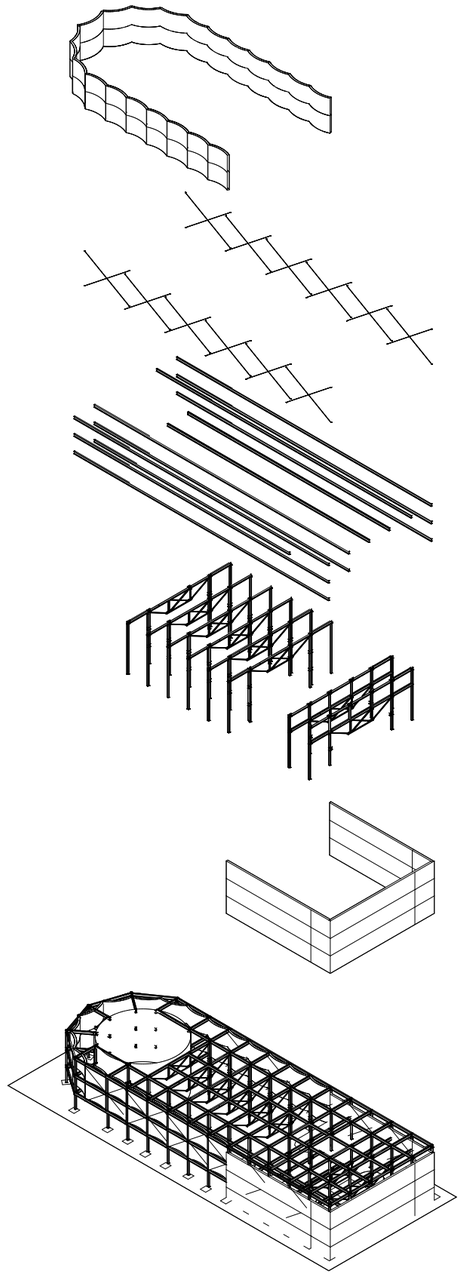
Novelty landscape - habitat towers

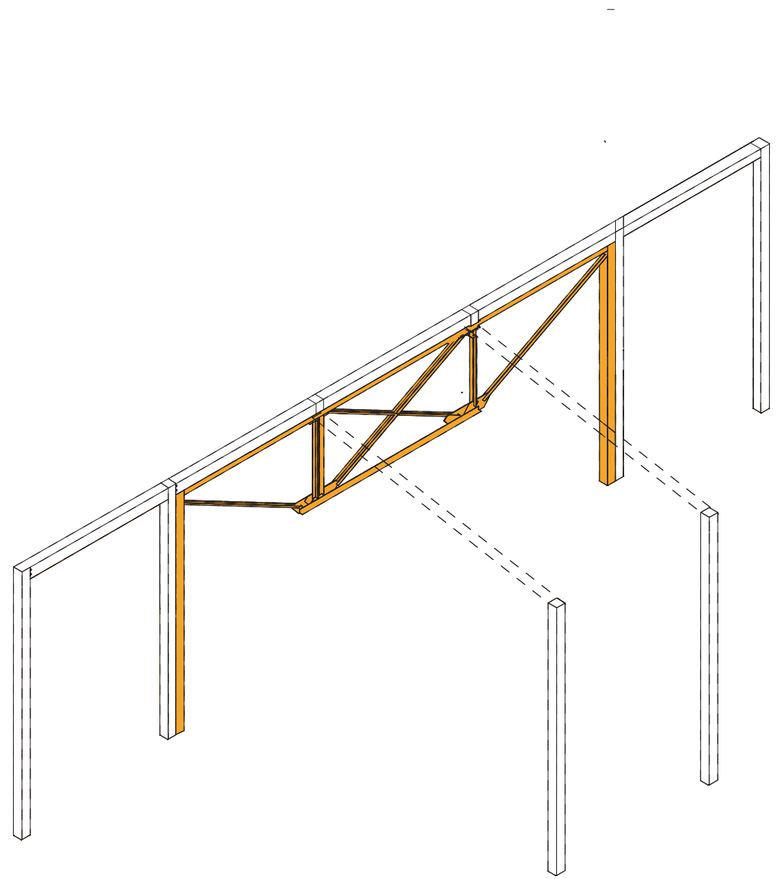
Visiting route with Swallows

Bridge intervention - opens the line to brussumerheide on the old conveyor belt

Bridge links 2 parts of the buidling


Relocated Containers relocated onto the conveyor belt
Facade Cladding Reclaimed from silos
Relocated Containers relocated onto the conveyor belt
Resupported Conveyor Belt
Rooftop terrace
Entrance to the aerial route
Promenade for visitors
Library and Archive - private
Science Labs - private
Collums in structural case to support the new trusses
Parking +
Main Entrances

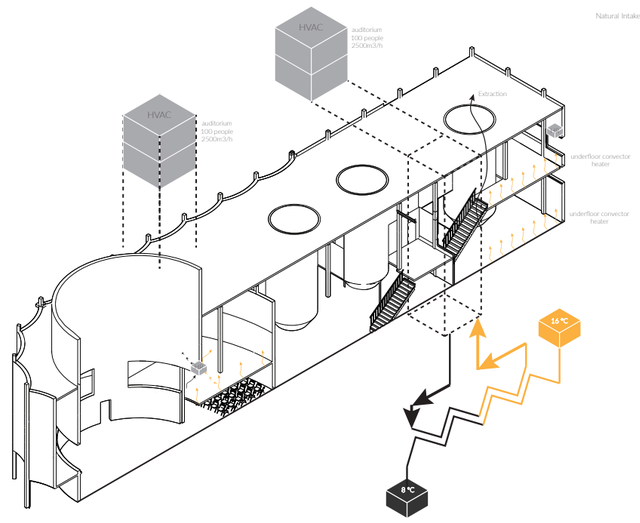




Portal Bracing

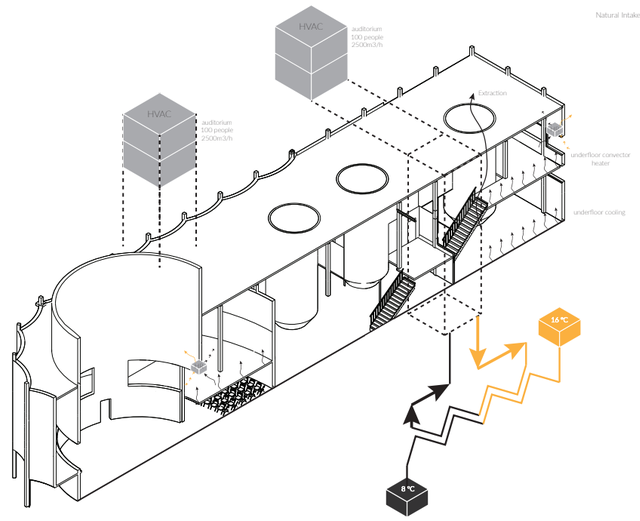
Winter

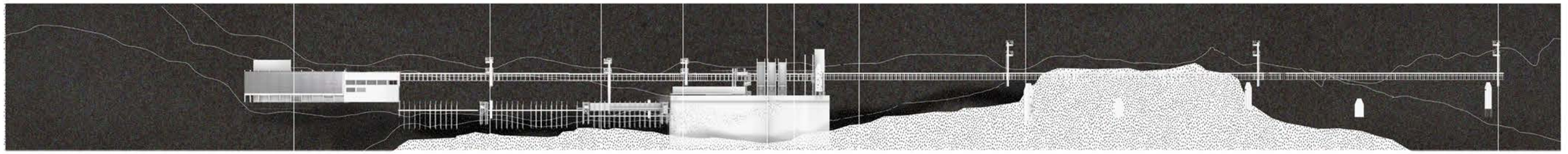
Natural Intake/ Machanical Extraction

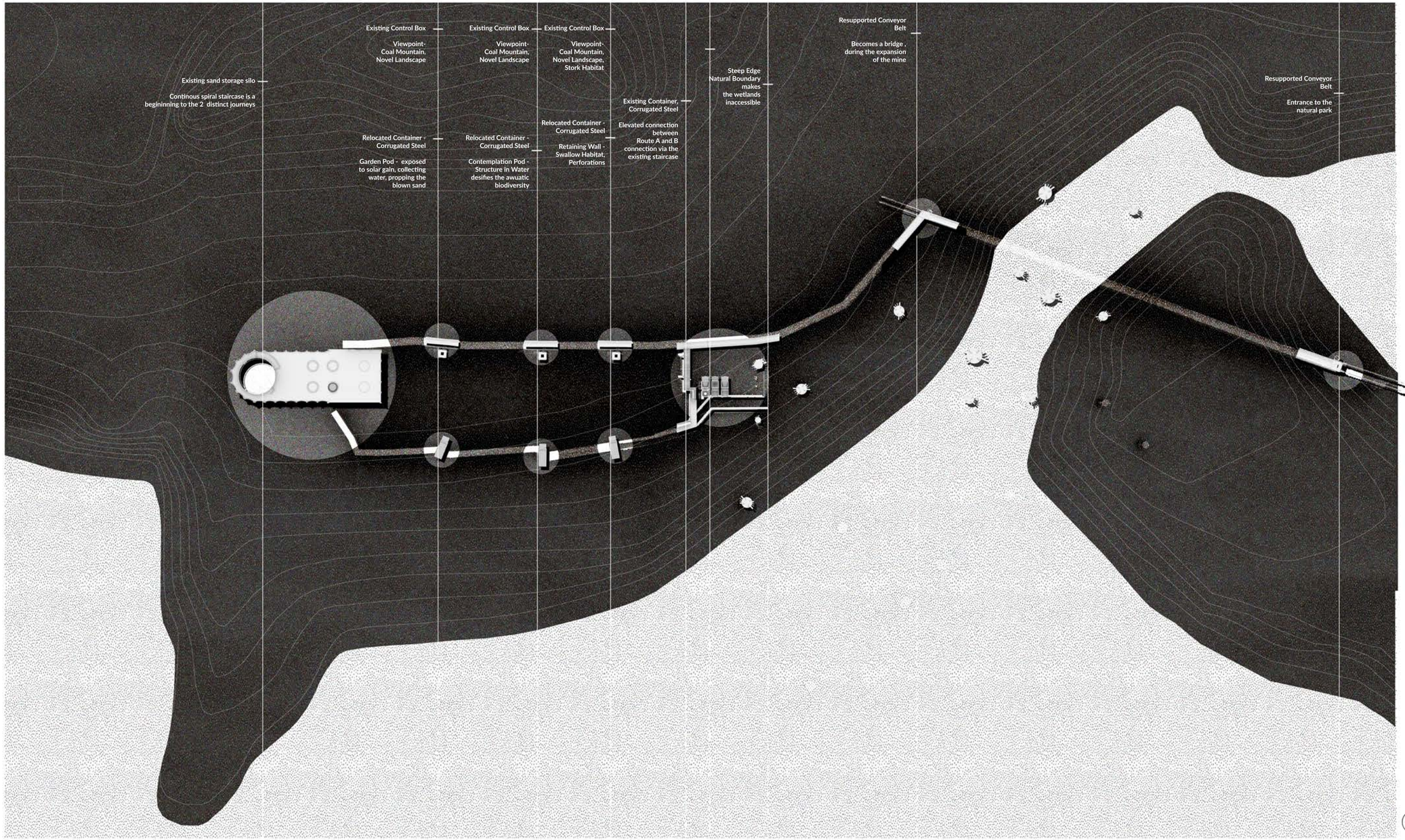


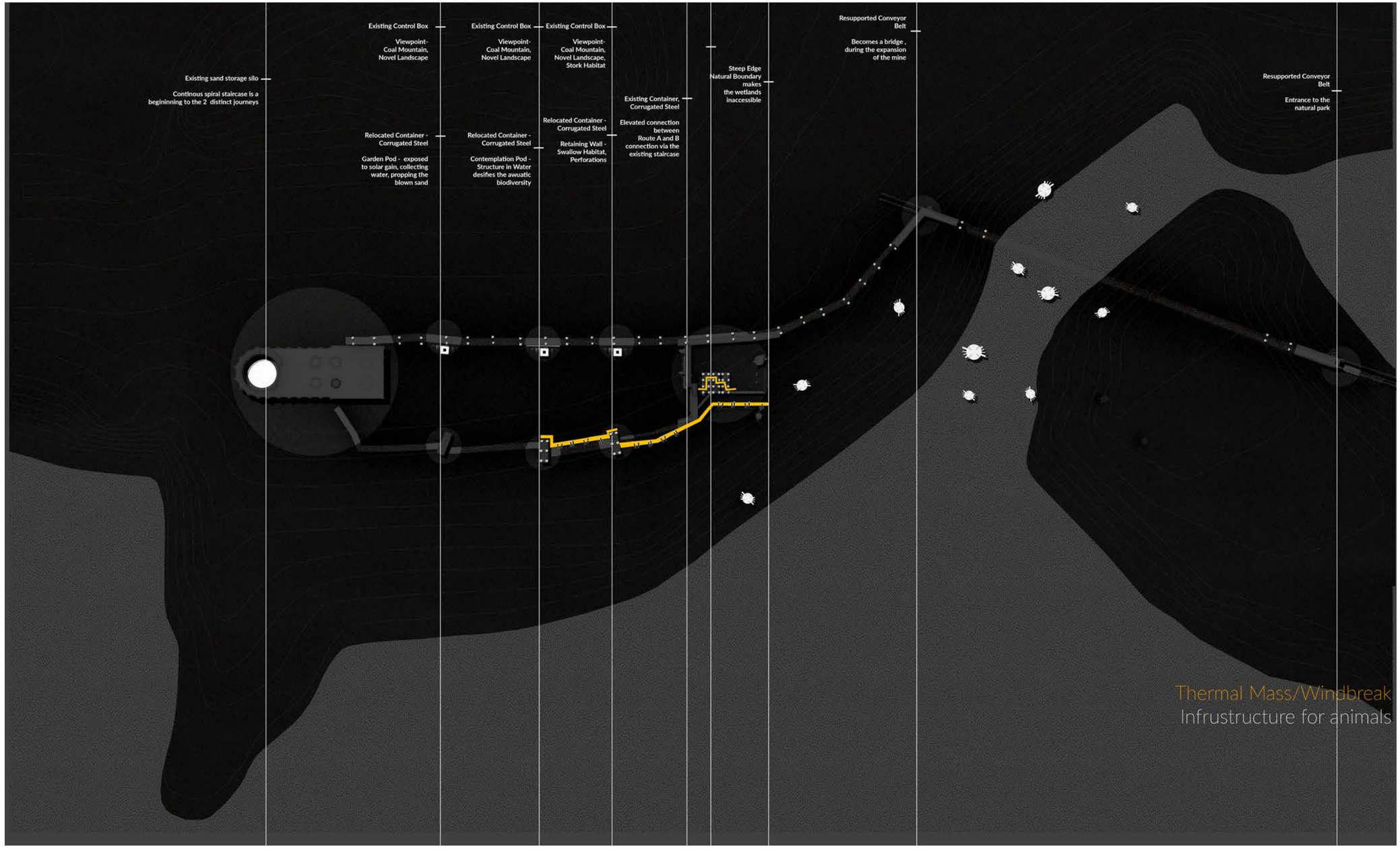
Summer

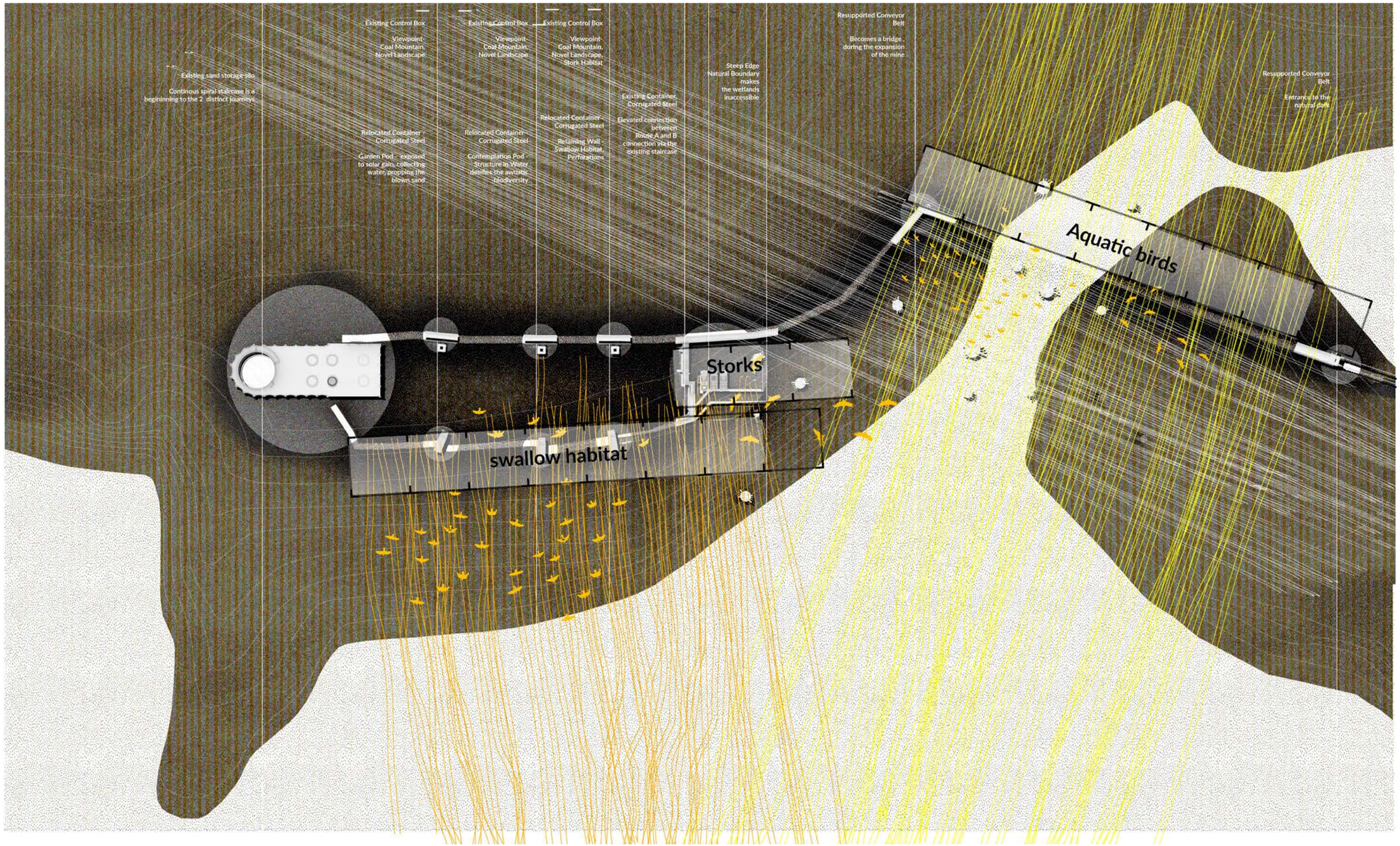
Natural Intake/ Machanical Extraction





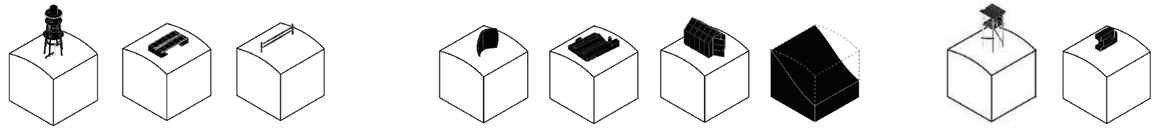

Existing sand storage silo
Continous spiral staircase is a begininning to the 2 distinct journeys
Existing Control Box
Viewpoint- Coal Mountain, Novel Landscape
Relocated Container - Corrugated Steel
Garden Pod - exposed to solar gain, collecting water, propping the blown sand
Existing Control Box
Viewpoint- Coal Mountain, Novel Landscape
Relocated Container - Corrugated Steel
Contemplation Pod - Structure in Water desifies the awuatic biodiversity
Existing Control Box
Viewpoint- Coal Mountain, Novel Landscape, Stork Habitat
Relocated Container - Corrugated Steel
Retaining Wall - Swallow Habitat, Perforations
Existing Container, Corrugated Steel
Elevated connection between Route A and B connection via the existing staircase
Steep Edge Natural Boundary makes the wetlands inaccessible
Resupported Conveyor Belt
Becomes a bridge , during the expansion of the mine
Resupported Conveyor Belt
Entrance to the natural park

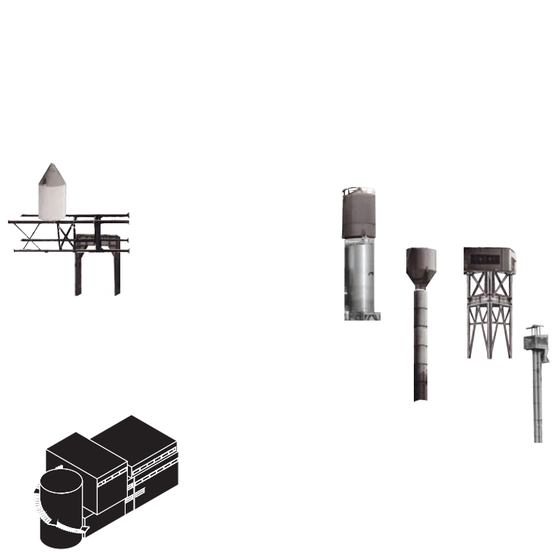

Existing Control Box
Viewpoint-
Coal Mountain,
Novel Landscape
Existing sand storage silo
Continous spiral staircase is a
begininning to the 2 distinct journeys
Relocated Container -
Corrugated Steel
Garden Pod - exposed
to solar gain, collecting
water, propping the
blown sand
Existing Control Box
Viewpoint-
Coal Mountain,
Novel Landscape
Relocated Container -
Corrugated Steel
Contemplation Pod -
Structure in Water
desifies the awuatic
biodiversity
Existing Control Box
Viewpoint-
Coal Mountain,
Novel Landscape,
Stork Habitat
Relocated Container -
Corrugated Steel
Retaining Wall -
Swallow Habitat,
Perforations
Existing Container,
Corrugated Steel
Elevated connection
between
Route A and B
connection via the
existing staircase
Steep Edge
Natural Boundary
makes
the wetlands
inaccessible
Resupported Conveyor
Belt
Becomes a bridge ,
during the expansion
of the mine
Resupported Conveyor
Belt
Entrance to the
natural park
Thermal Mass/Windbreak
Infrustructure for animals


Existing sand storage silo
Continous spiral staircase is a begininning to the 2 distinct journeys
Existing Control Box
Viewpoint- Coal Mountain, Novel Landscape
Relocated Container- Corrugated Steel
Garden Pod - exposed to solar gain, collecting water, propping the blown sand
Existing Control Box
Viewpoint- Coal Mountain, Novel Landscape
Relocated Container- Corrugated Steel
Contemplation Pod - Structure in Water Reinfest the aquatic biodiversity
Existing Control Box
Viewpoint- Coal Mountain, Novel Landscape, Stork Habitat
Relocated Container- Corrugated Steel
Retaining Wall - Swallow Habitat, Perforations
Existing Container, Corrugated Steel
Elevated connection between Route A and B connection via the existing staircase
Steep Edge Natural Boundary makes the wetlands inaccessible
Resupported Conveyor Belt
Becomes a bridge , during the expansion of the mine
Storks
swallow habitat
Aquatic birds
Resupported Conveyor Belt
Entrance to the natural park

Satellites

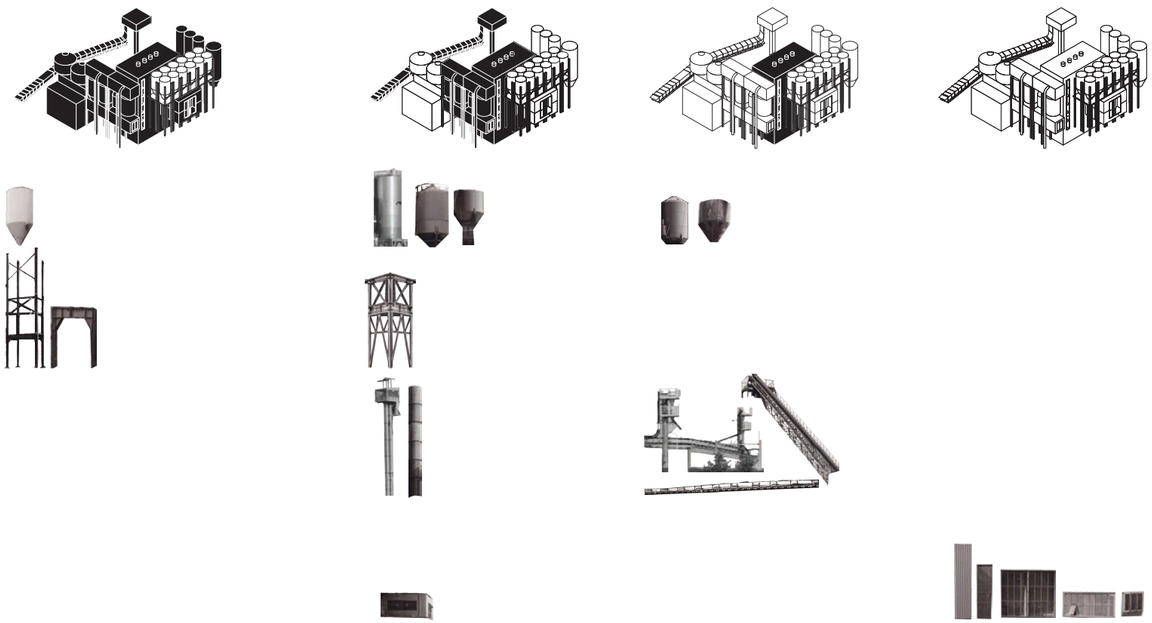
recomposition





left to nature - now

ihabited - 2050

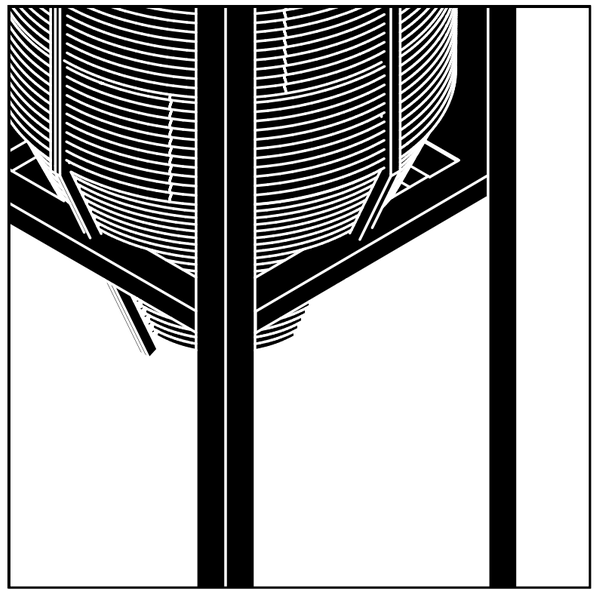


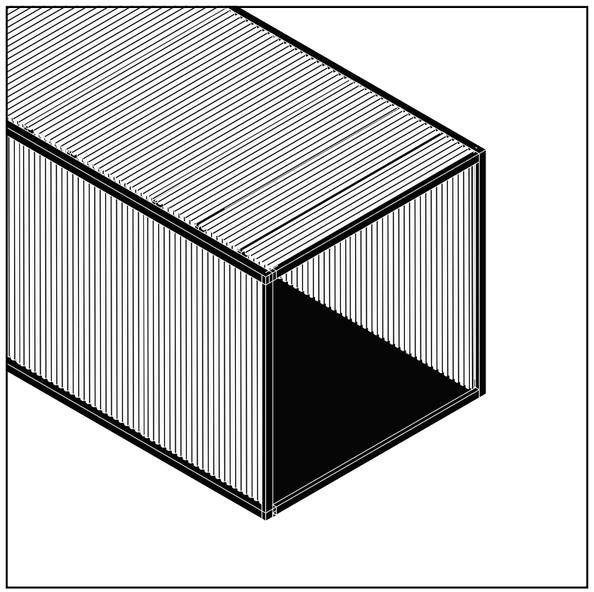
decomposition

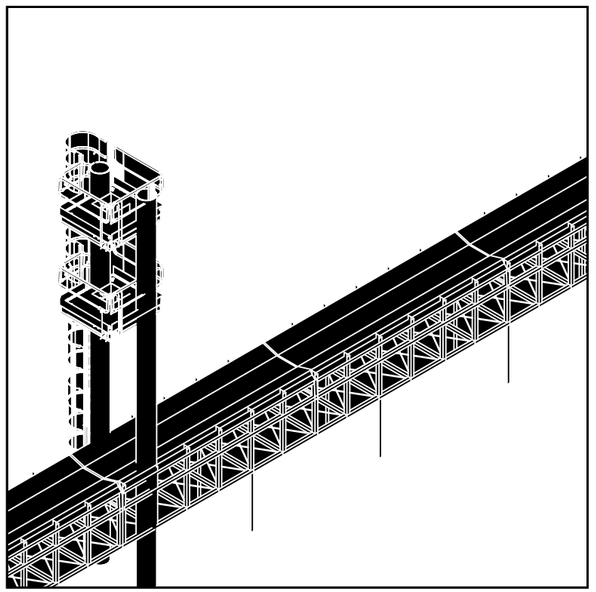
Organised demolition

Today

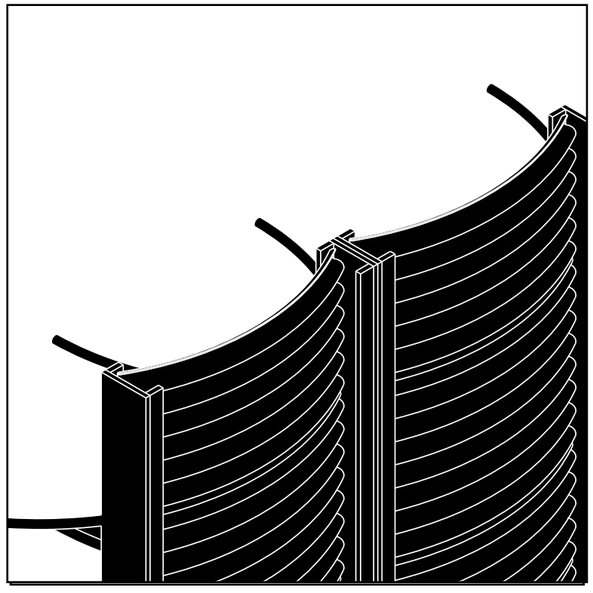
3 Elements of recycled infrustructure are to become a new layer of landscape

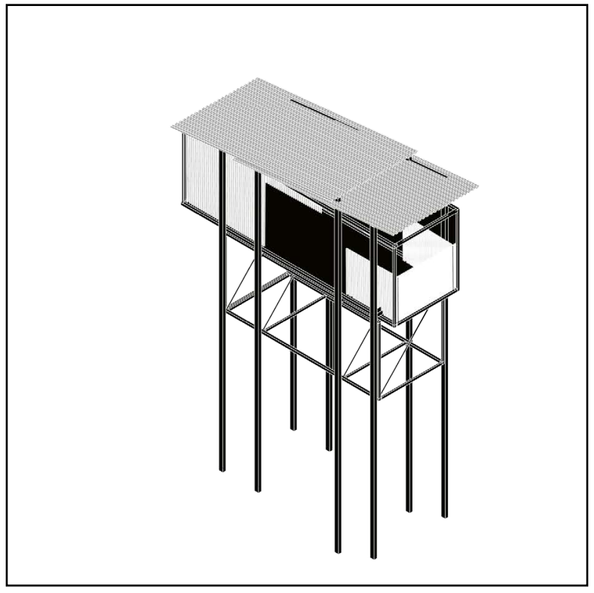


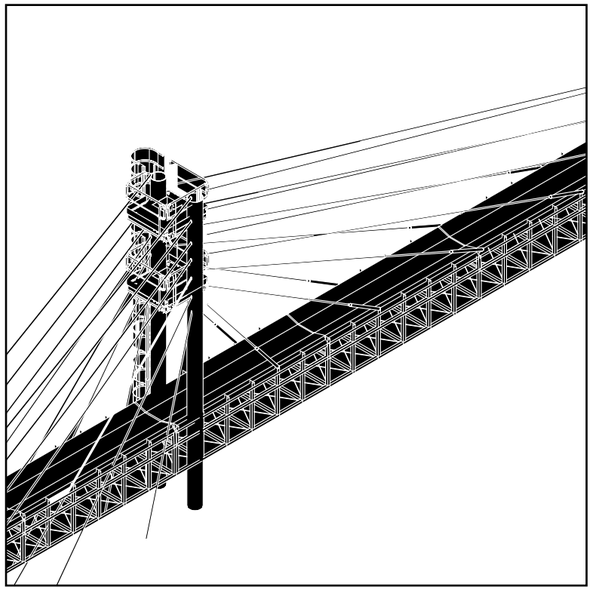




3 Elements of recycled infrustructure are to become a new layer of landscape

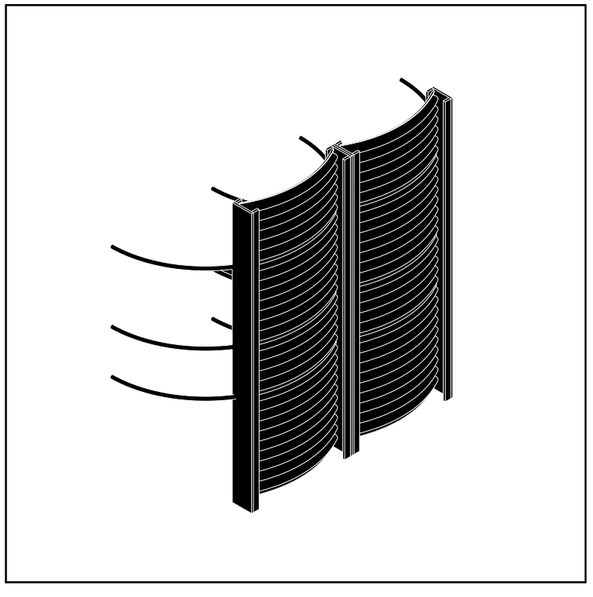


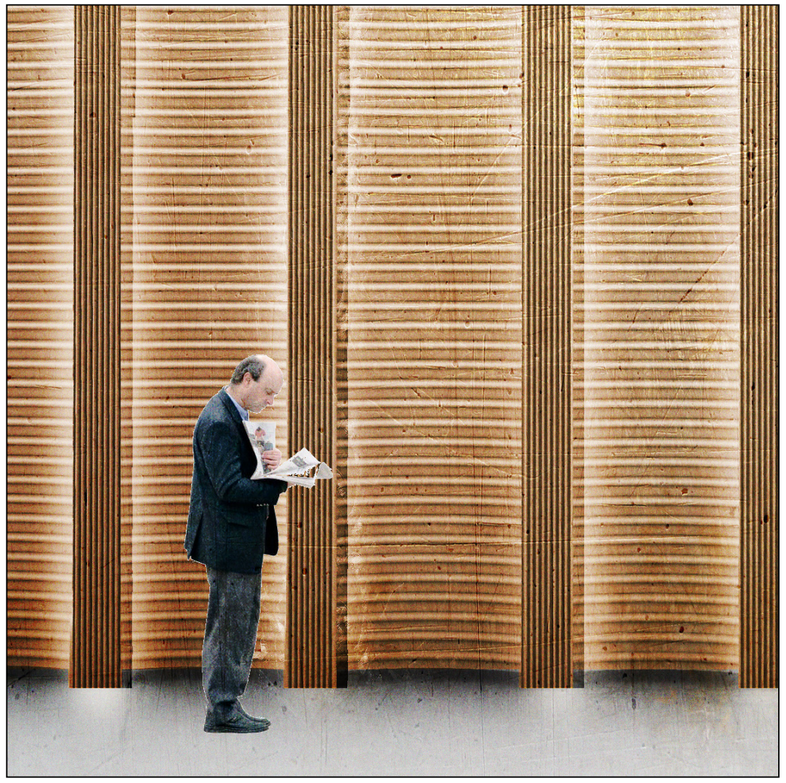


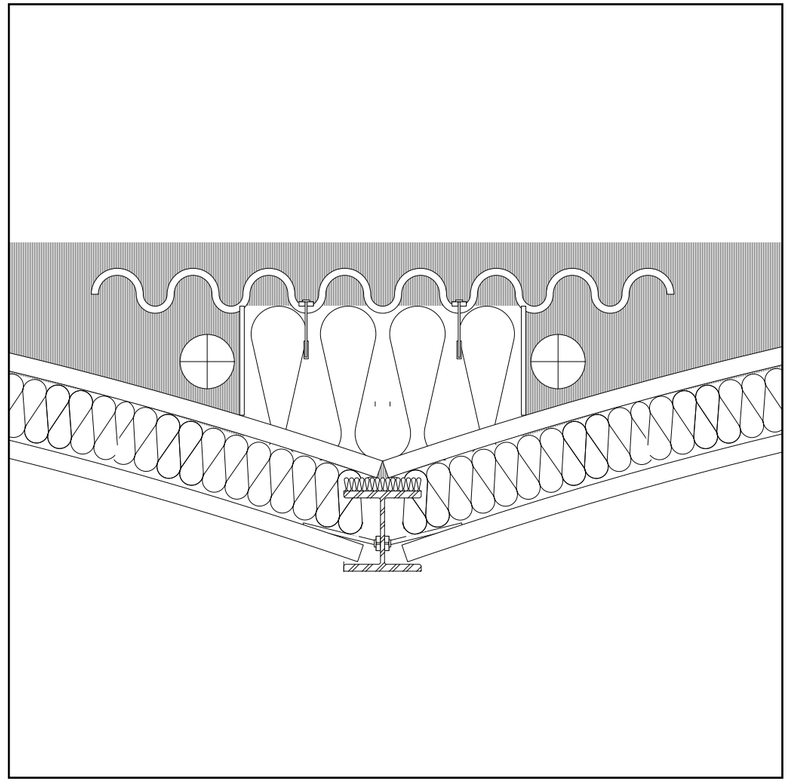


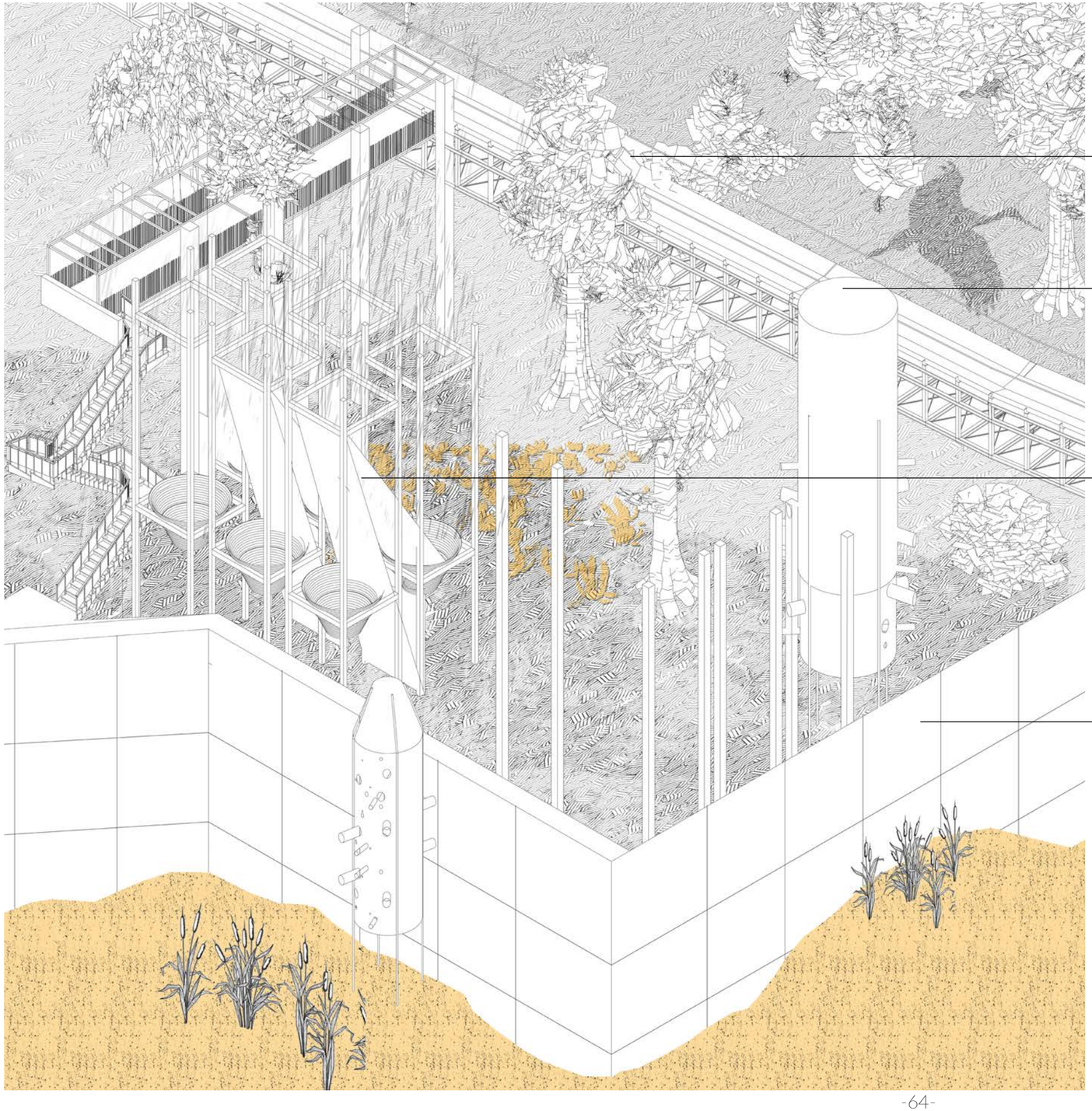
2025

Reapproperiation into a new architectural Device







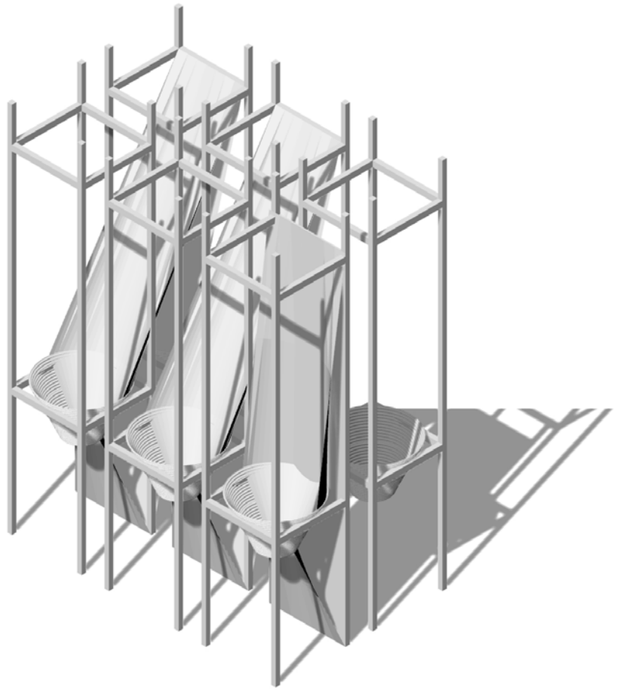


Repurposed conveyor belt - elevated walkway

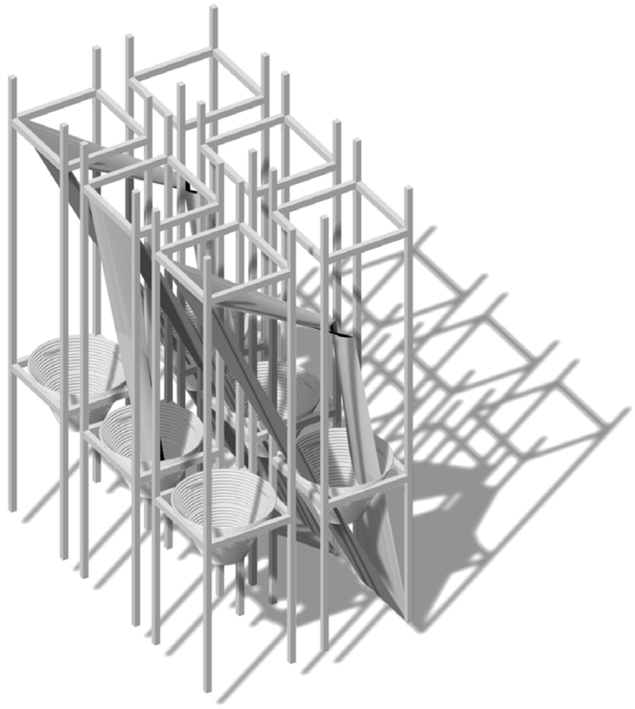
Silos reupurposed into habitat towers - Punctured tunnels provide animal hideaways
Tall structures mock stork habitats

Canopy structure supported by the pieces remaining from the silo demolition
Tensioned EFTE shaped to gather water and protect the young vegetation

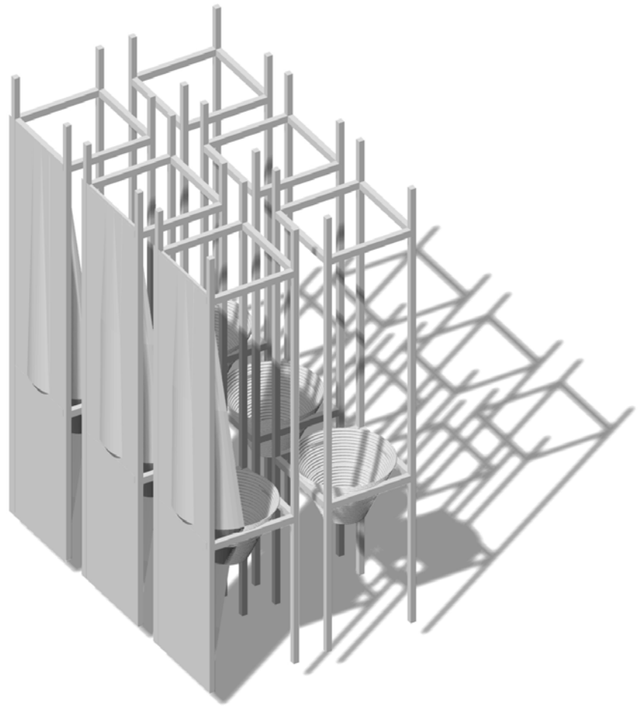
Retaining wall - from the existing creates a steep bank



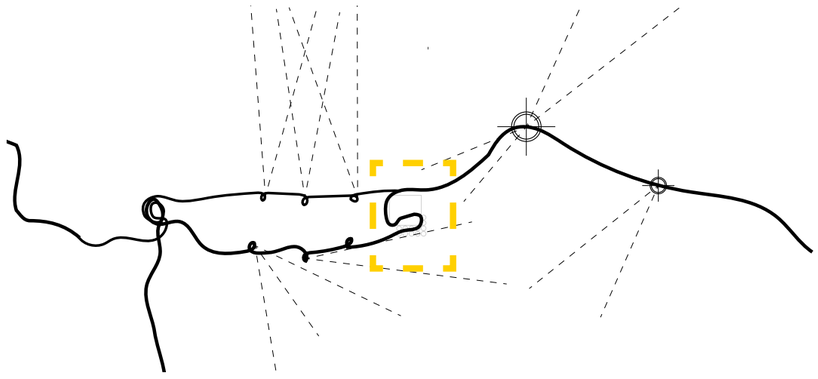
2022 - Garden
windbreak/water collector

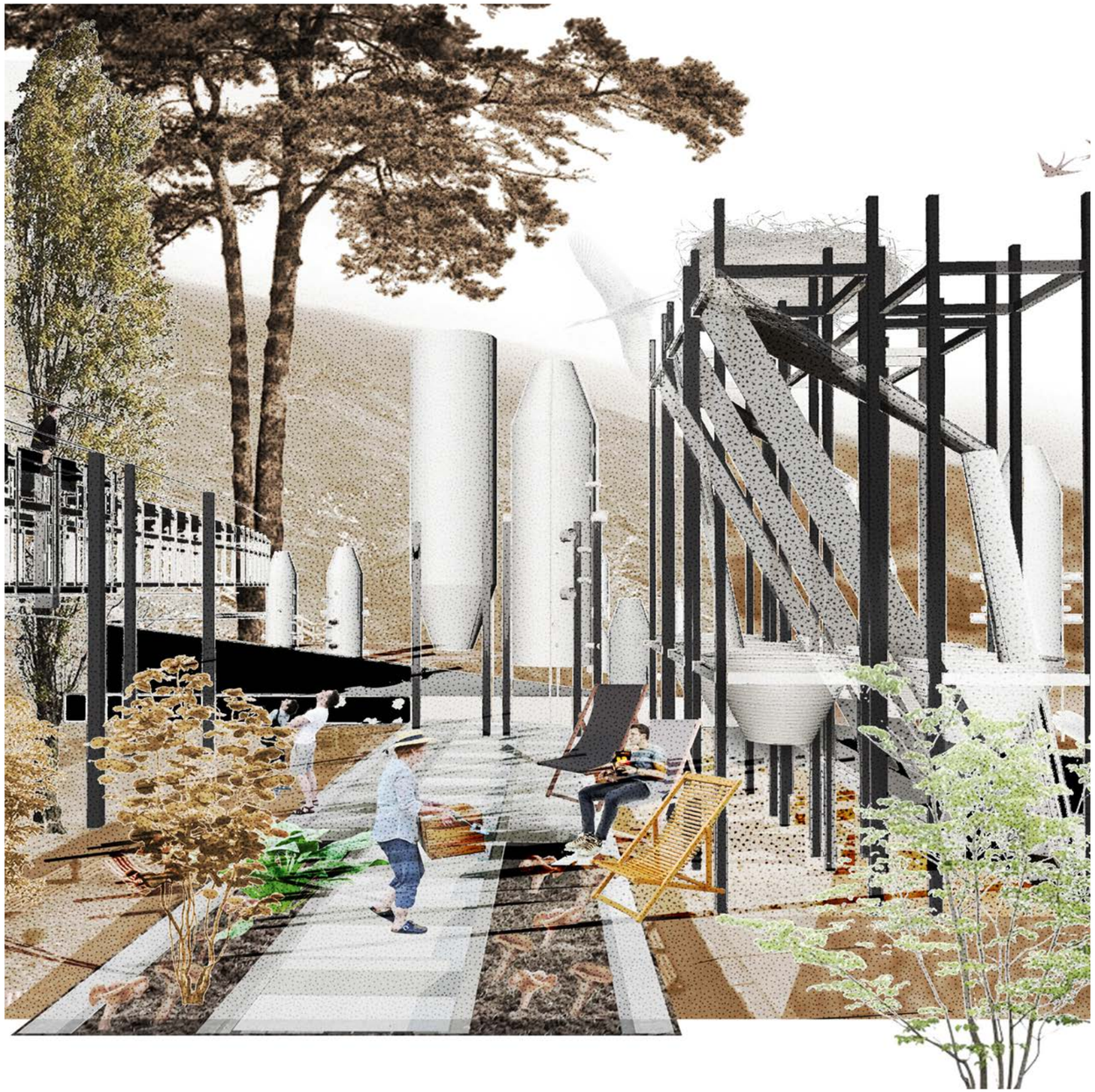


2028 - Canopy
solar shading

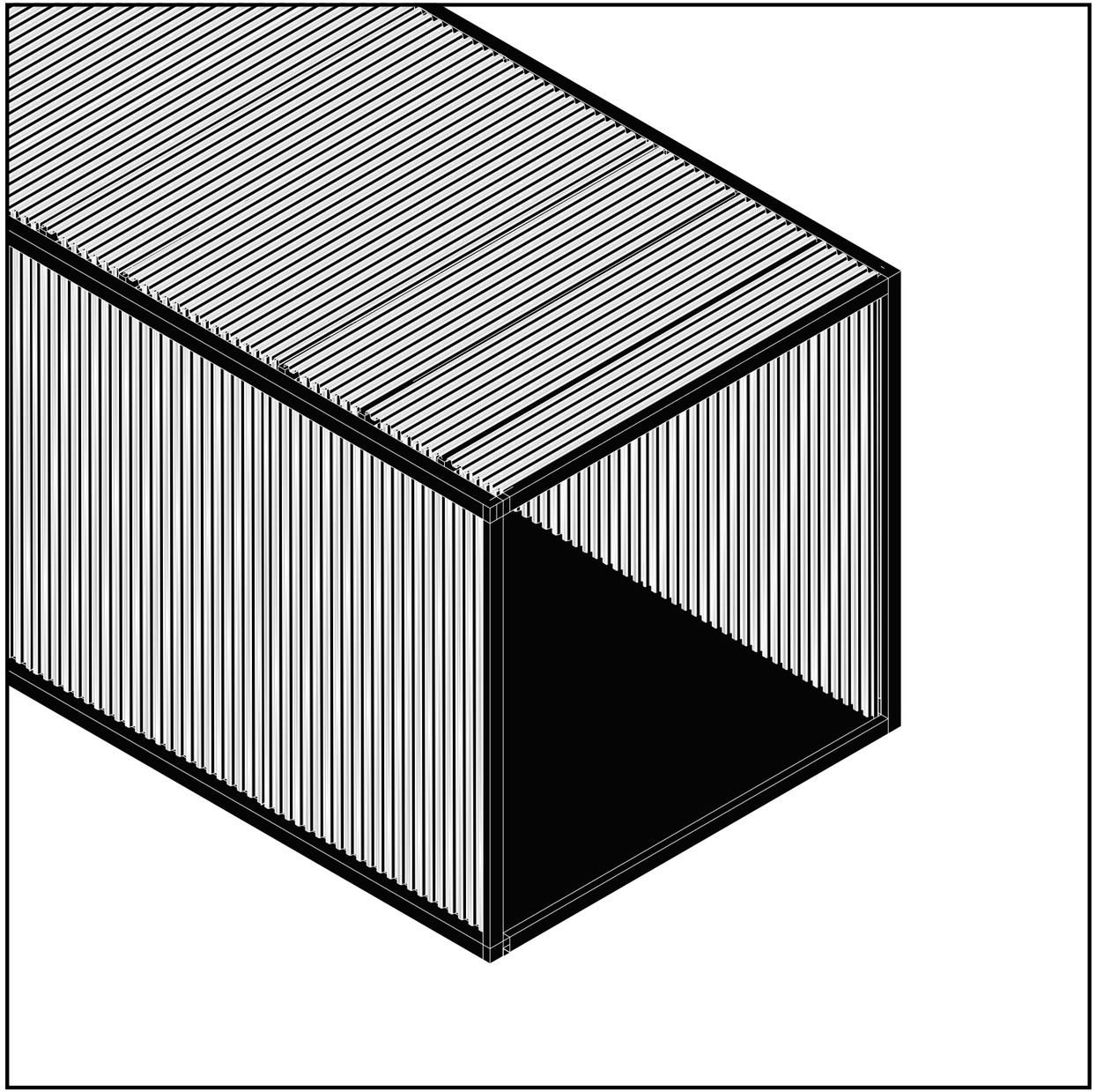


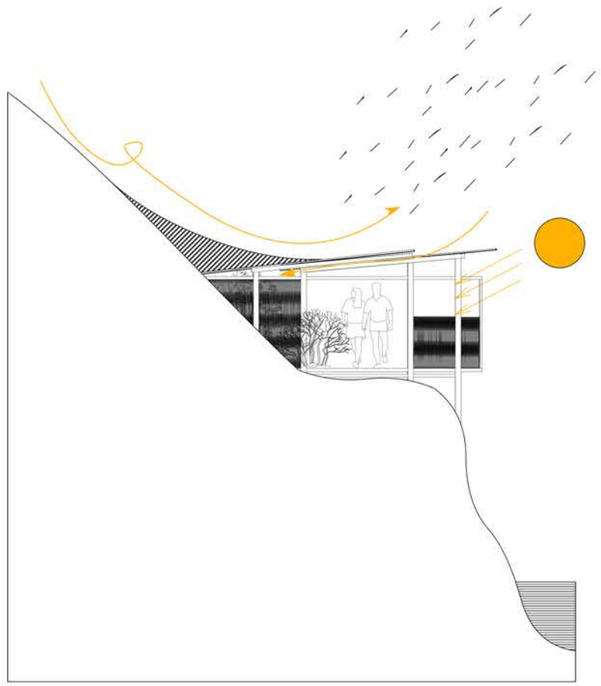
2030 - Open- Air Cinema
screening



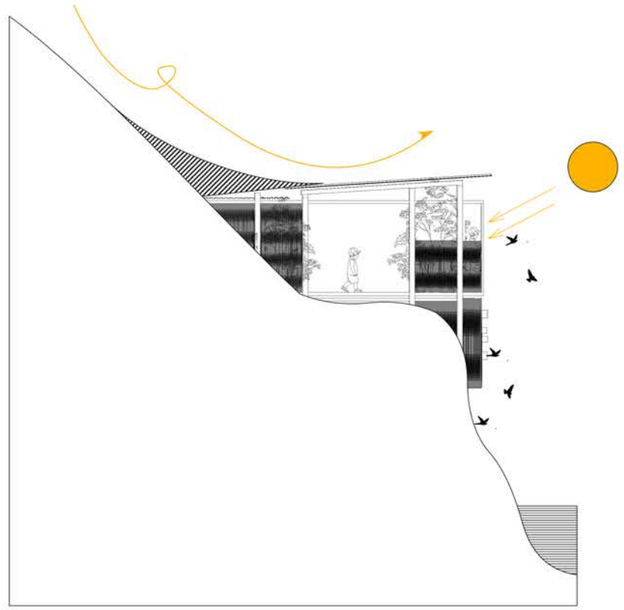


Canopy
solar shading

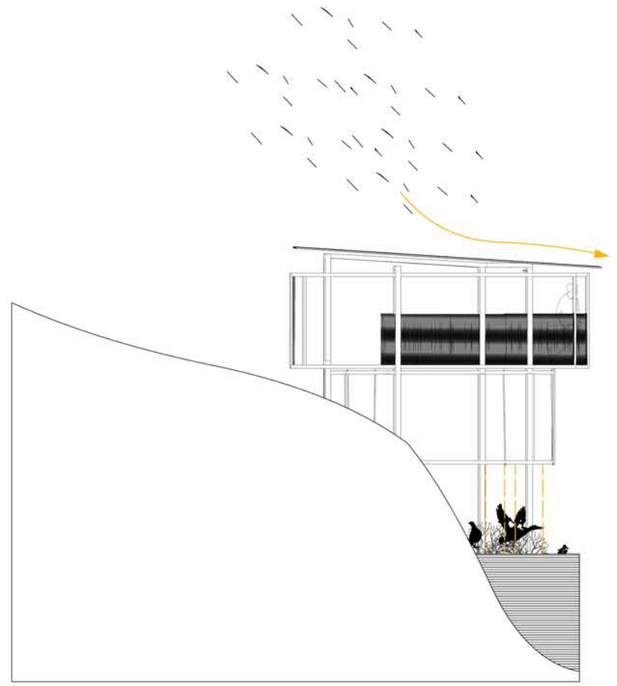




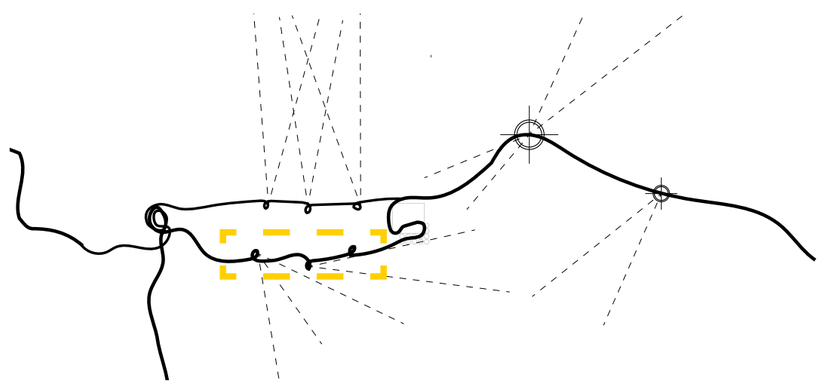
Garden
windbreak/water collector/ solar gain

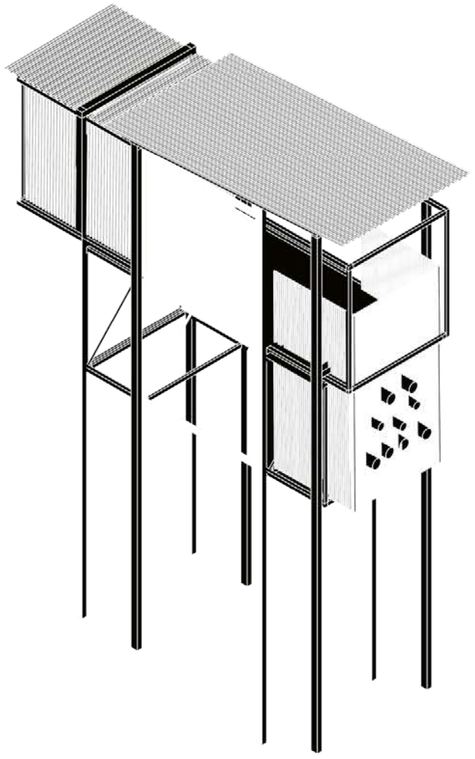


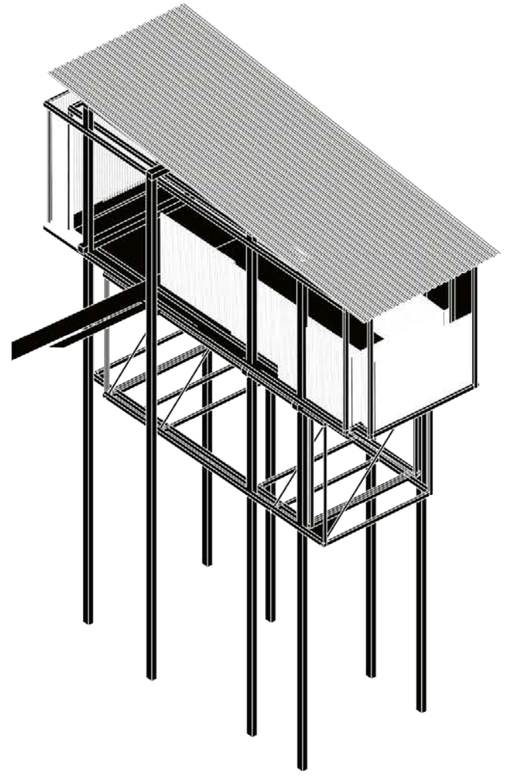
Enclosure
Swallow Habitat

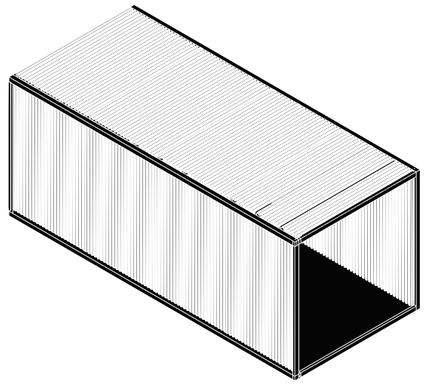


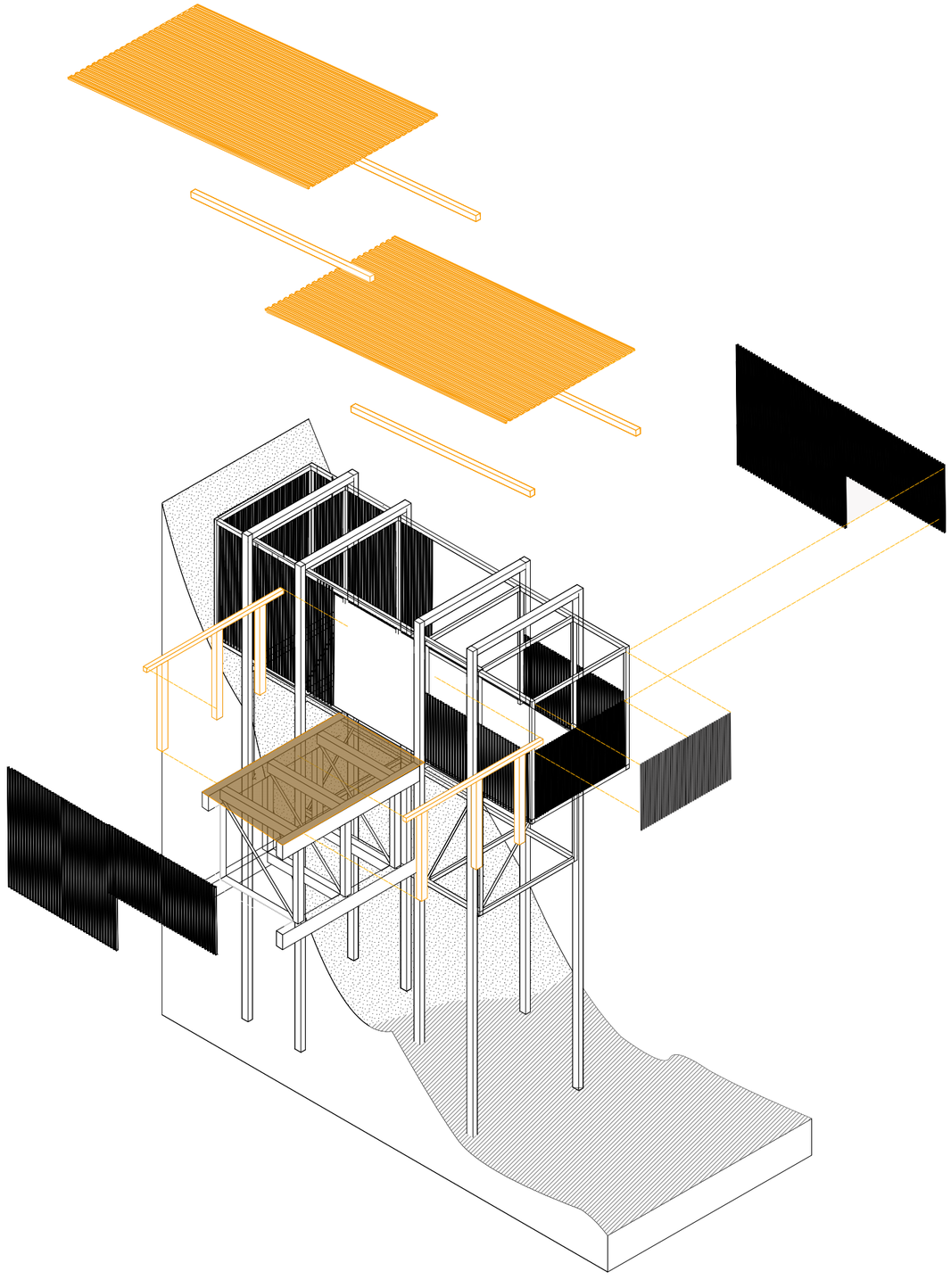
Water Habitat
Reeds intensified with steel
collumns

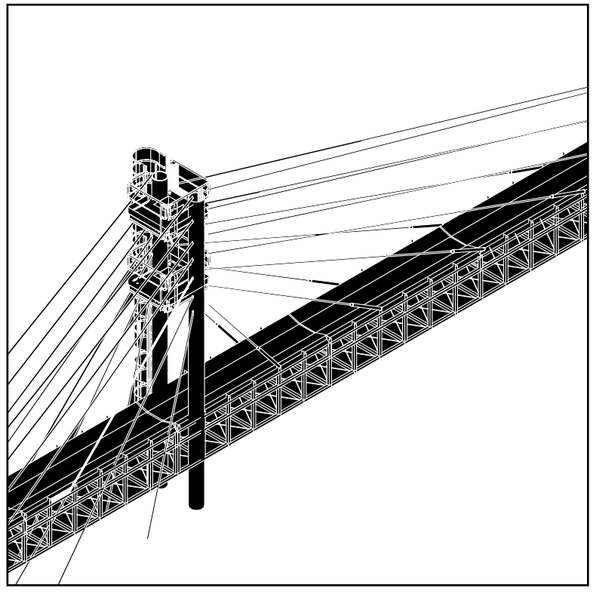


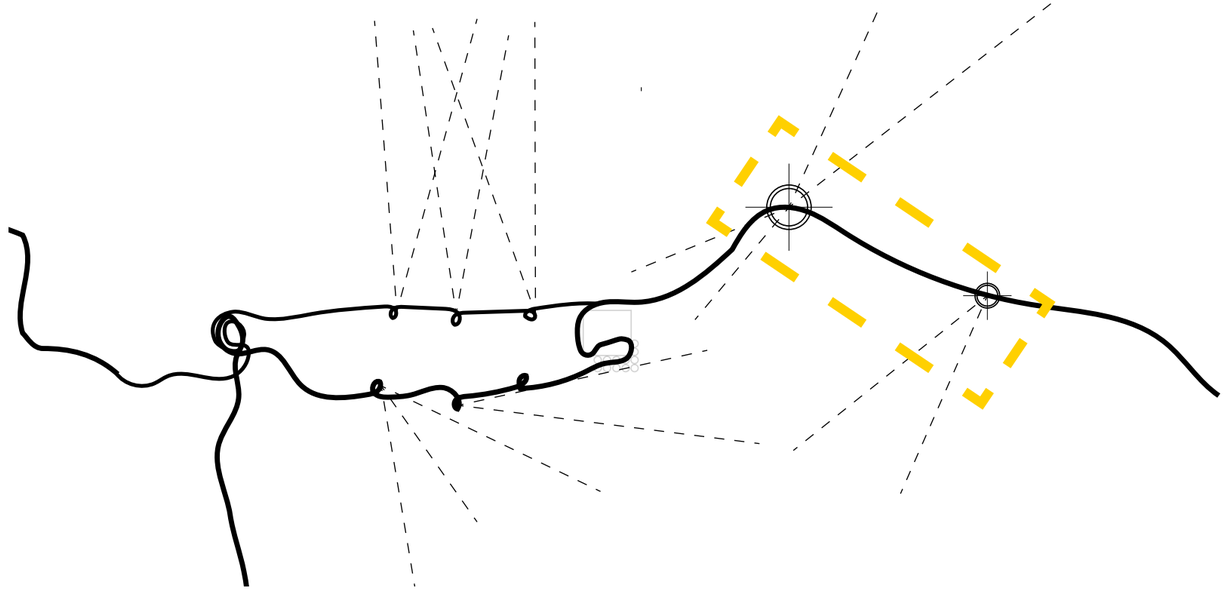


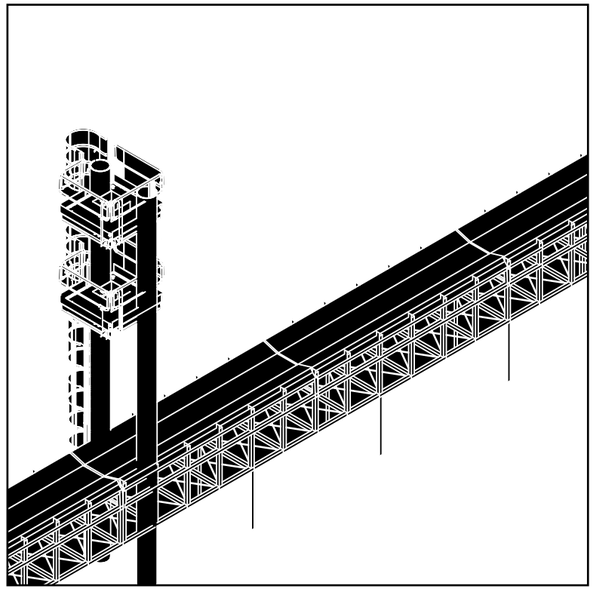


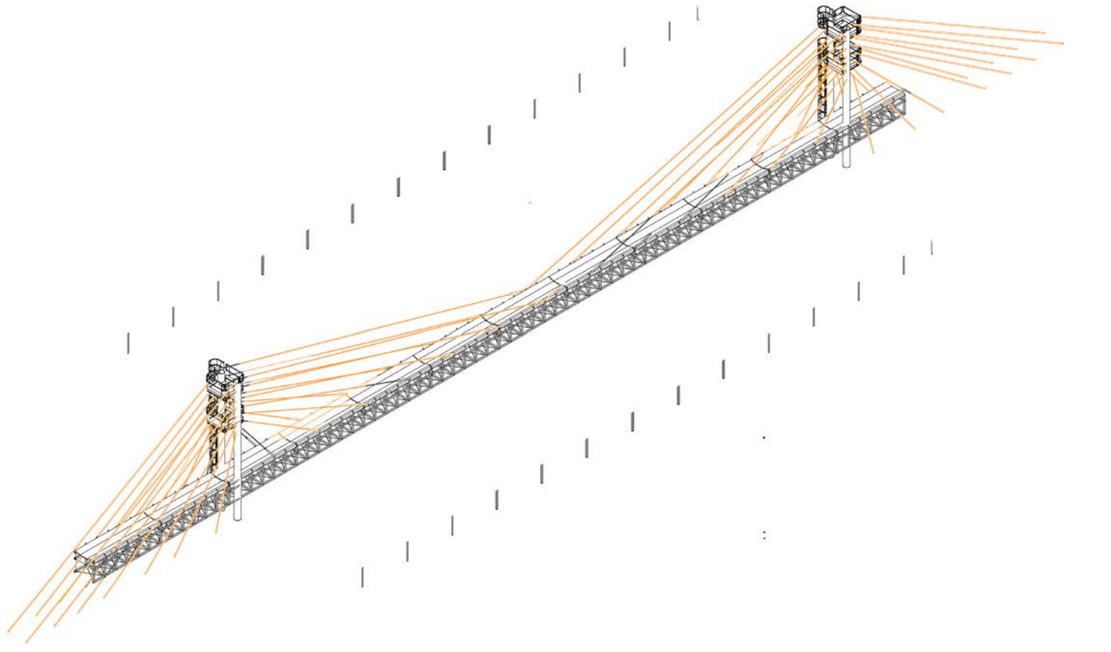








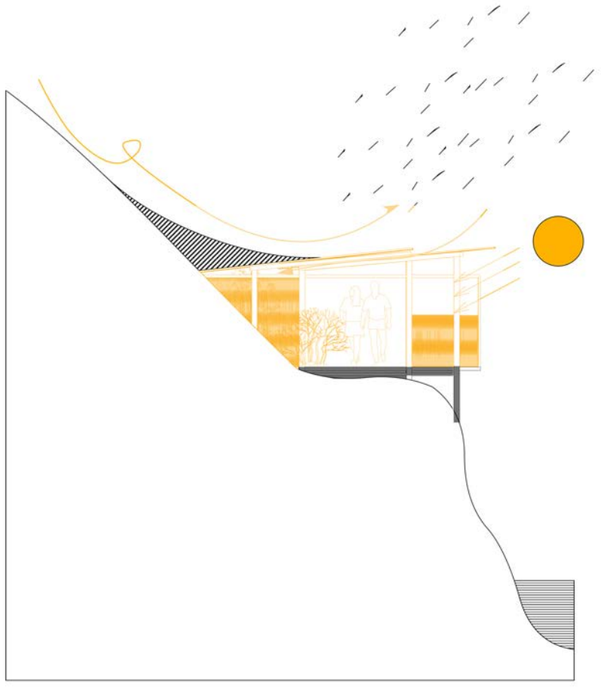


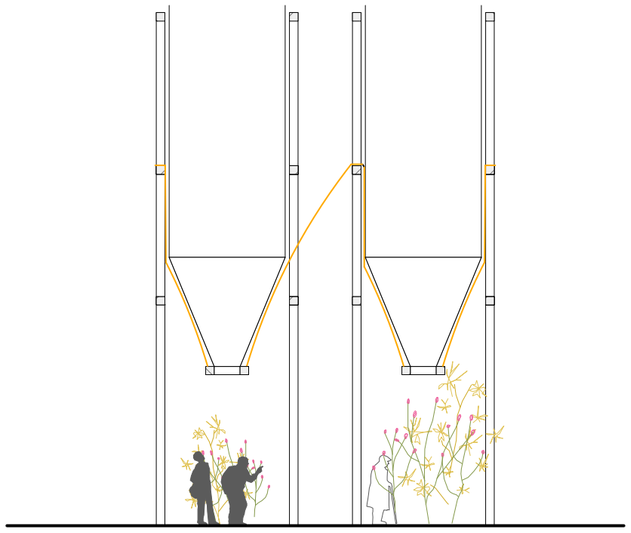


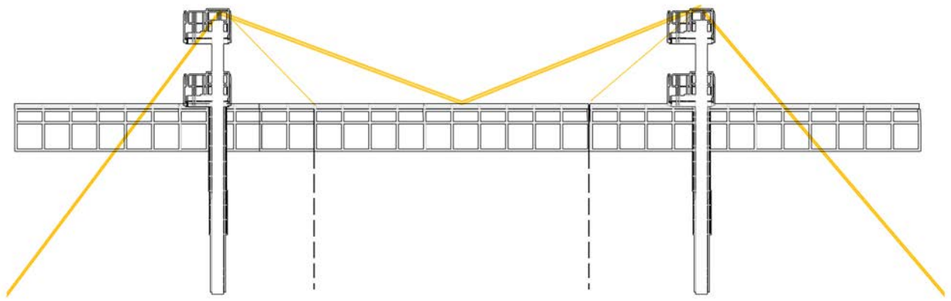
2019

2022

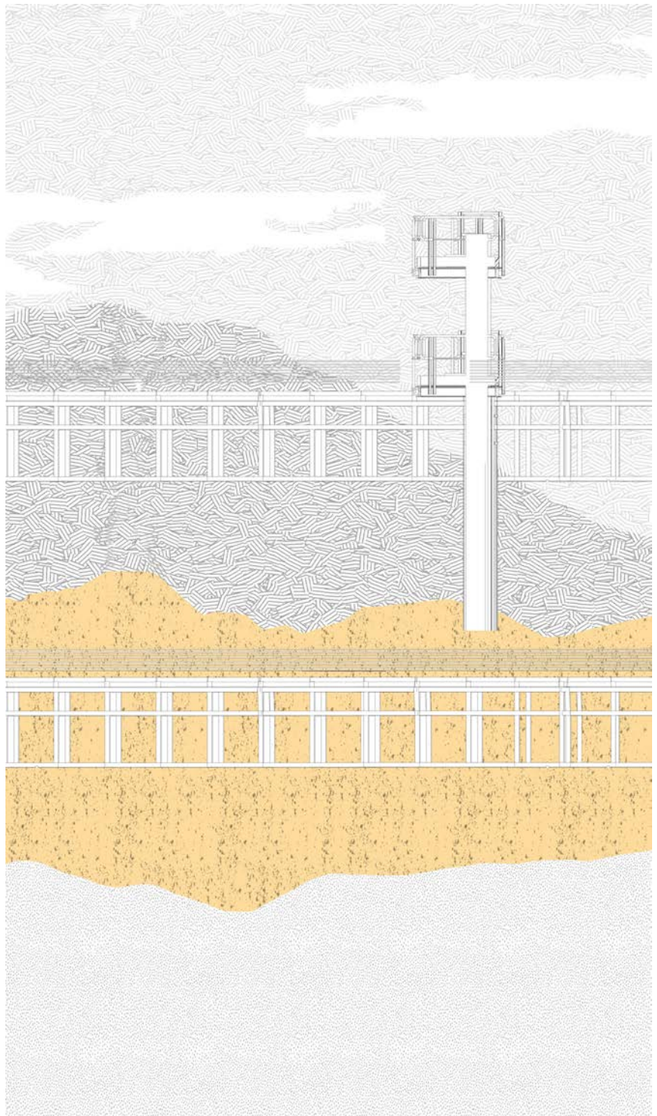
2030

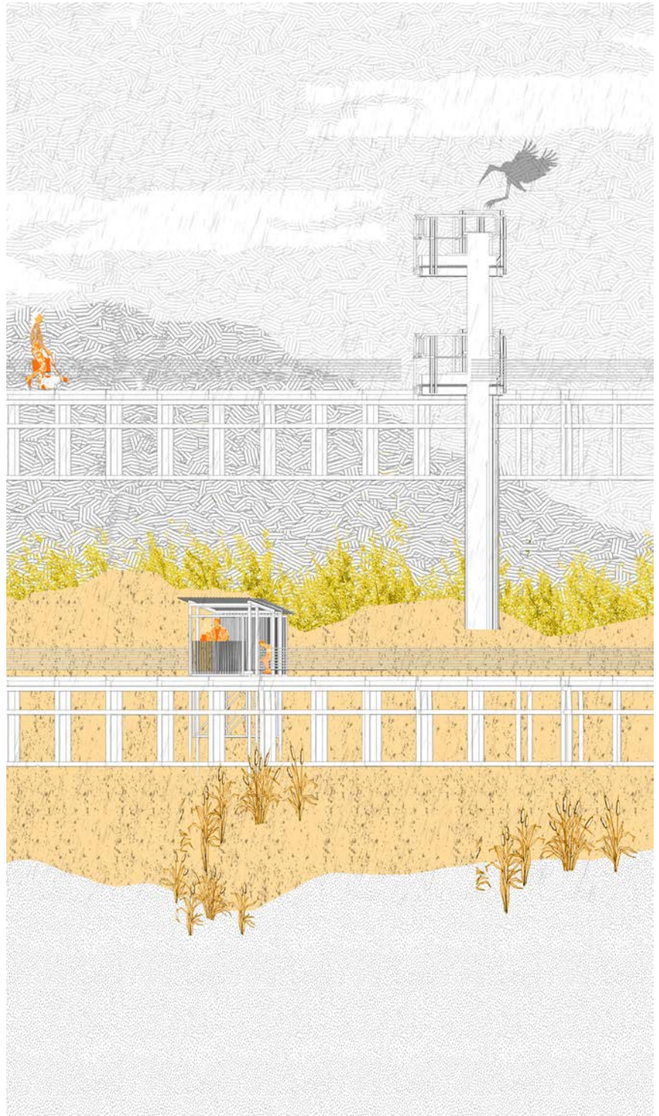


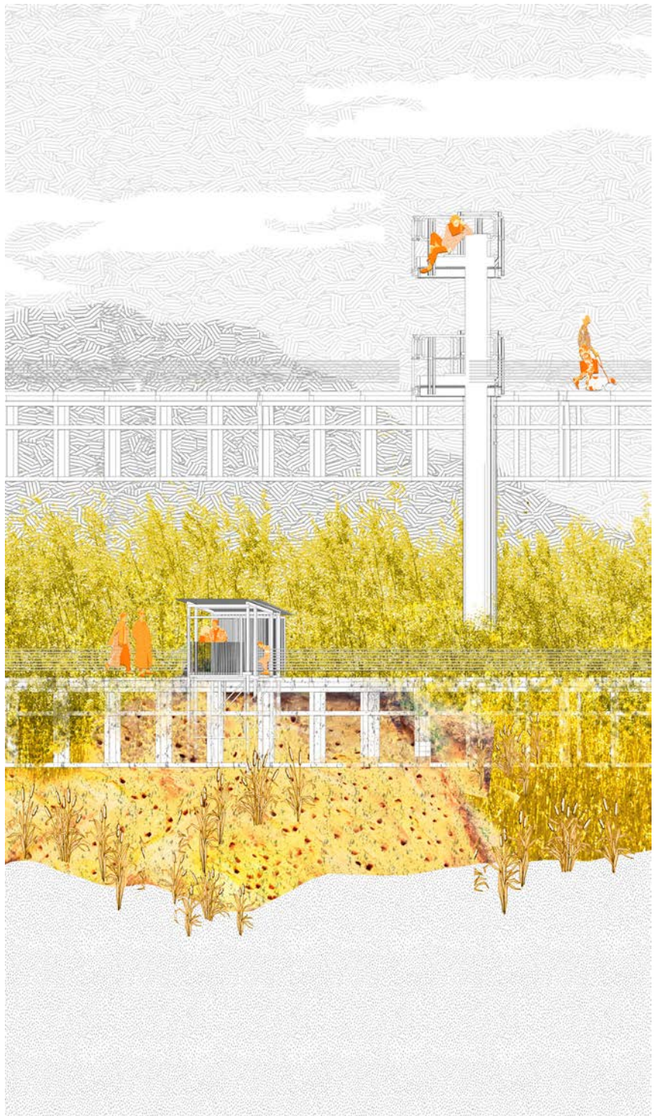




2030







Thank you!


Thank you !