

# *Revealing the Anthropocene*

**- sensory laboratory of landscape processes**



*Process book for diploma project*  
*The School of Architecture and Design in Oslo*

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## Abstract

Geologists today are discussing whether we are in the epoch of the Anthropocene or still in the Holocene. However, as a buzz word for the last decade, the term Anthropocene has been used as a perspective in art, literature, and academia as a point of departure for exploring phenomena in relation to climate change, the use of materials, and geology where the human is perceived as the main agent. In field of landscape architecture one could question if the term has drawn attention to create more sustainable proposals and projects, however not explored how the Anthropocene potential can become an aesthetic guide to reveal consequences of human actions.

The diploma project 'Revealing the Anthropocene – sensory laboratory for landscape architecture' is a suggestion for how to deal with the Anthropocene in landscape architecture in a geological important and industrial site. The purpose is to create a site, that can reveal landscape processes and become a laboratory for exhibiting and sensing the Anthropocene material.

In 2018 the former quarry Huken in Oslo, stopped being active and the municipality of Oslo decided to transform it into a recreational park (Asplan Viak, 2018). This diploma project proposes a transformation of Huken that deals with the potential of revealing geological and ecological processes over time as an aesthetic value. Focusing on the fact that a landscape will change over time, the project deals with principles from material, topography, succession and hydrology of the site. The project stimulates and emphasizes sedimentation, erosion, melting, water flows and succession entangled with actions from visitors on the site. Based on ecosystem services, the site will facilitate a process of cleaning asphalt waste and dirt snow through

vegetation. The site will become a laboratory of those processes over time. Speculative drawings forecast how such things might turn out, however it could indeed look very differently in 50 years. The project is seen as a way of interpretate past geological traces together with present material.

The proposal is based on my analysis of historical maps and literature. Huken contains three important characteristics that are valuable in a transformation proposal. First, Huken is an industrial site, where extraction has led to a constant flow of material in and out – linking the site to a much greater urban context. Secondly, Huken is a site of geological heritage importance with unique geological varieties, that should be emphasized (Kvamsdal, 1999). The third characteristic is that hiding the consequences from human impact would be problematic. Today there is 100.000 m<sup>3</sup> of contaminated asphalt waste at Huken. The material contains a potential to raise Anthropocene or "ecological awareness". As Davis & Turpin (2015) states:

*"Our sensible and perceptive systems are being refashioned at rates that we can barely keep up with, as the world around us changes so rapidly. We daily experience what used to be a sublime moment; anthropogenic mountains are now so ordinary that we don't even notice them (...) our current climate demands a different kind of aesthetic and sensorial attention."*

Using anthropocentric material together with landscape processes this project is an exploration of how search different aesthetic may be come to form. It's a proposal to reveal the unvalued Anthropocentric traces entangled the change of landscape processes.





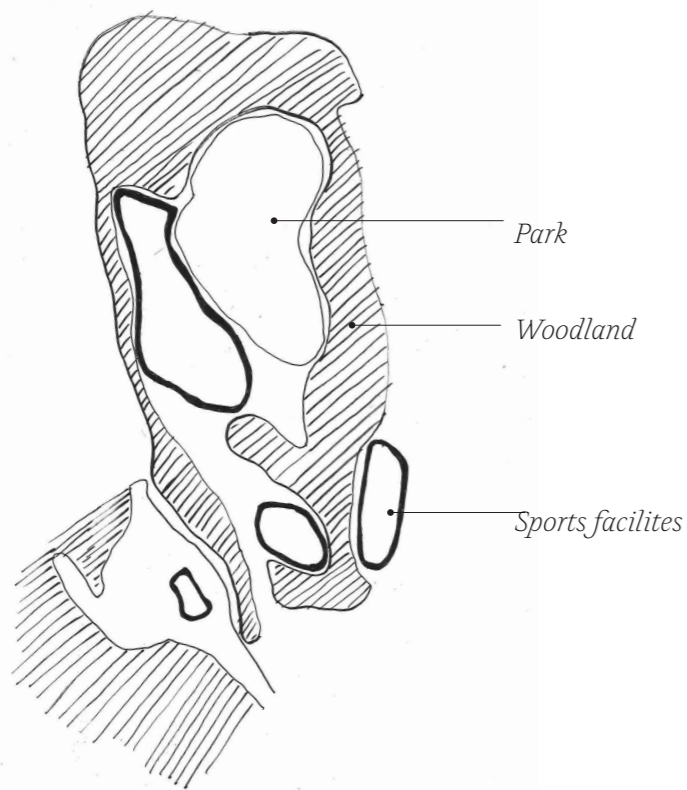
## *Huken pukk- og asfaltverk*

The city of Oslo is surrounded by a green/blue structure. Oslofjorden, the fjord to the south of the city connects Oslo to the Kattegat and gives space and light. To the north and the east the city breathes through the vast woods. These woodlands serve indeed as a recreational spot for skiing and hiking while being a forestry too. Marka as these woodlands are called it highly regulated when it comes to its recreational and hydrological use as well as its forestry. Markaloven protects the woodlands from being transformed into building site.

Within the protection of the Markaloven Huken pukkverk has for many decades served as an open pit for extraction of stone that has been turned into gravel. This has been used for constructing layer on heavy traffic roads. Huken is located in the woods, however the heavy noise has led to complaints from people living in the housing area to the south. The owner, the municipality decided to close all activity based on the civil complaints and the process of transforming it has already begun (Hofoss, 2012). So far the transformation has been based on a recreational programme with a swimming lake, climbing and an amphitheatre for concerts. Most of this is already a part of the activities facilitated in the vast surrounding forest. As a site that to some extent is shaped by natural forces I am curious of the transformation could be rethought. How could the play of natural forces be seen less as a problem if not just overlooked but a catalyst for the design making the site changing on terms for living species.



## A review of the current proposal for Huken



For Huken Pukkverk, a plan made by the City of Oslo and the architecture/engineering company Asplan Viak has already been sketched and designed. This chapter aims to be a critical reading of this proposal, which will inform about what a counterproposal should include.

At the time of writing, present loose material has been rearranged on site to secure the topography from land- and rockslides. However, in addition to the rearranging of the material, the plan is to add trees, lawns, furniture and roads to invite people into the site through activities mainly sport, learning and supposedly culture. The list of programme is roll ski paths, sledge riding, rock climbing, beach volley, mountain biking, parkour. Further amphitheatre and a picturesque point de vue is bringing other kind of activities to the site than sport. Further, the proposal is aiming to solve two issues: how to turn the site into an attraction though facilitation of sport, swimming and to some extent culture and how to solve the technical issues such as landslides and contamination of water.

However, the proposal seems to be harmless, unprovoking and plain – maybe even genetic. As

genetic as it is the proposal can be dividing it into three landscape archetypes, the park, the unorganized sport facilities and the cultivated woodlands. The three types are not intertwined but rather a pattern distributed. However, let me describe how these three types are gestured in the proposal. The parks are situated in both the south and the north wing. These places exists as park because of their open spatiality, their level of cultivation in vegetation and the activities they invite for. A great area of the site it is proposed to plant woodlands consisting mainly of pines. These plantations will lead to an enclosed space, where the present architecture of the open pit with rock sides. Last but programme wise not least the current proposal aims to facilitates a various amount of sports activities. Area wise mountain biking.

The proposal may be a way of expressing the idea of what Marka should be. As Huken lays within the regulation of Marka, a highly regulated recreational forest, this proposal may simply just be an expression of what that is expected of Marka. Marka is mainly facilitating informal activities – contemplative being and if anything else – a place for sport. The proposal looks indeed similar to other places that serves as a transition between Marka and Oslo such as Sognsvannet,

Frognersetteren and Kjelsås in it's programme. Following this way of thinking may led to that the proposal is a way – as good as you can – to turn Huken back to being a forest. Nevertheless, I do not think we can undo the intervention in landscape that we as human have done? The proposal is based on the idea that human activity has been dominating for the last couple of decades and see it as bad moment in the history of Marka. Materials has been pushed back and forth, concrete has been sprayed on rocks to avoid rockslides. This is just one step on the way to become the future

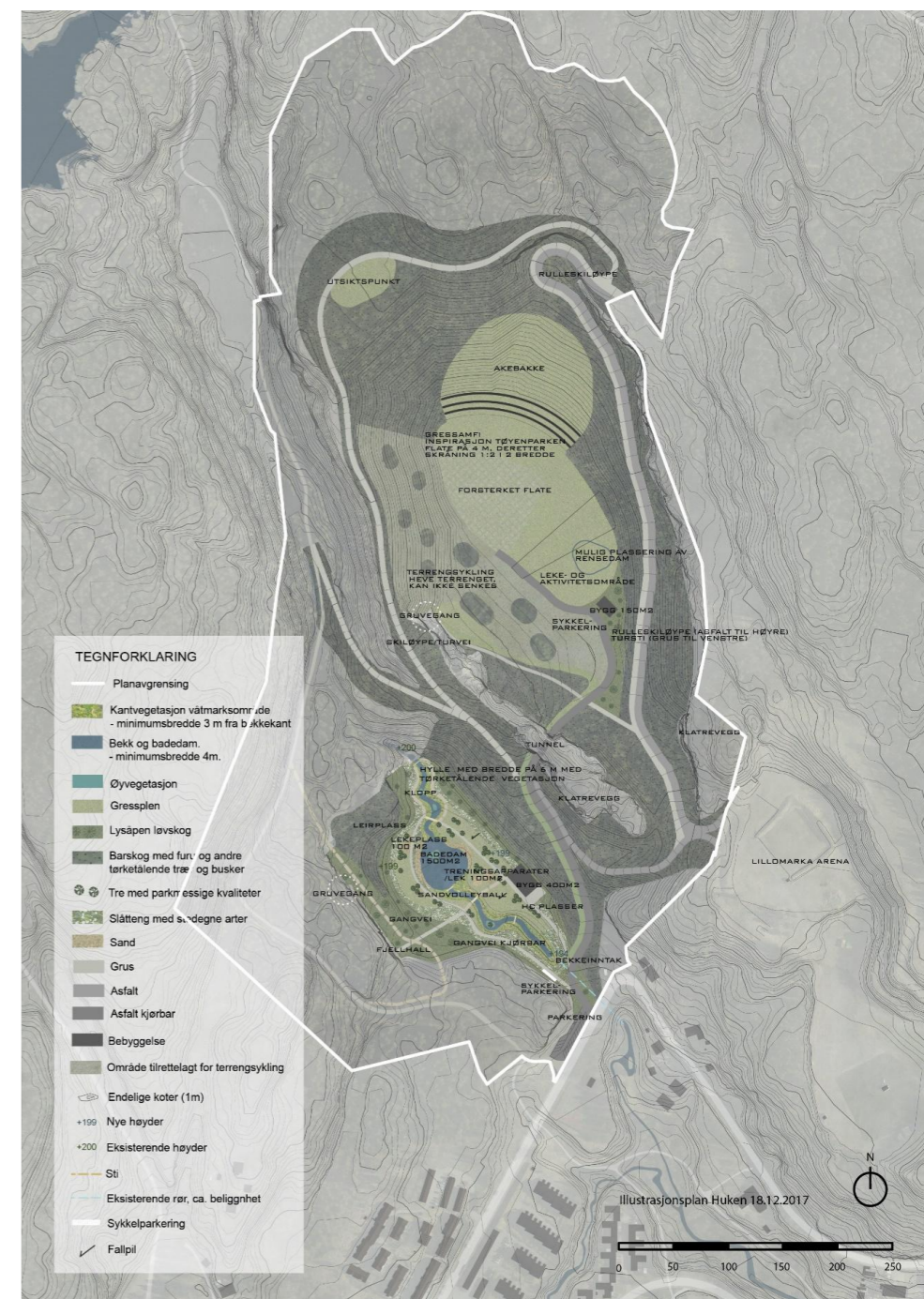
Huken. The plan is to spread gravel for paths and humus for nutrition for planting trees. The proposal appears as if someone has draped a cloth to cover the past -including the prehuman time the deep past geological time as well as the Anthropocene past. And in this sense the past is not only hidden in a spatial, textile way. It's the narratives and shifting understanding of landscape that the proposal is aiming to conceal. But can we accept to give such significant place loose remove meaningful traces present today? As the Landscape architect, George Descombes states: "Landscape is never finished or completed like a can of preserves; it is an accumulation of events and stories; a continuously unfolding inheritance. I want to build a semantic void, allowing walkers to interpret their experiences however they saw fit." The proposal lacks to deal with Huken as a processual site. It lacks to deal architectural with the fact that this site contains semiotics from the deep pasts and Anthropocene interactions.



Asplan Viak: Peaceful, romantic and recreational. The proposal seems to aim to create a such situations in perspective views.



Security first. Concrete as been sprayed on some of the rock side to avoid rockslides. It serves as protection, however conceal deep pasts event.



Asplan Viak: Situation plan



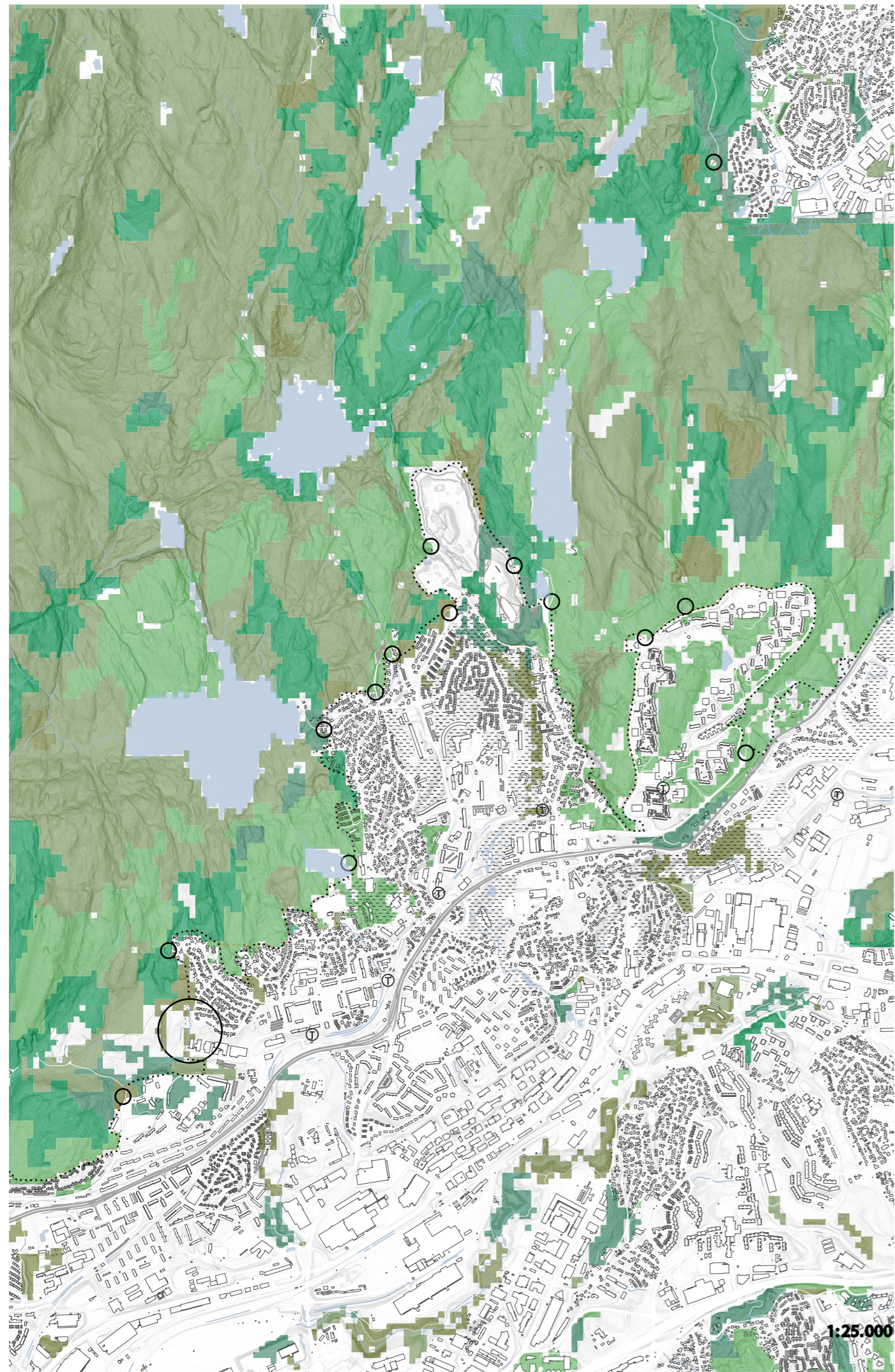
# Forest types in Oslo Forest

Oslo is unique by having a vast forest as a backyard. The forest is a valuable place for recreation as well as for forestry purpose. The species are dominated by conifers.



- Spruce forest
- Pine forest
- Deciduous
- Mix forest
- Conifer forest





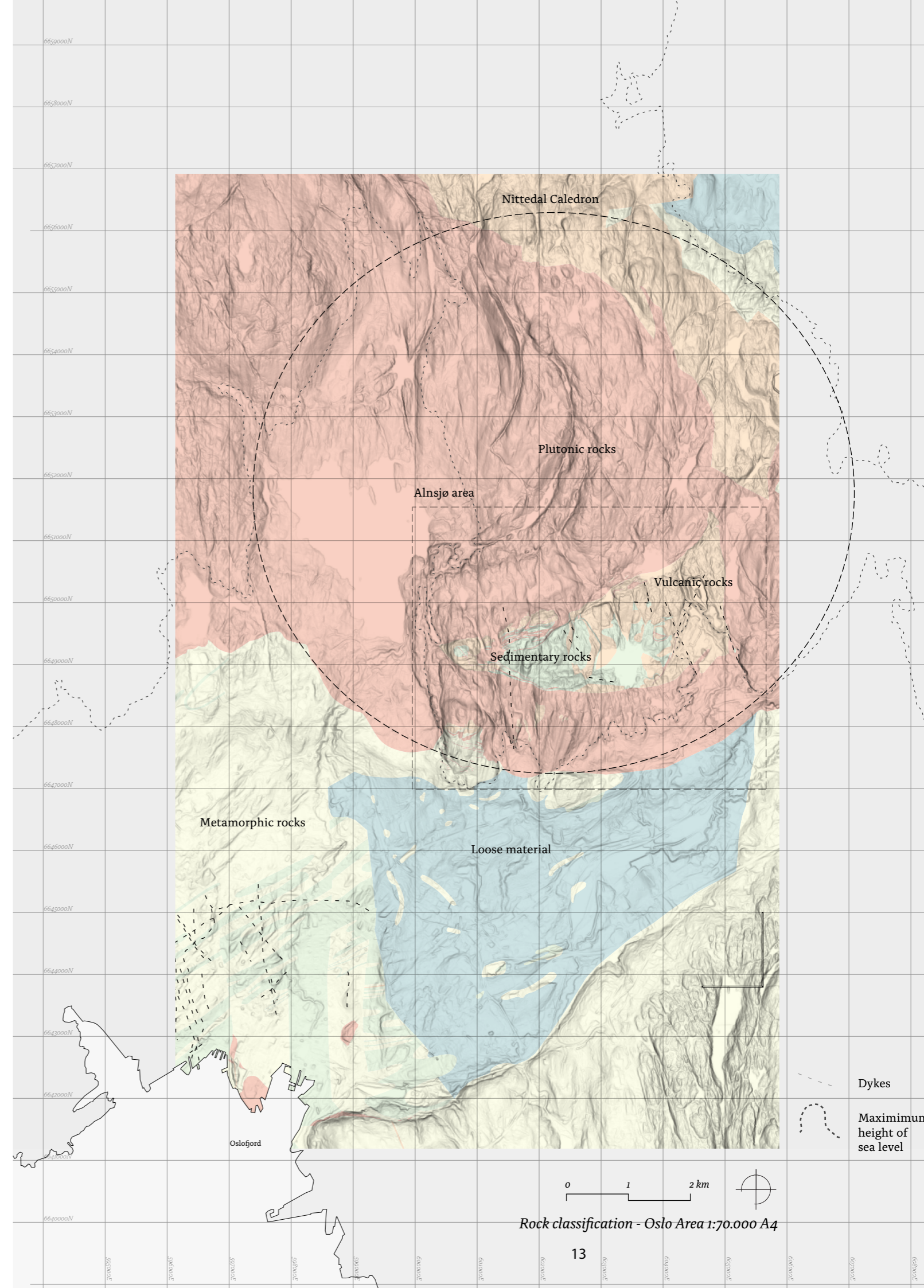
As mentioned before Huken is located in the valley in the area Ammerud in the Eastend of Oslo. The area is dominated by housing from the 60s and 70s . Huken lays in the end of the housing area and may become a new entrance to the huge forest of Nordmarka.



# Geology of Oslo

The geology of Oslo is mainly formed by the Oslo Rift (Spjeldnæs and Askheim, 2021) and vulcanism. In Permian time date 3-200 year back the area around Oslofjorden a rift was formed subsidence and faults. That has led the bedrock we have today. As the map shows, the Oslo region contains many rock types. Big areas of the Oslo Marka contains plutonic rocks dominated by synite and granite. These rock types appeared as a result of the 'Nittedal' volcano. When the lava solidified it was beneath the earth crust.

Huken has a big variety of rock types, and was a important location in the 19th century to discover how bedrocks was form. Geologists could not understand why so many different types of rocks where located so close to each other. The fact that rocks could transform to other types of rocks were not believed before the discovery of Alnsjøfeltet (Segelstad, Grønhaug and Selbekk, 2010)





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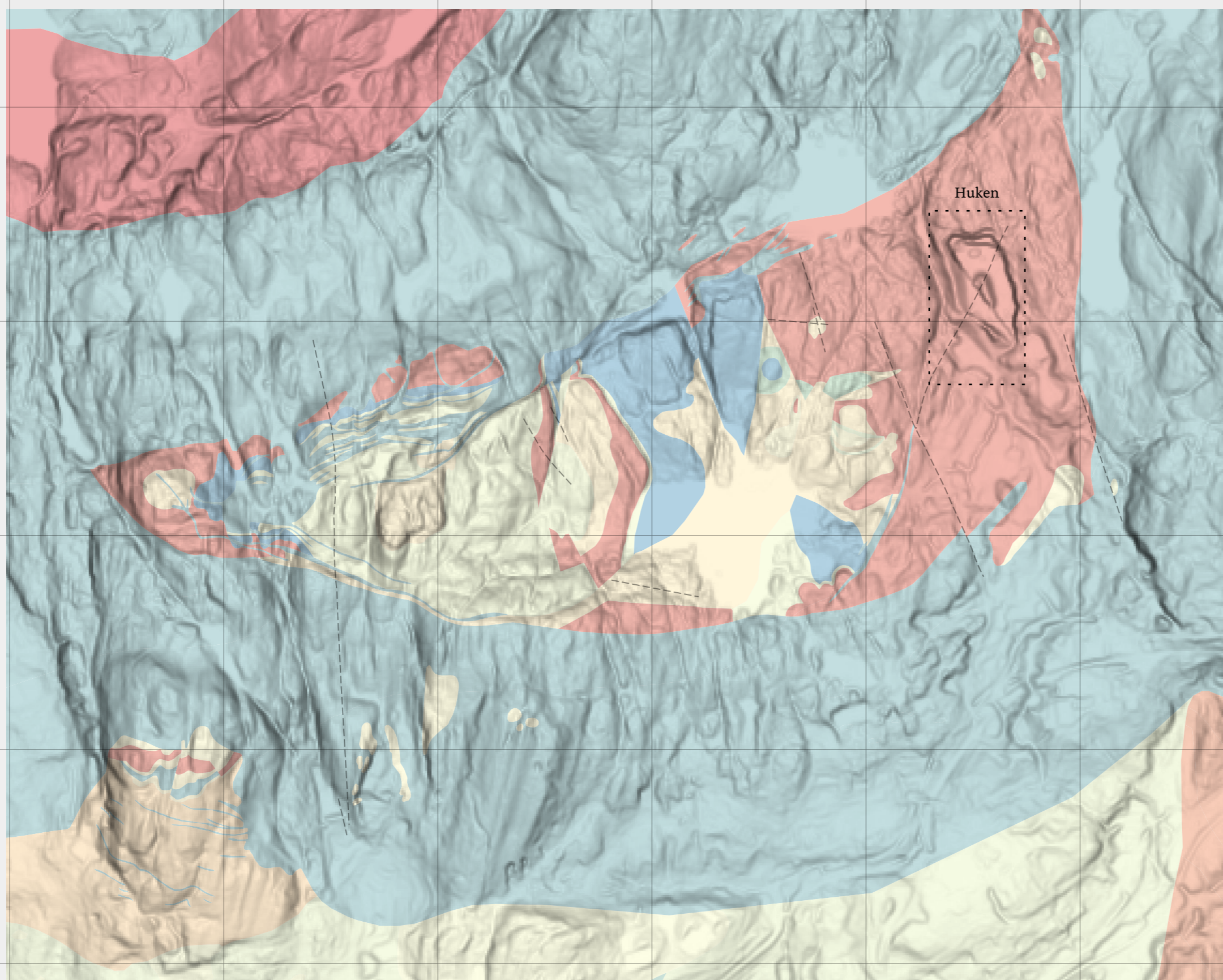
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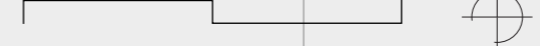
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- Alkali feldspar granite
- Basalt
- Conglomerat
- Diabas
- Gneiss
- Hornfels
- Latite
- Limestone
- Loose material
- Pyroclastic rock
- Quartzite
- Sandstone
- Shale
- Syenite
- Volcanic breccia

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Bedrocks - Oslo Area 1:20.000 A3

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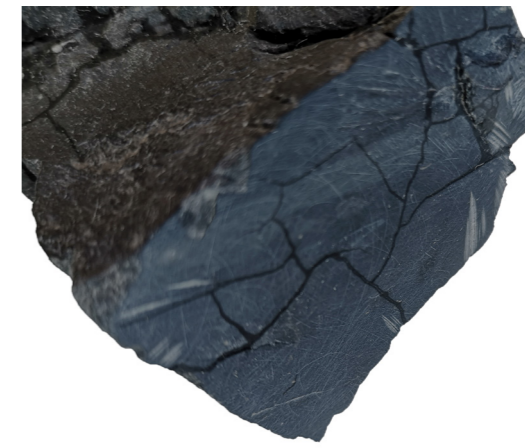
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## Basalt

*The dark rock basalt of Huken originates from the former volcano 'Nittedal'. As an extrusive igneous rock basalt was lava, that had contact to the surface when it solidified (Gjessing, 1978). As gravel basalt is suitable as a layer in road construction since it is durable (Kvamsdal, 1999).*



Basalt rock from Huken. I have cut through it and polished it to see textures and colours



Adze from Universitetsmuseet i Bergen, Arkeologibasen





VESTVEGGEN  
BASALT COMES IN MANY COLOURS.



TVERRVEGGEN  
A BOULDER OF SCHALE AND  
WHY IS IT APPEARING HERE?



TVERRVEGGEN  
IS IT PAINTING? OR MINERALS



HOKENVEGGEN  
ON A ROCKSIDE NEAR THE OPEN  
PIT BASALT APPEARS DIFFERENT. IS IT  
KONGLOMERAT?



TUNNEL  
A CONCRETE LAYER IS ADDED TO  
THE BASALT ROCK MATERIAL - HIDDEN  
DRIED BEHIND IT - CONTRAST



VESTVEGGEN  
Diagonal WEATHERING



BLACK, BLUE, RED - VESTVEGGEN.



VESTVEGGEN  
RANGE IN COLOUR.

*Finding geology semiotics*

Sensing the rock side of Huken I noticed that not all basalt look the same. I started to questioning, how the same rock material varies by appearance. Minerals and metals can be brought to the surface of a rock, which will change the colour. But also the minerals in a rock type can vary. Lastly dykes of other rocks than basalt runs through the site.



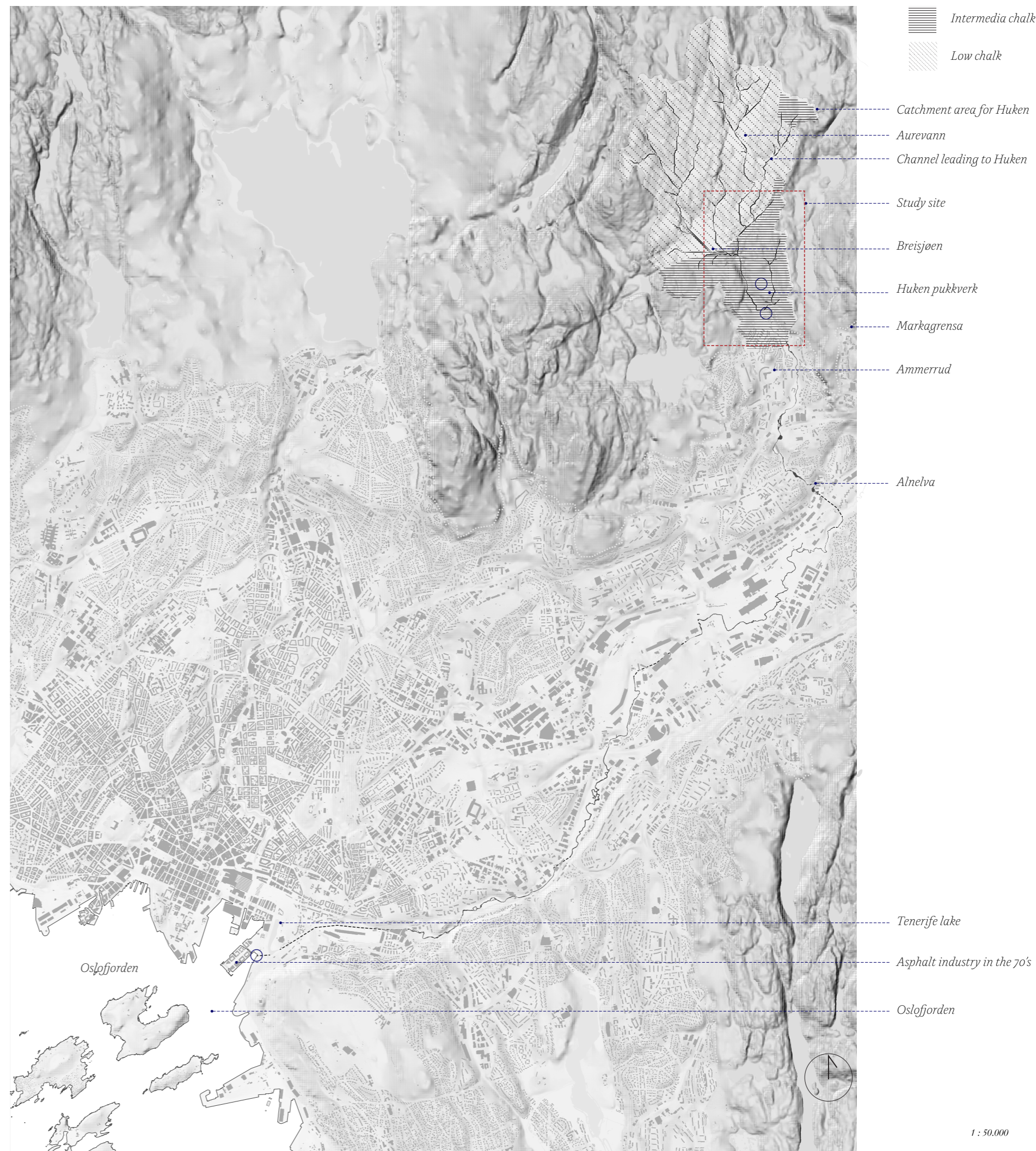
## Woods, city and water

Huken Pukkverk is located on the border to the *Ammerud*, a suburb in the eastside of Oslo - planned as a satellite city in the 60s and 70. The open pit is to the East, North and West surrounded by Lillomarka a part of the urban forest in Oslo, that functions as a recreational heart aswell as a forestry site.

On a big scale level the terrain is facing south all the way to the Oslofjord. The catchment area of the Huken is a rather large area water coming from creeks and lakes such as Breisjøen and Auravann. Breisjøen works a drinking water reservoir for the city resolving in a fence and no accesibility for the public. Further the water coming to Huken is through the creek is rather limited.

Rainwater coming through the site will continued into Alna or Alnaelva, a river running through the eastside and connected to other rivers untill it ends at the bank of Oslofjorden in the citycenter. A lake called *Tenerife* is the last stop before the banks of the fjord. Earlier *Tenerife* served as a recreational swimming spot untill the industries including Huken Pukkverk contaminated the river till such a degree that the lake was no was suitable for that.

This means that both the catchment area and the Alna is indeed serving Oslo and in the same time is linked or determined by Huken Pukkverk.





*Anthropocene processes*



*In 1964 a information movie was shot to show how the municipality worked to improve roads in Oslo. The focus on Huken as a part of the whole system reveals the importance of the site, as well the rhythm of moving material as an anthropocene process. The movie can be seen at <https://digitalmuseum.no/02118478806/veivesenet-i-arbeid>*



*Historical photos in Huken or related to Huken. It reveals the history Huken of man power and that Huken always have been a part of a bigger urban metabolism by extracting, receiving and transforming material.*



How the metabolism of the site is connected to a much bigger scale?

A piece of Huken Pukk- og Asphaltverk can be found all around Urban Oslo. Since the beginning of the Huken as an open pit, Huken has contributed to construction of asphalt. You will be able to find pieces of Huken under Karl Johan Gate, the main shopping street in Oslo. Masses has been exported from the site through decades. In the same time, asphalt has been imported to the site. Asphalt that no longer has been need in urban-Oslo, has been stored in Huken for decades.

The metabolism has been mapped on the next page.



## Urban metabolism

Huken is a part of Oslo and you can find piece of it all over the city in under and in the asphalt.

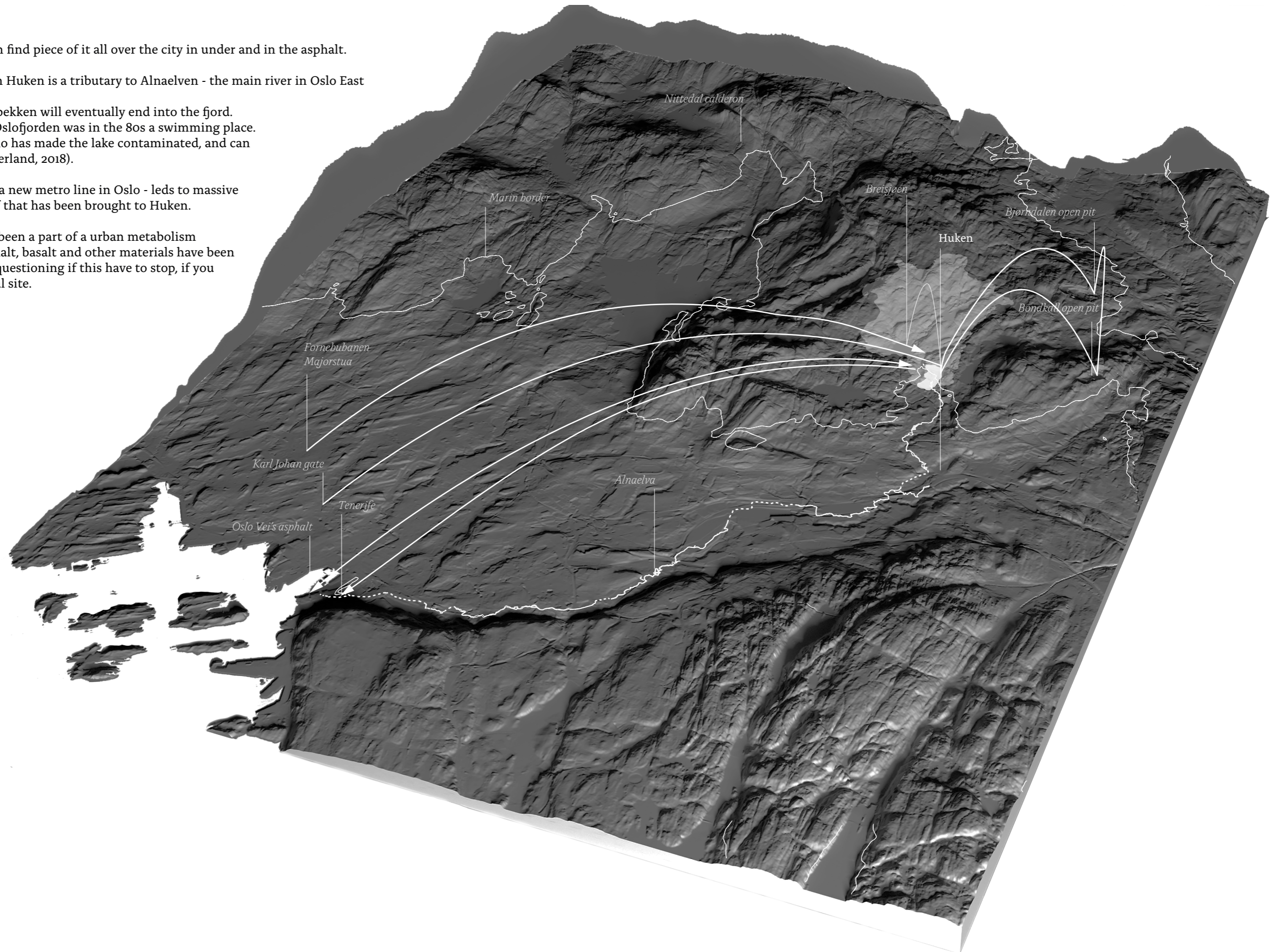
Arevannsbekken running through Huken is a tributary to Alnaelven - the main river in Oslo East and ends in Oslofjorden

Materials eroding with Arevannsbekken will eventually end into the fjord.

A lake called Tenerife, just before Oslofjorden was in the 80s a swimming place. However, the industries in East Oslo has made the lake contaminated, and can no longer be use for swimming (Gjerland, 2018).

The excavation of Fornebubanen - a new metro line in Oslo - leds to massive surplus rock materials and some of that has been brought to Huken.

The conclusion is, that Huken has been a part of a urban metabolism of Oslo exchanging materials, asphalt, basalt and other materials have been im- and exported to the site. I am questioning if this have to stop, if you transform a quarry to a recreational site.



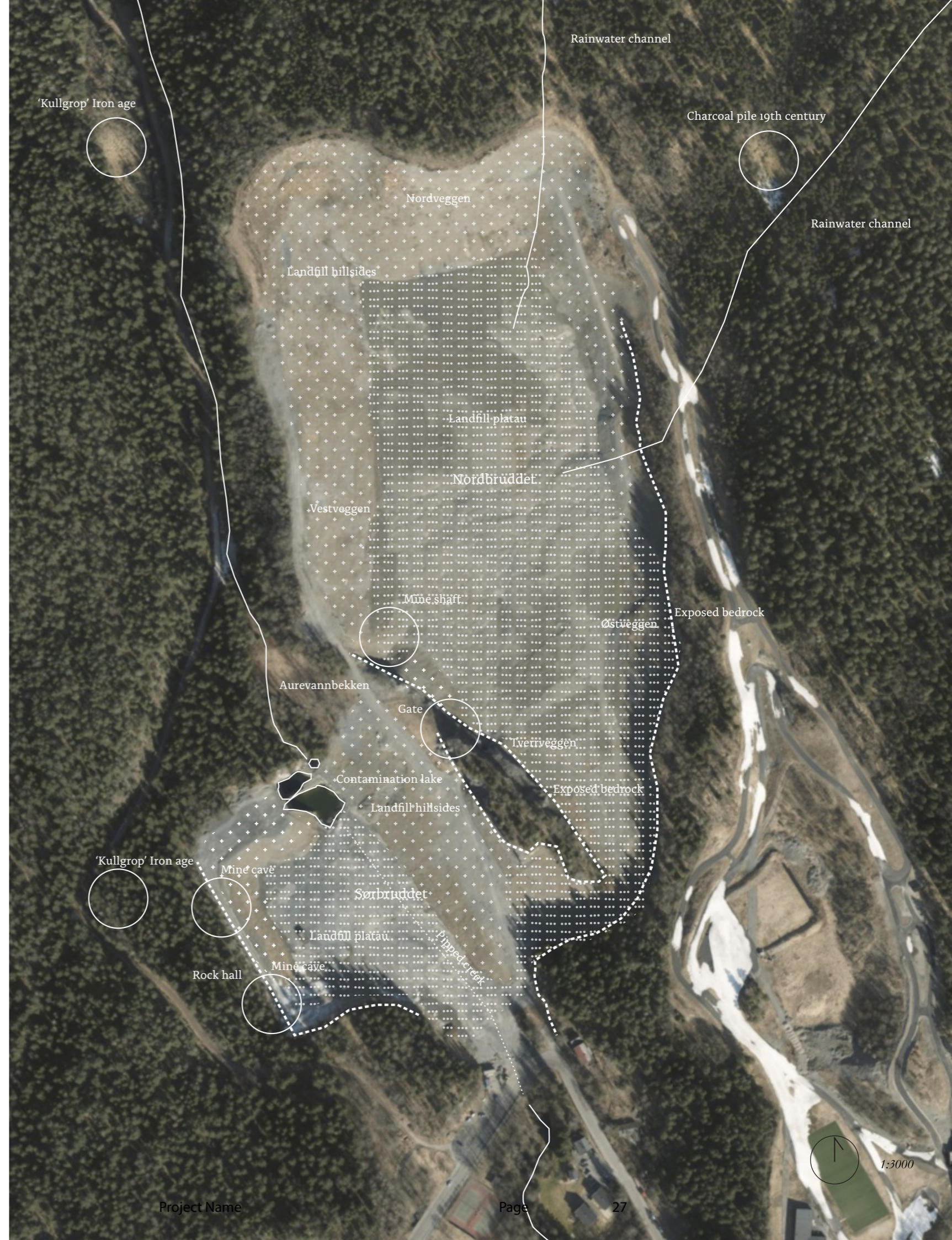


## Physical site

The open pit, Huken is in a nut shell to massiv depression in the landscape with Nordbruddet and Sørbruddet devided by wall of basalt rock with an opening toward the city to the south.

The two parts of the site has diffent problems and therefore ask for different proposal. The north part, Nordbruddet, has been exavated such in terraces such that the transformation has started with securing the hillsides with the existing asphalt masses. Both the hillsides to the east, north and west is now covered by the industrial material making the land new and desturbed. Further the bottom of the site has been filled too. It has a monoton spatial quality covering the geological material. One may think that the use of the material has not been well thought. It solves a security issue based on the idea that the landscape should be given a continuous shape rathe r than thinking of how the landscape is changing place.

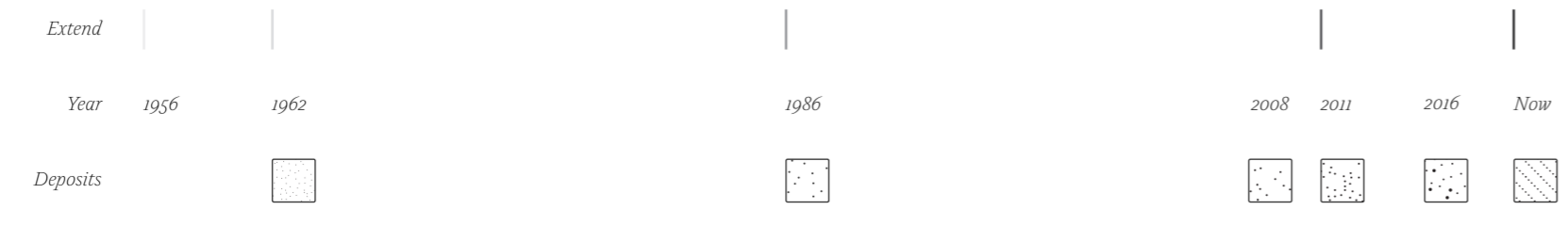
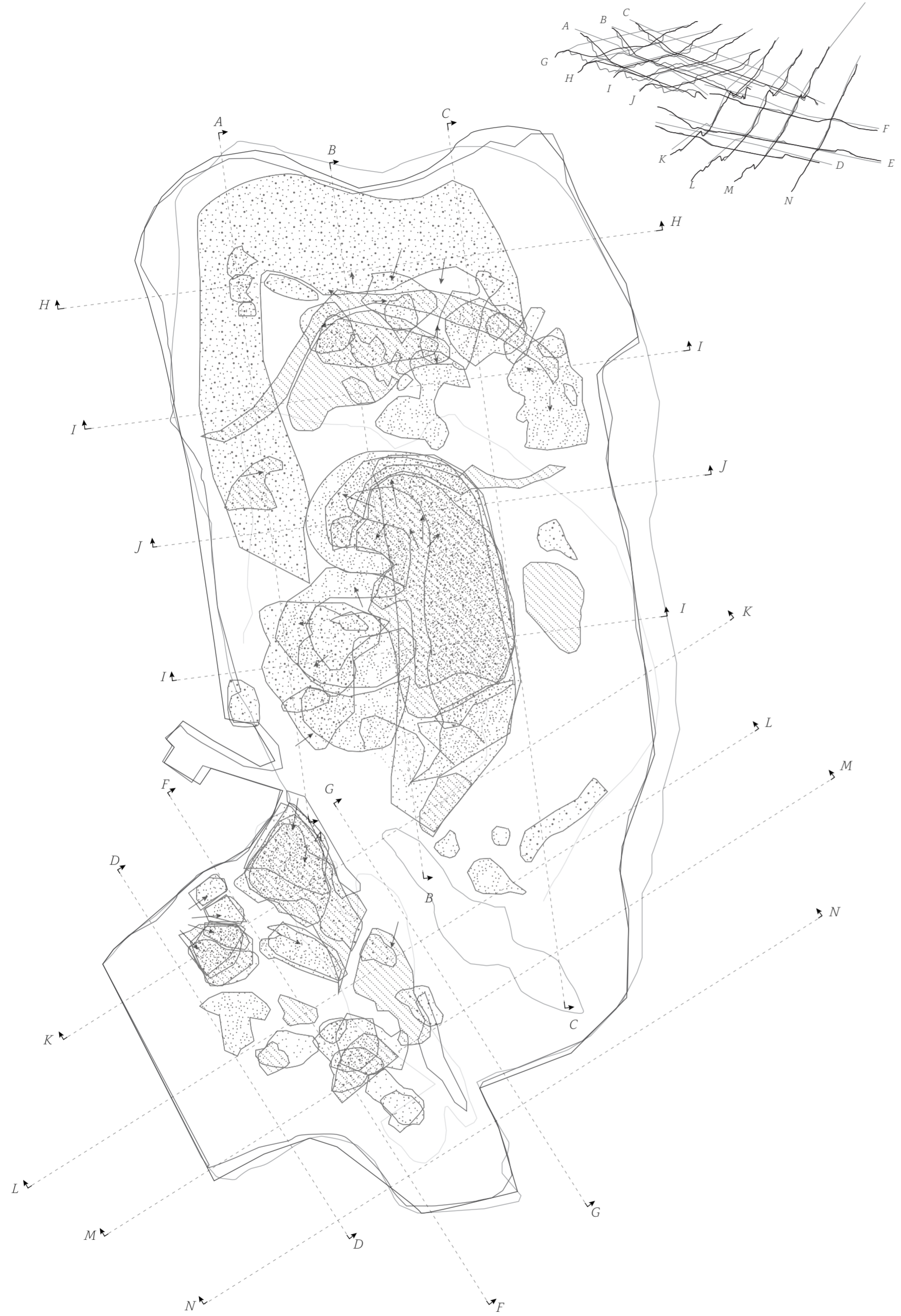
The south part, Sørbruddet, has as well been filled with mass. Further the creek that runs thurgh the site connecting the catchment area to the north with Alnelva to the south has been pipped under the masses. Three sinks bassins has been shaped to clean the water before going further downhill. From my perspective it seems like the water is been thought more as a problem than a potential . In the transformation plan though a swimming lake is porposed, but one might ask: Could the water serves as both a tool for forming the landscape and providing clean water for the Alnelva?





Tracing material movements at Huken

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N 5920599



6656265 N  
270060 E

Load direction of material

Sources:  
Aerial photos from <http://norgebilder.no> (01/01-22)

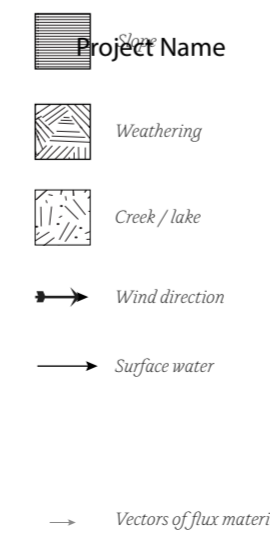
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Tracing the past rhythm of extend and material

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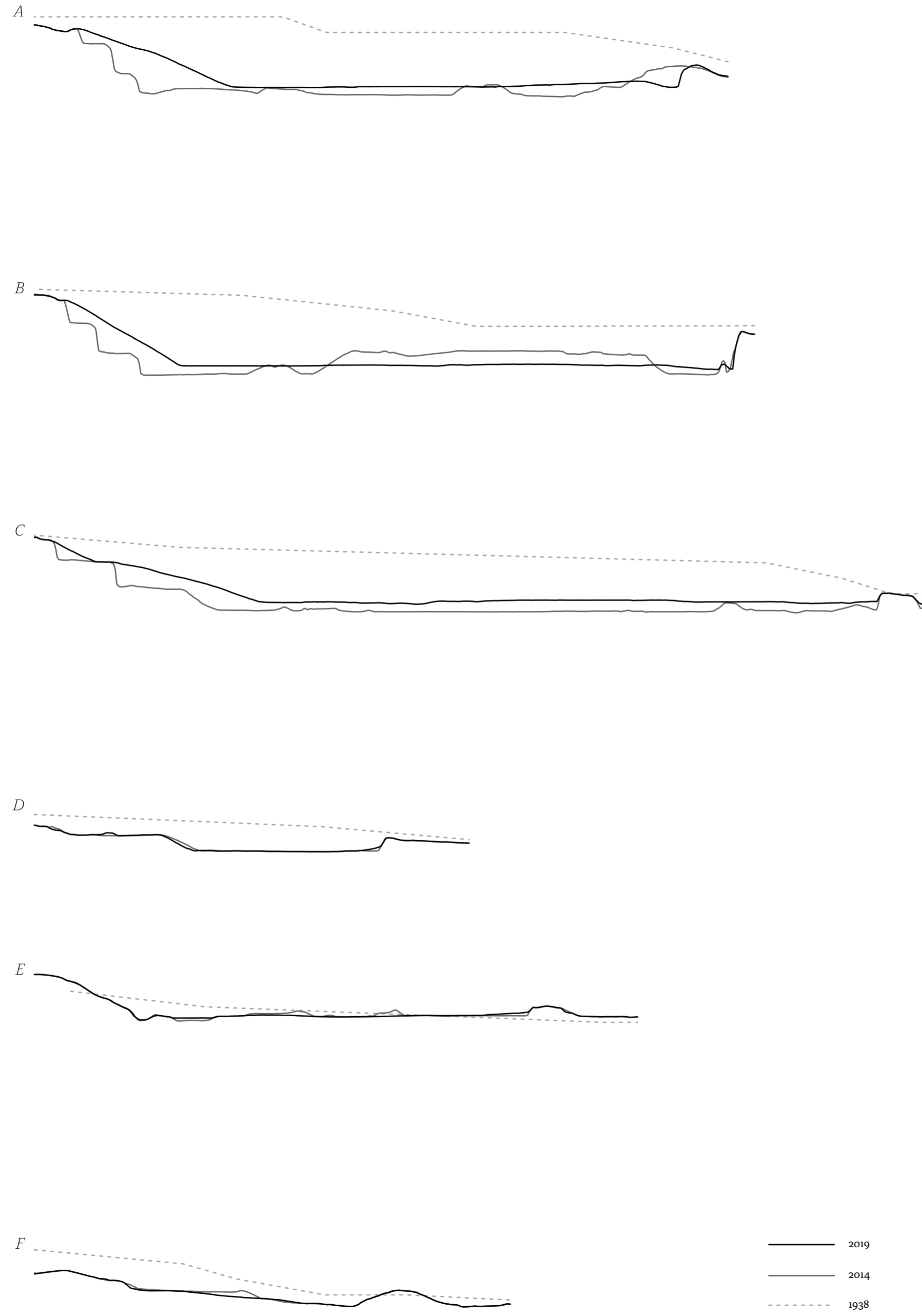
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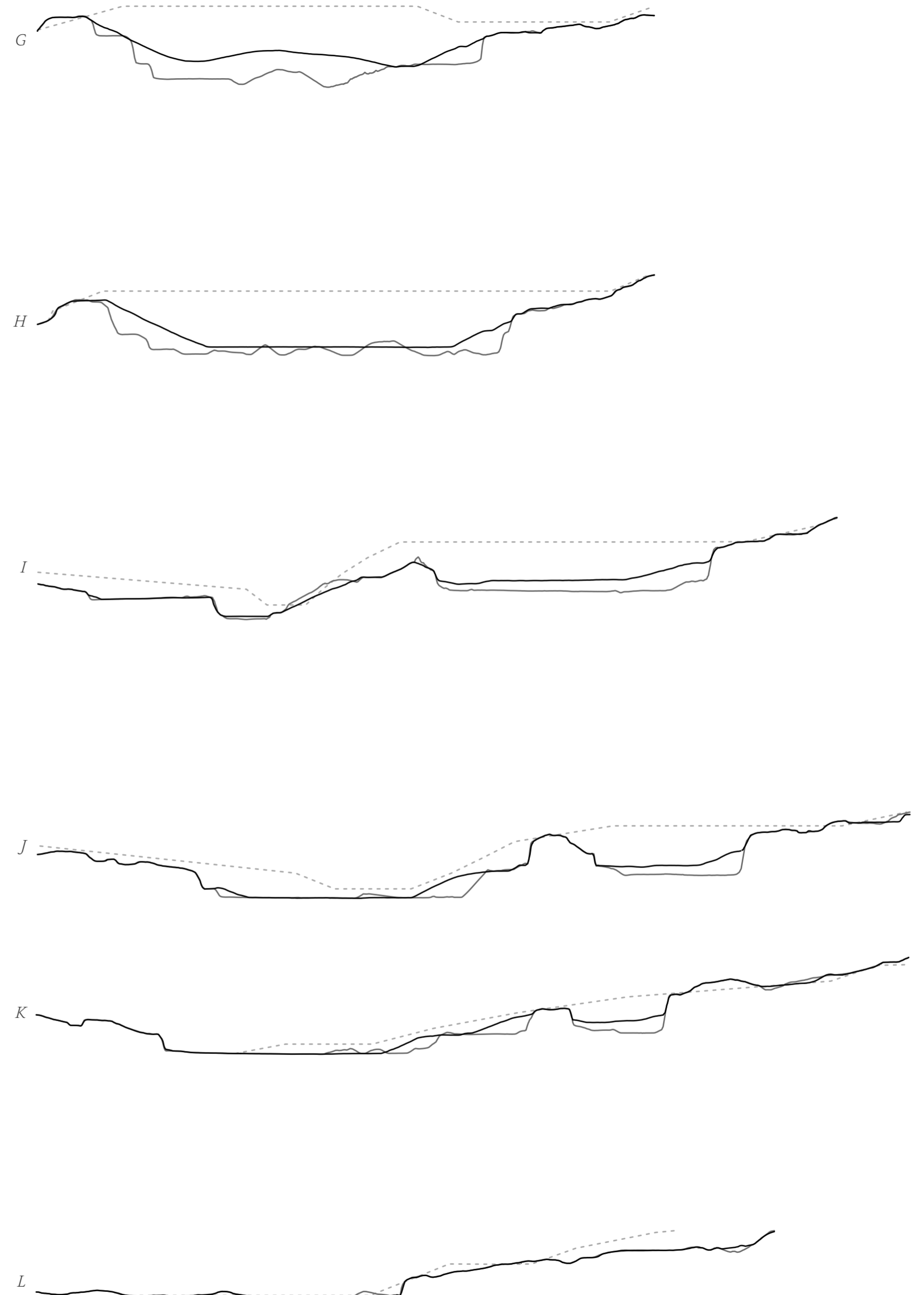
Topography sections from 1938, 2014 and 2019



— 2019  
— 2014  
- - - 1938

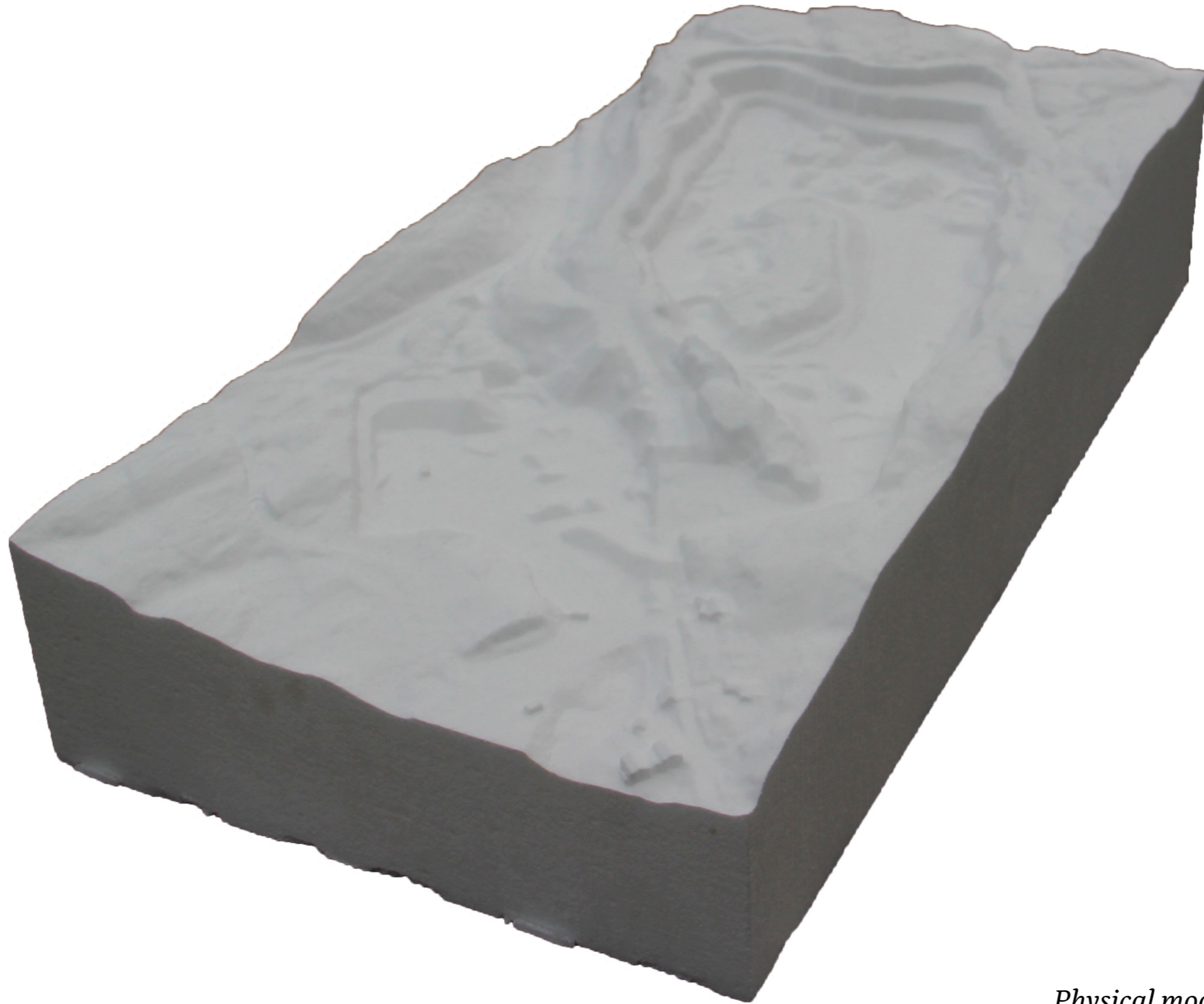
Sources:  
2019: Oslo Kommune Laserskanning 2019 <http://hoydedata.no> (28/01-22)  
2014: Oslo Kommune Laserskanning 2014 <http://hoydedata.no> (28/01-22)  
1938: Kart over Aker 1938, <http://www.oslo.kommune.no/OBA/Kart/1938/index.html> (28/01-22)

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*Physical model of terrain in 2014  
Since that masses have brought in so the  
hillside are covered hidden geological layers*



## *Asphalt waste*

As Huken was a part of an asphalt metabolism, the site has been used to store waste asphalt. However asphalt is made of mainly rocks and a bitumen that binds the materials together. Bitumen is a form petroleum. So how can the asphalt waste cause contamination issues?

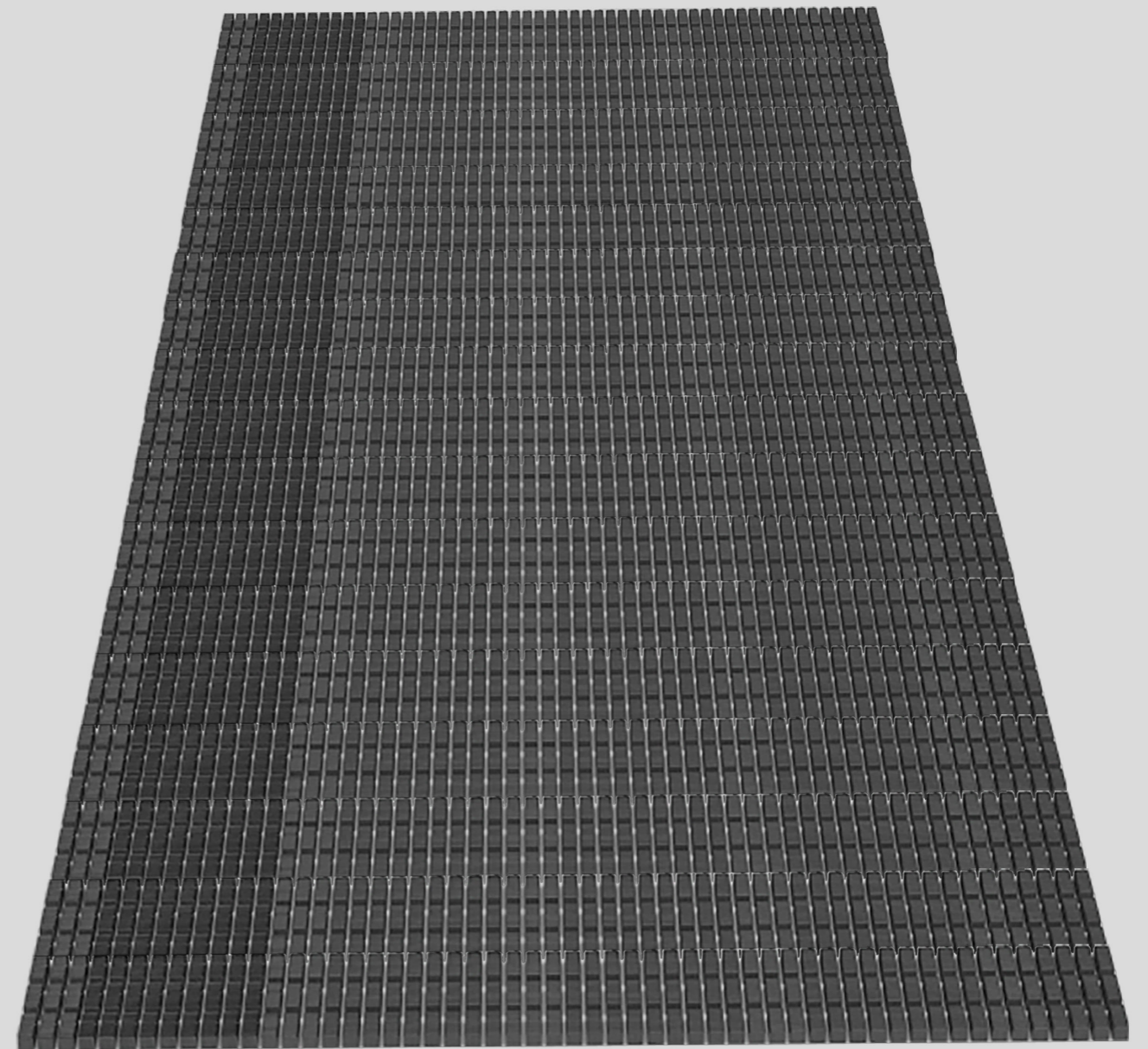
A survey made of samples from different locations at Huken has shown that there is a higher level of PAH's and petroleum at Huken. Both can cause ecological issues if they are free. (Haarstad, 2013)

The city has come up with the solution to encapsulate it under the surface and over the bedrock. However, if we have to understand the consequences of human actions, would this be the right way?

The asphalt waste tells both a story of Huken as an industrial and metabolic site and the story of how humans produce waste by living a regular life.

Could the asphalt have a potential to bring qualities to Huken by being a sensory material while being a part of process of cleaning it?

## *Geological heritage*



*100.000 m<sup>3</sup> waste asphalted is deposite at Huken today. It is equivalent to 3012 20 ft container.*



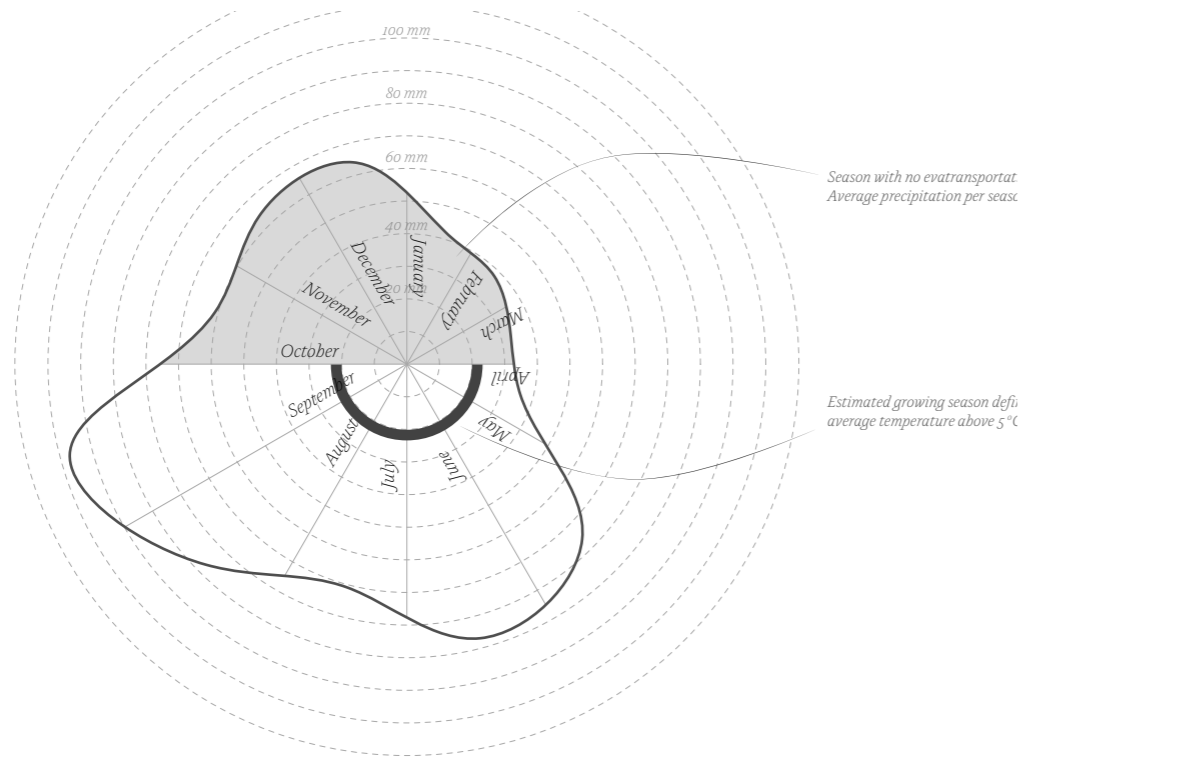
## *Dirt snow*

Asphalt is used for roads for humans to easily move from one place to another. In Norway, though, the winter brings snow to the topography. On roads it causes problems and create unsafe situations. The city of Oslo salts heavy trafical roads to prevent car accidence (Oslo Kommune, n.d.). But salt becomes a problem for surrounding ecosystems as well as being an material that absorb smog from exhausted gasses from car.

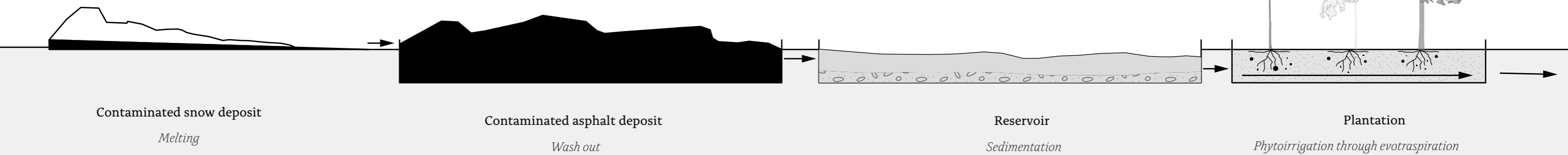
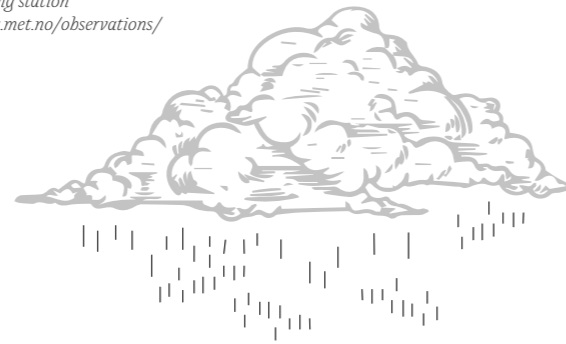
Could Huken both become a site for cleaning contamination from asphalt and dirtsnow?



## Phytoirrigation for asphalt and heavy metals and dirt snow



Average Precipitation 2012-2021  
Vestli monitoring station  
<https://seklima.met.no/observations/>



Principle section of phytoirrigation

The answer for cleaning contaminated material could be find vegetations. As a ecosystem service, phytoremediation can be a method of chaning the form for a contaminated element. Phytoremediation is a process to degrate contamination through plants. In this case ohytoirragiation, which is a form of phytoremediation that chemically binds particular contamination polluted water is irrigated on plantings. The roots will absorb through evotranspotation the contamination into the plants and bound them (Kennen and Niall Kirkwood, 2015).

Naturally snow will become water over time, but asphalt is yet a solid material. Rain will though leach the material.

The design project is suggesting a laboratory landscape to create a sensory space for processes and materials. Leading water from contamination source into depression, where there will be sedimentation of physical waste. This is especially required for dirt snow (Andreassen, 2019).

From the depressions water will be led into a landscape of suitable plants. Overflow of water will be led to Aurevannsbekken.





*Salix ssp.* Willow

Is a native species of Oslo.

Can absorb petroleum and PAHs



*Betula pendula* European White Birch

Is a native species of Oslo.

Can absorb PAHs



*Populus ssp.* Poplar

Is a native species of Oslo.

Can absorb petroleum and PAHs

## *Suitable tree species*

The right plantation is important for function of phytoirrigations. The listed tree species to the left both both native species and are suitable for especially the asphalt contamination.

For dirt snow the salt can cause problems for plants. Therefore a vegetation of salt tolerant grass are planted simulating a Norwegian beach meadow ((Artsdatabanken, n.d.). Suggested species are:

*Festuca rubra*  
*Phragmites australi*, *Agrostis stolonifera*  
*Puccinellia maritima*  
*Plantago maritima*  
*Juncus gerardii*  
*Carex xsalina*

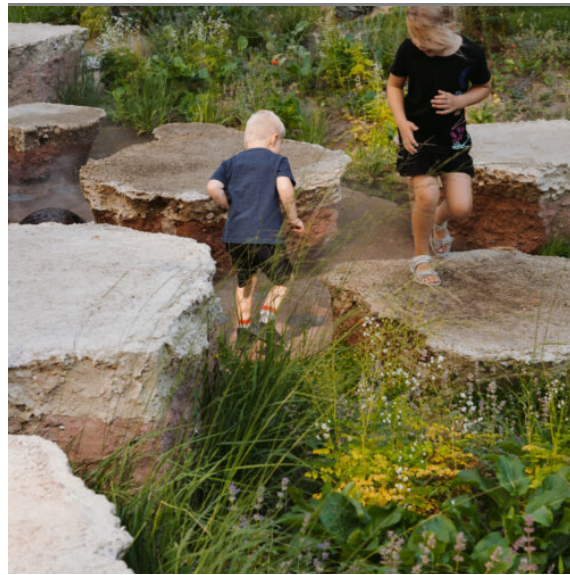


# Aesthetic and practicality of constructing sites

How can the aesthetic of a building site be an inspiration and has a belonging to this project of Huken?

Huken is not a building site but a industrial site. However Huken has through years been a site for moving materials. And by moving material is

has acting with the same rythm or on the same terms as if it was a builing site. On a constructing site materials a brought in to be parts in a new building or landscape. And at such a site materials are transported to other places to make space for the new material. Such sites belongs to the world we are living in and further they are a requirement for



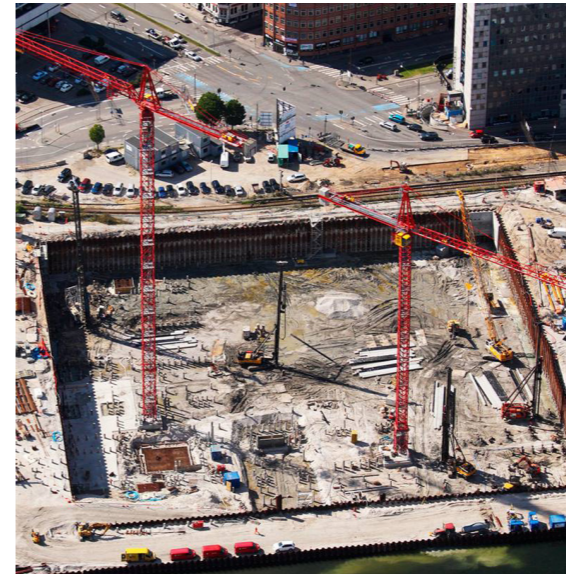
Left: The landscape architecture office BOGL has been using the same technic as secant pilling, a on site concrete casted pill to stabilize the ground seen to the right. The method is call secant pilling. BOGL has by casting the c oncrete in soil form a pattern of concrete islands that creates a new geology.



In the preperation of a building the construction site is shaped. It becomes a negative for the building.

our way of living. Nevertheless, we are not suppose to sense them. They are often hidden away with fences and "No trespassing!" signs. In the same time constructing site are a temporary semiosis or symptome of the anthropocene.

To continue constructing sites are not just a certain



aesthetic. They serves as way of solving pratical problems related to buildings - problems that are related to ecology such as hydrology and geological process fx water storm or erosion.

Can the inspiration of the aesthetic of constructing site become a way of solving the transformation for Hukken?



Tas dist, essumqui commis rem del et omnimudant optatur, te mi, omnis accum exceseque reria acidel imilis.

Tas dist, essumqui commis rem del et omnimudant optatur, te mi, omnis accum exceseque reria acidel imilis.



# Proposal



The succession varies in species and tempi according to the growing material. To the left it's gravel, in the middle it's the present disturbed soil. To the right spruces are growing in soil.

*Year 50*

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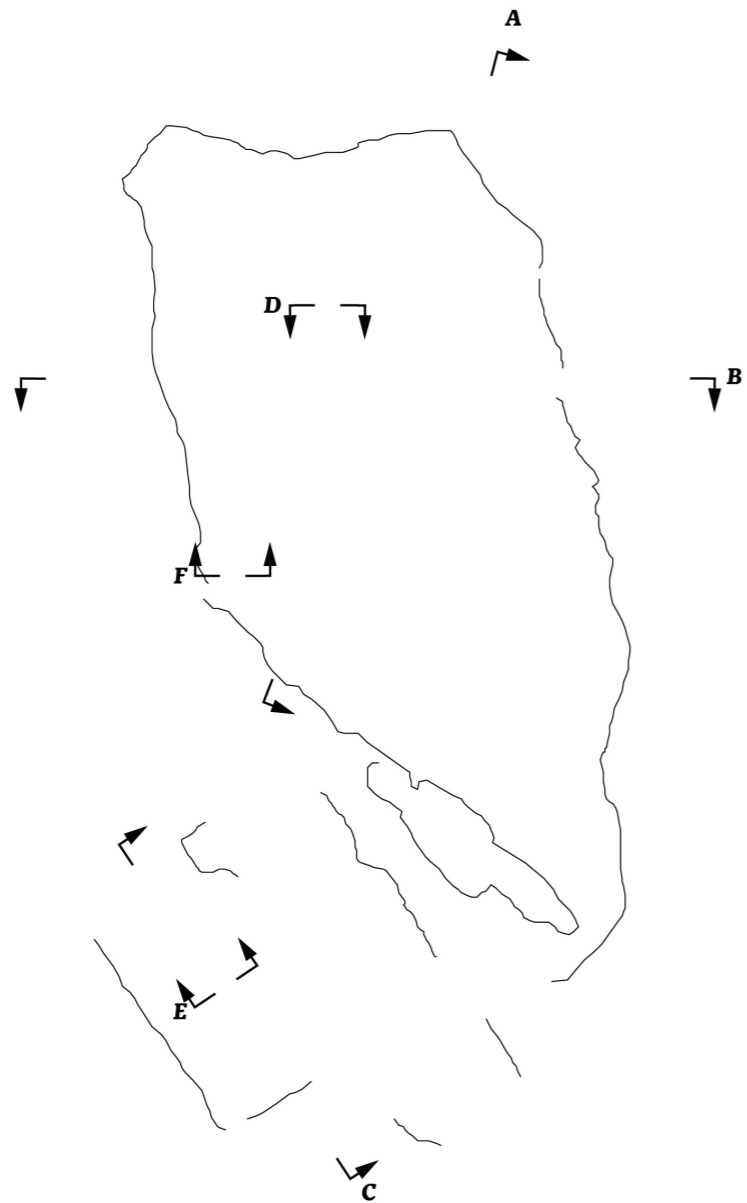
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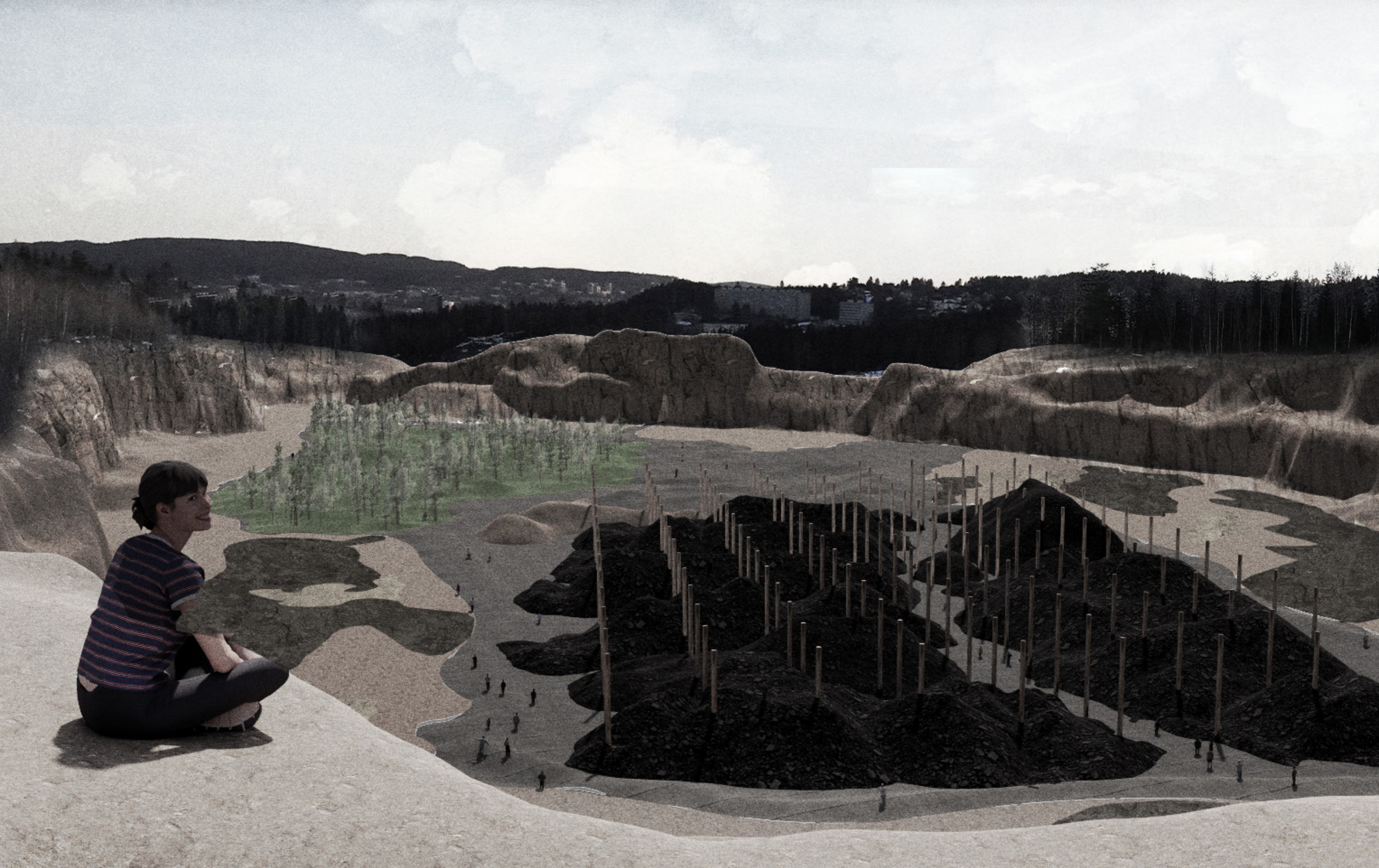
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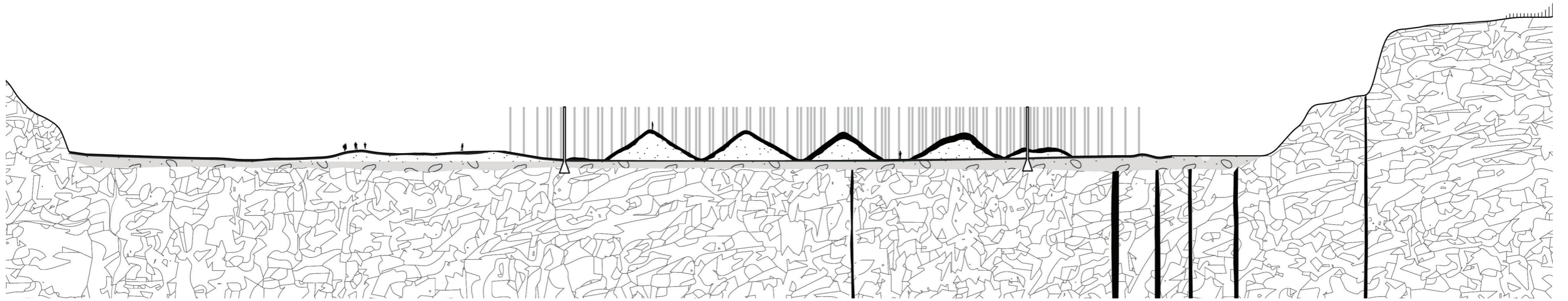




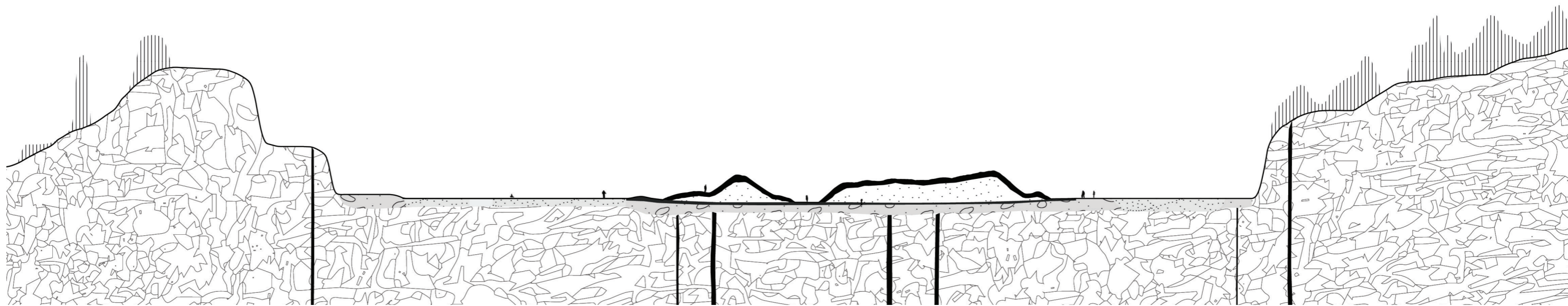
North area from above, as it is one of the qualities from a quarry.

*Year 0*



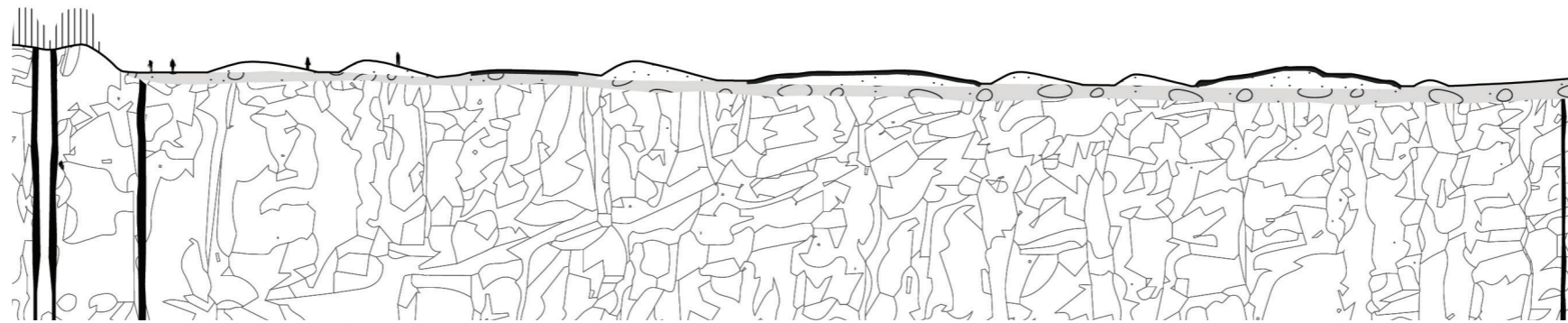


Section A 1:1000 *Year 0*



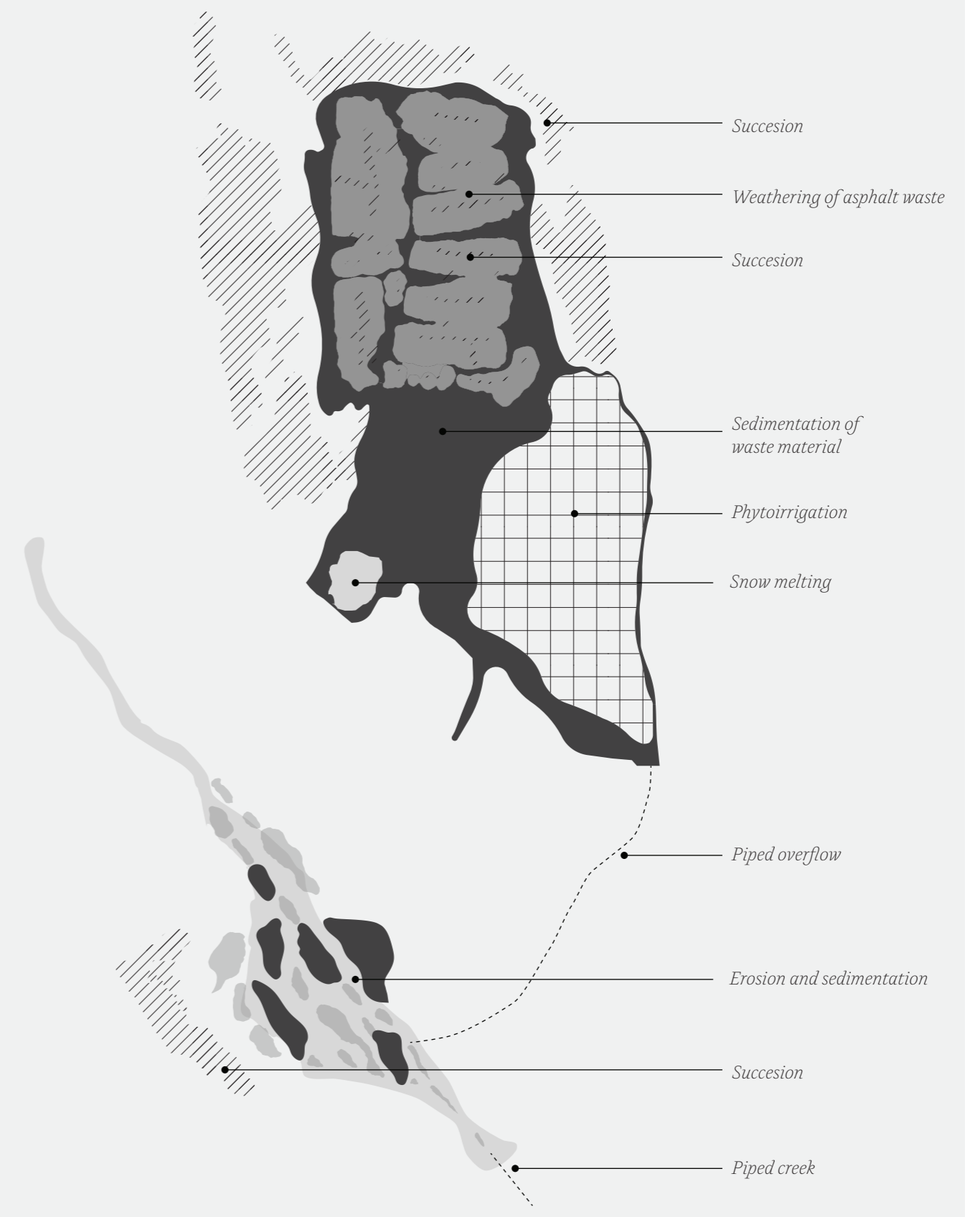
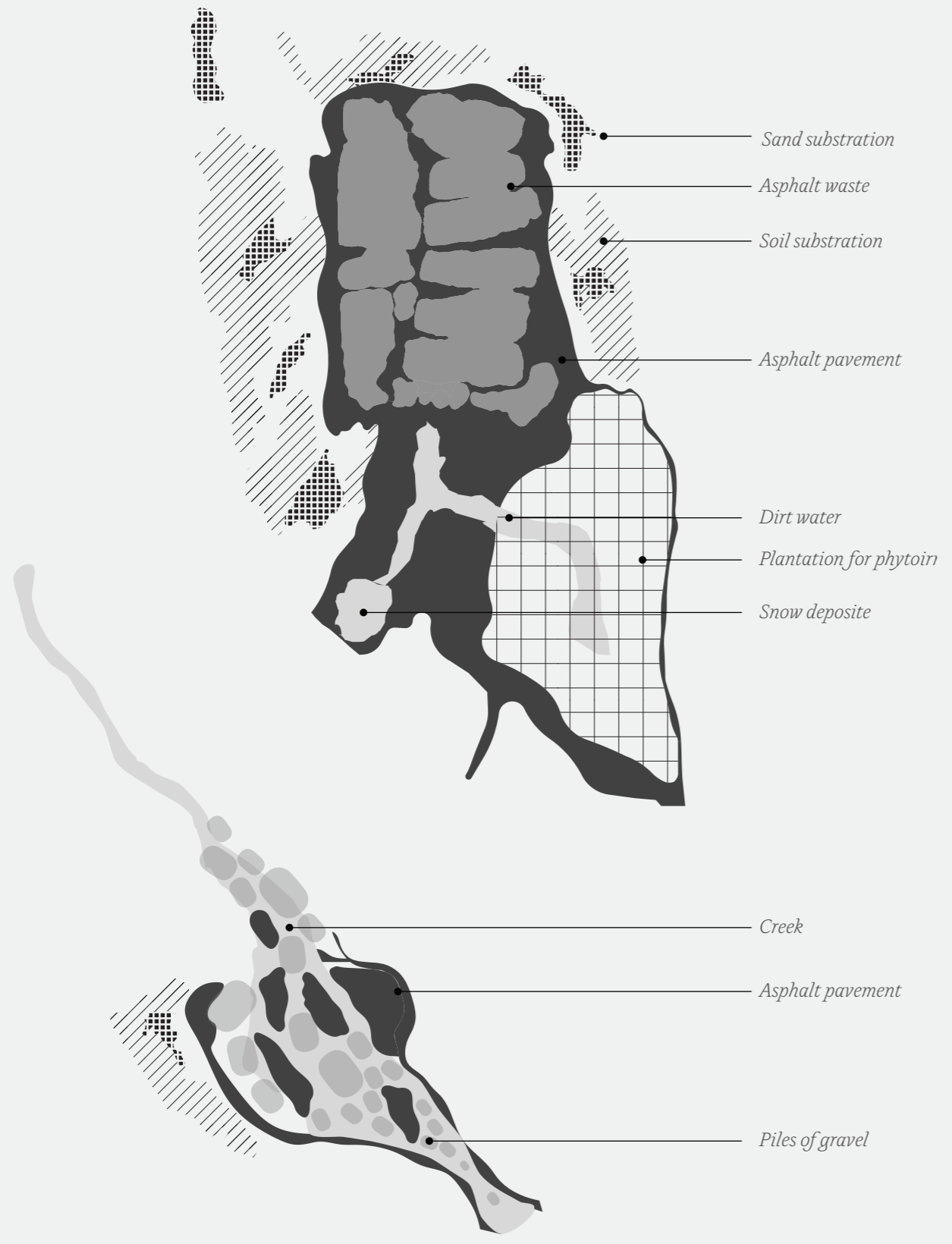
Section B 1:100 *Year 0*





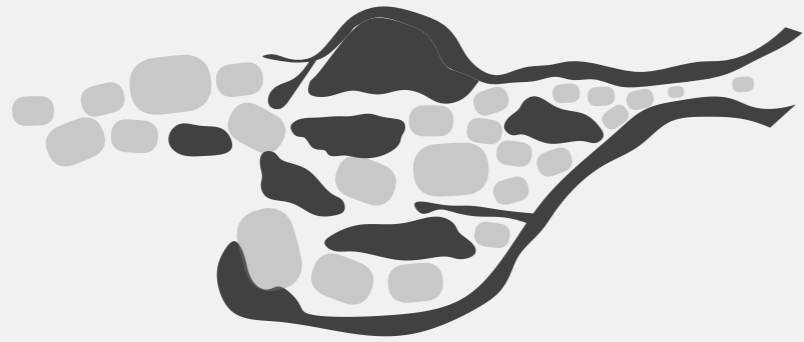
Section C 1:100 *Year 0*



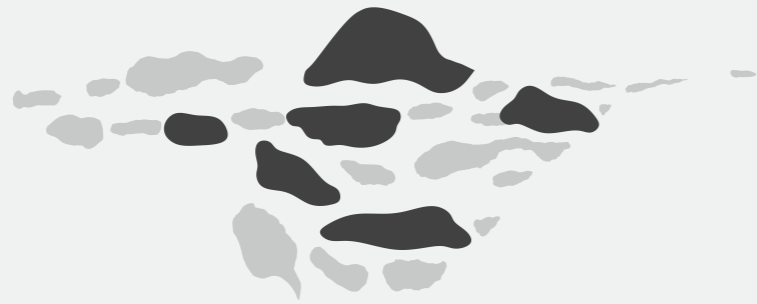




*Year 0*



*Year 5*



*Year 50*



*Year 0*



*Year 5*



*Year 50*







Opening the creek Aurevannsbekken. Piles of gravel together with asphalt islands will distribute the water in a delta

*Year 0*



The proposal allows the river to change over time. The gravel pills are transformed and rocks are brought into the site from the catchment area with the creek.

*Year 50*



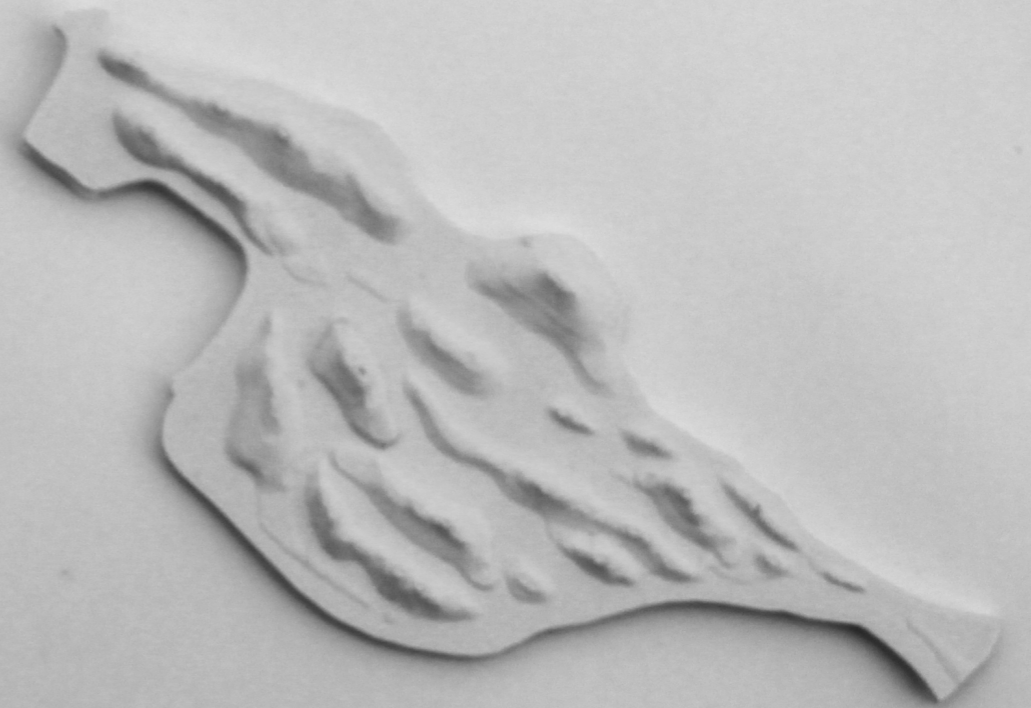
*Topography change in the creek*



*Year 0*



*Year 5*



*Year 50*





In winter the dirt snow from surrounding roads can be deposited. When the snow melts the water will run through a landscape of depression where materials and waste can be deposited and continue to the phytomirrigation,

*Year 50*





Phytoirrigation bassin. The beginning of a woodland. The plant will transport and evaporate the contamination from snow and asphalt

*Year 0*





The trees and plants has grown in different tempi. Some has been cut down and new plants has been planted. The water from the asphalt deposite and the snow will deposite their physical waste in depressions.

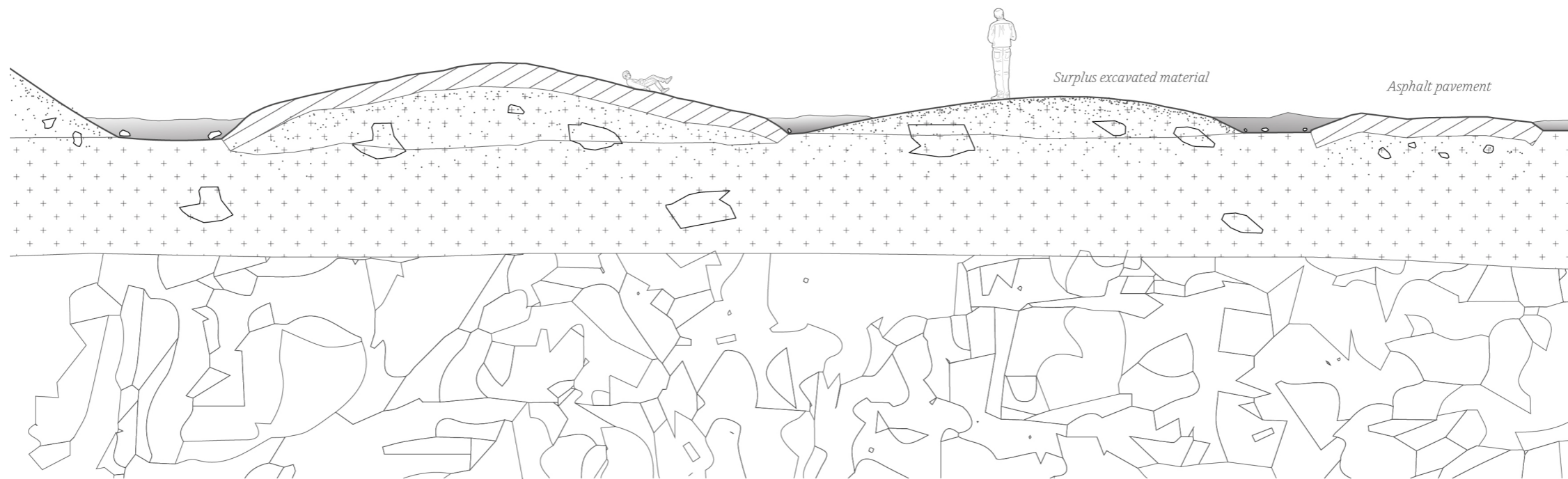
*Year 50*





Opening the creek Aurevannsbekken. Piles of gravel together with asphalt islands will distribute the water in a delta *Year 0*





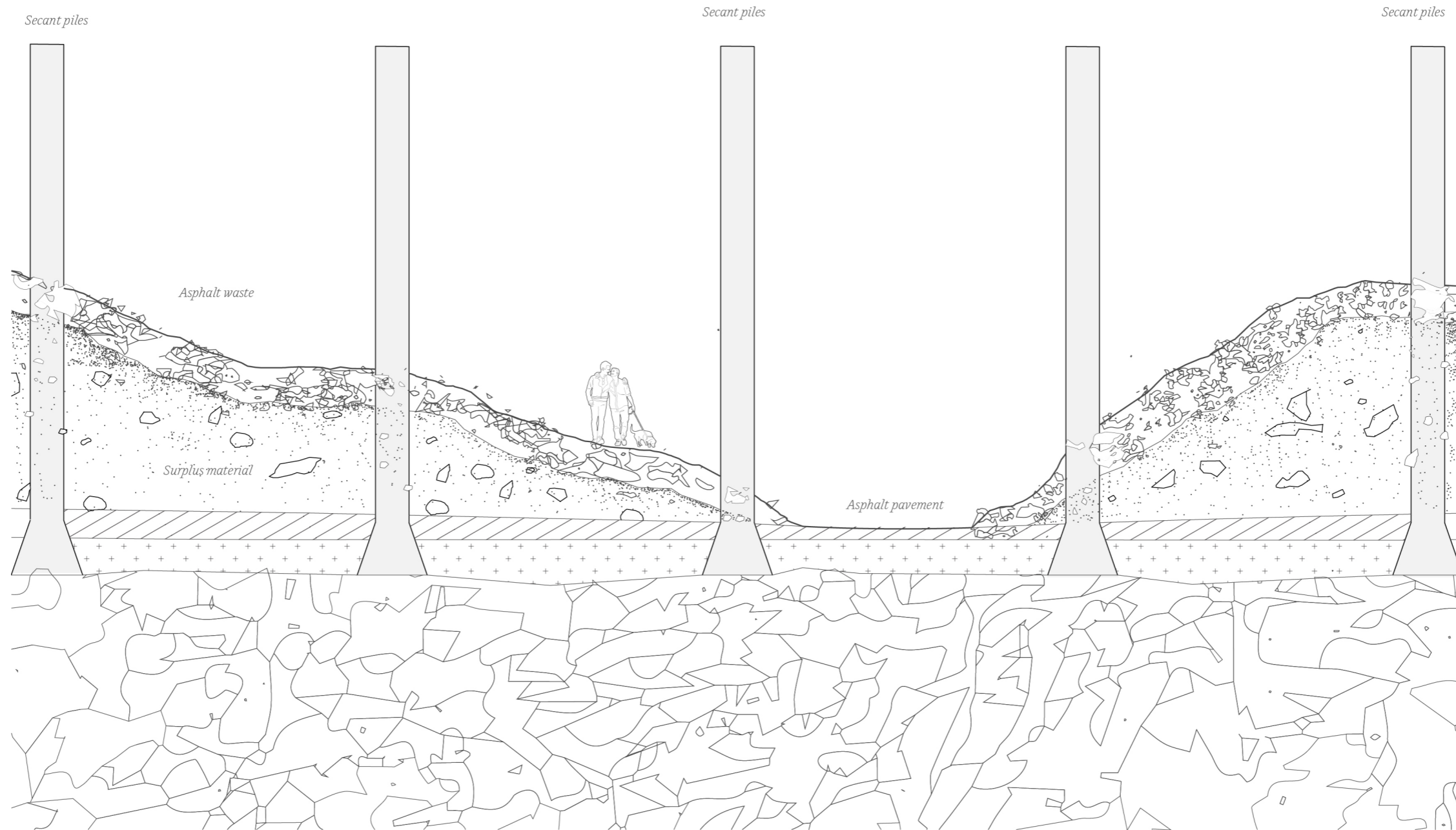
Section E 1:100: The creek that today runs through pipes in the underground, will be led to the surface in a new topography of asphalt pavement and gravel piles.

*Year 0*





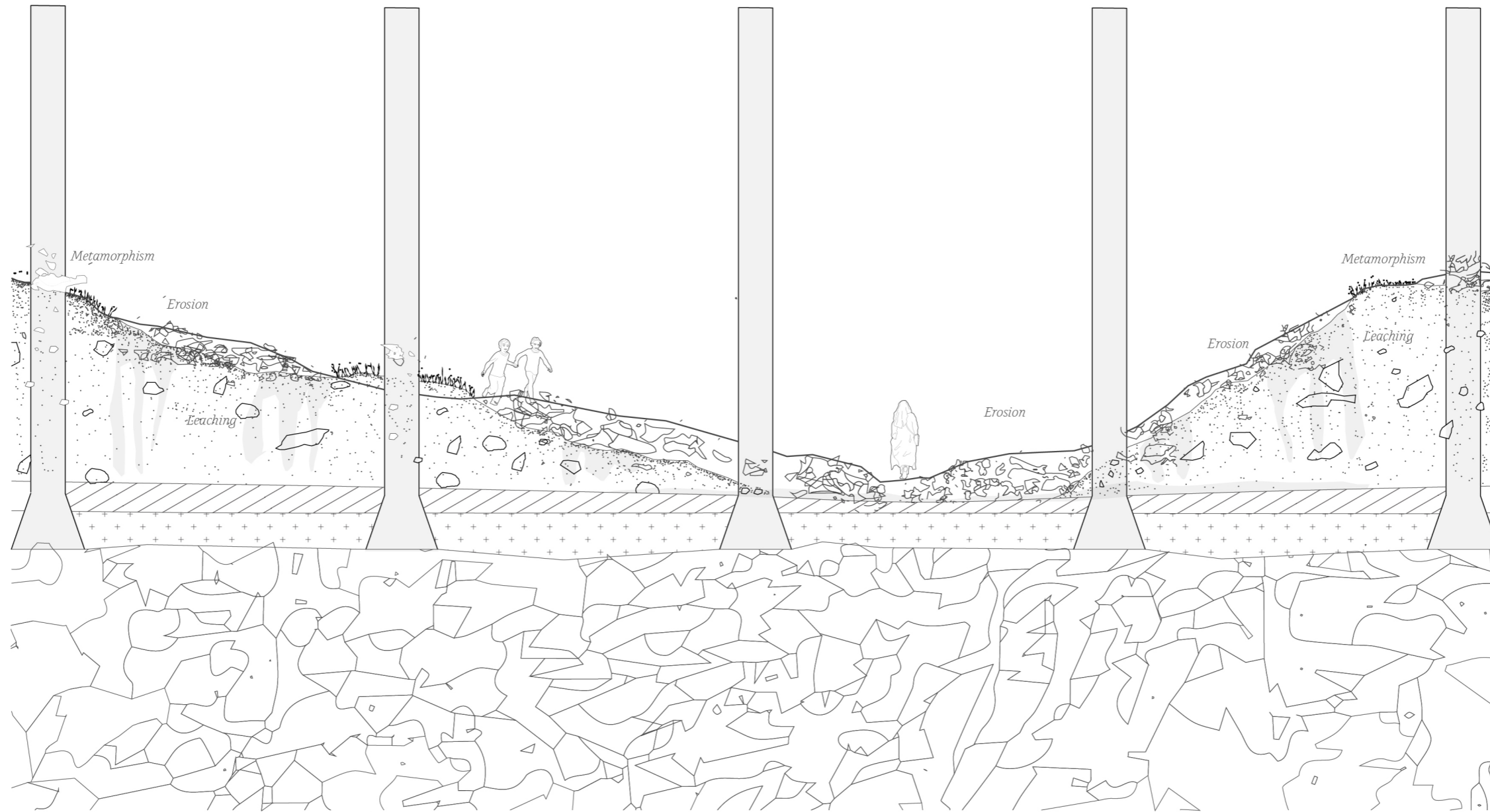




Section D 1:100: Under the asphalt waste material gravel will be stored. In the deposited material secant pills will be casted in concrete. A new geological conglomerat is formed.

*Year 0*

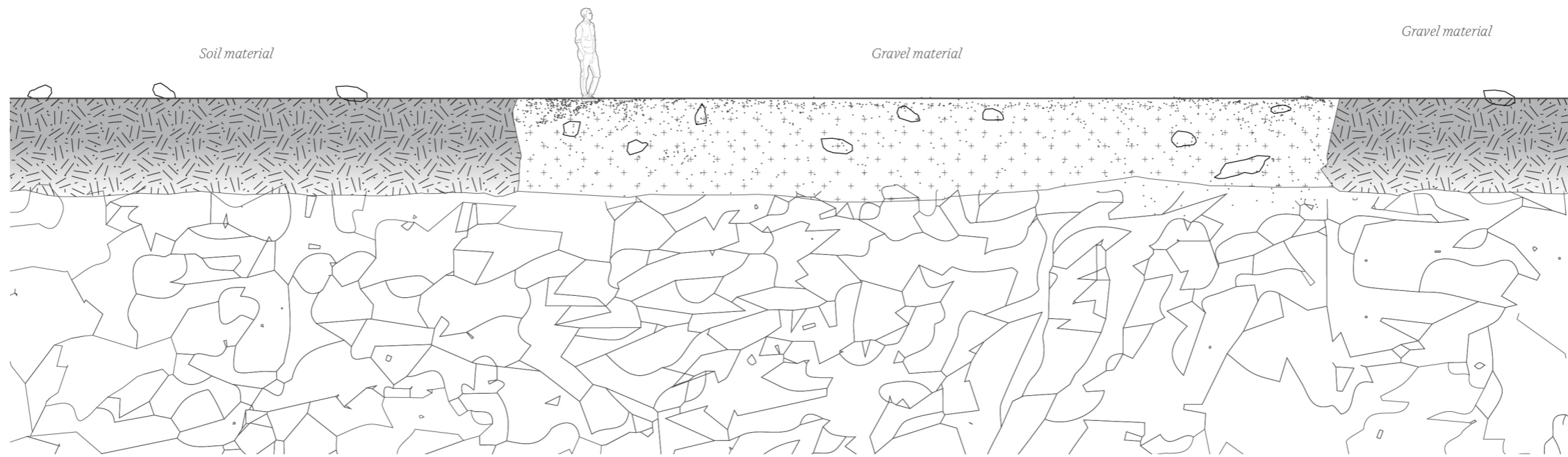




Section D. 1:100: Over time the contamination in the asphalt will leach and be the surface run further in the system. Erosion of the piles will reveal the geological materail aswell as the gravel. Slow succesion of grasses will grow

*Year 50*

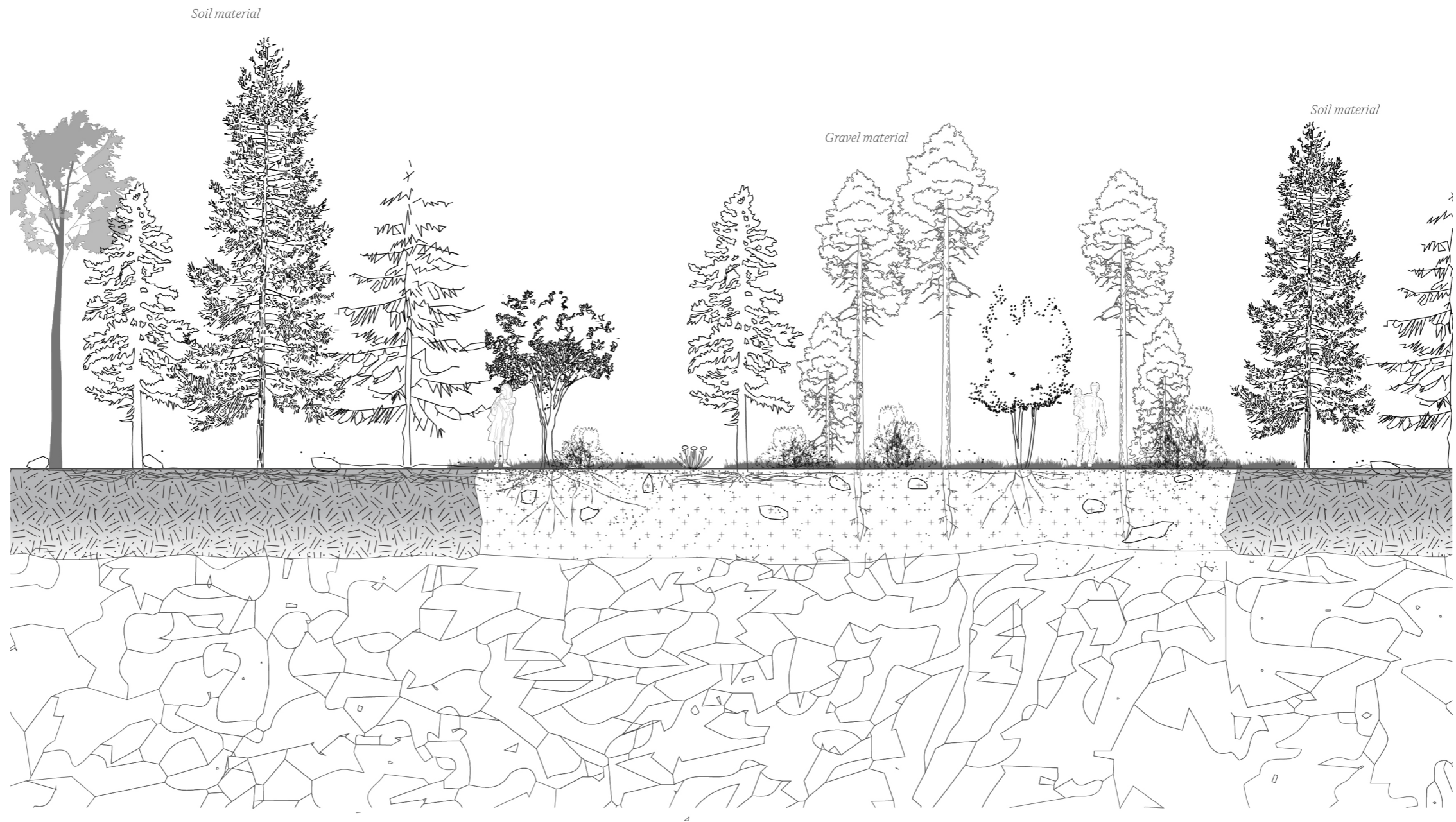




Section F 1:100: As a laboratory fields of soil and gravel material will be establish to create different kinds of succesion

*Year 0*





Section F 1:100: The trees and plants has grown in different tempi and species.

*Year 50*



# Conclusion

The project "Revealing the Anthropocene - a sensory laboratory of landscape processes" aims to suggest how the Anthropocene can be a aesthetic guideline in the field of landscape architecture.

By analysing and interpretate a humanshaped landscape, the project suggests a transformation of a former quarry driven by the material and process on the site. The project search to give an alternative and artistic The senses of material and processes are seen as quality of a design.



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