

Universal design Pyramid (Goldsmith, 2012),

shows a successful design can be achieved by all types of people from normal to disabled people



Visual problem



Hearing problem



Healthy

Sensory impaired

Impairment Categories

Primary Sense

Secondary Sense

Equality

Tangible Sense

Intangible Sense

Strenght

Weakness

Common



Hearing



hearing



visual



Visual



visual



hearing



Healthy



visual



hearing



smell



touch



memory and experience

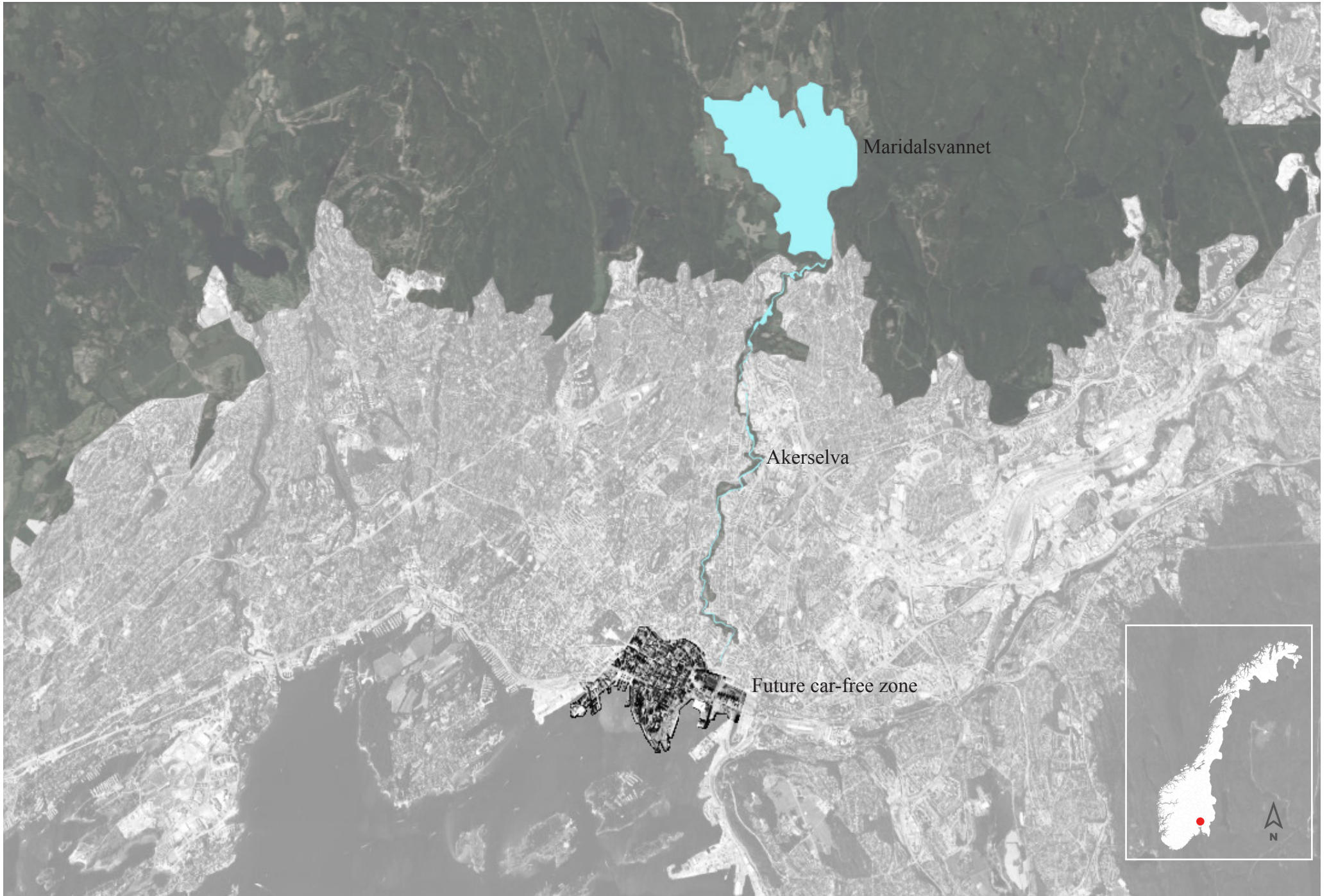


kinesthetic and balance

Challenge

Enhance

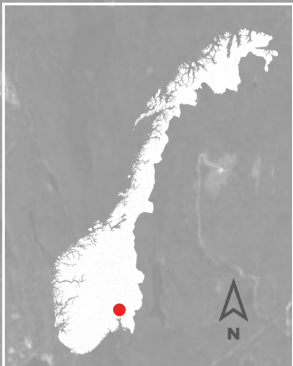




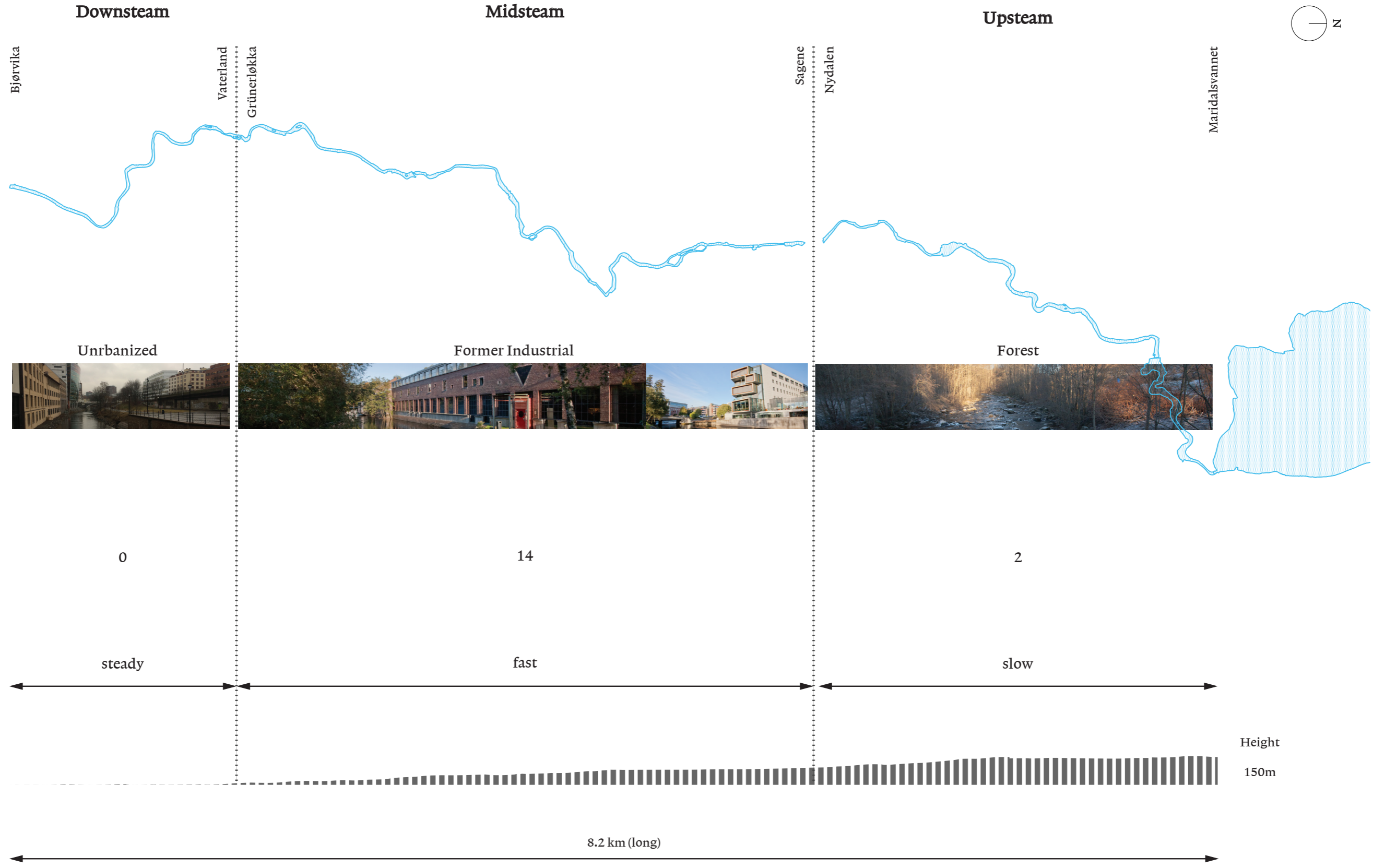
Maridalsvannet

Akerselva

Future car-free zone



Akerselva



Up-stream
From Maridalsvannet to Nydalen



Nydalen fabrikker Eckersberg Johan Fredrik 1851

The uppermost section of the Akerselva consist two waterfalls. Sawmill processed timber from peaceful upstream forestry before reached the Nydalen area. The folklorist and forester Peder Asbjørnsen claims that sawdust was forming a lid on the surface of the pond and had depleted the stock of trout at this upstream.



Up-stream
From Maridalsvannet to Nydalen



, after 1867, water becomes drinkable water again.



Mid-stream
From Sagene to Grünerløkka



Motiv fra Akerselva A. Nay 1857

The Akerselva ran into its busiest stretch through fourteen power-producing falls and the last falls is located at Grünerløkka. For increasing the power for operations, industries bought and expanded waterfalls. Thus, there became proto-industrial centre in 1850s and made it as the larger labour market.



Mid-stream
From Sagene to Grünerløkka



The industrialization made its most lasting contribution to Oslo's city architecture in the present-day.



Down-stream
From Vaterland to Bjørvika



Vaterland Bridge Ole Tobias Olsen 1865

The urbanized area was erected new tenements in downstream. Residents used boats to get out on the fjord, in a gradually more polluted environment. The first public sewer in Christiania was let into the river by this bridge.



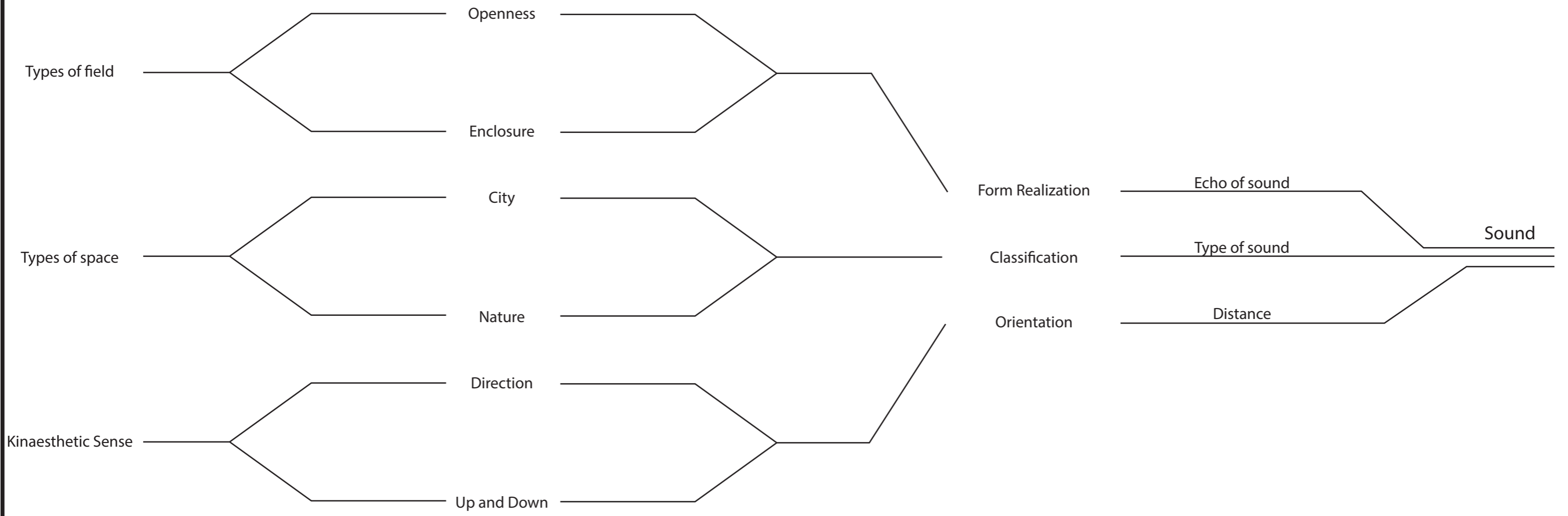
Down-stream
From Vaterland to Bjørvika



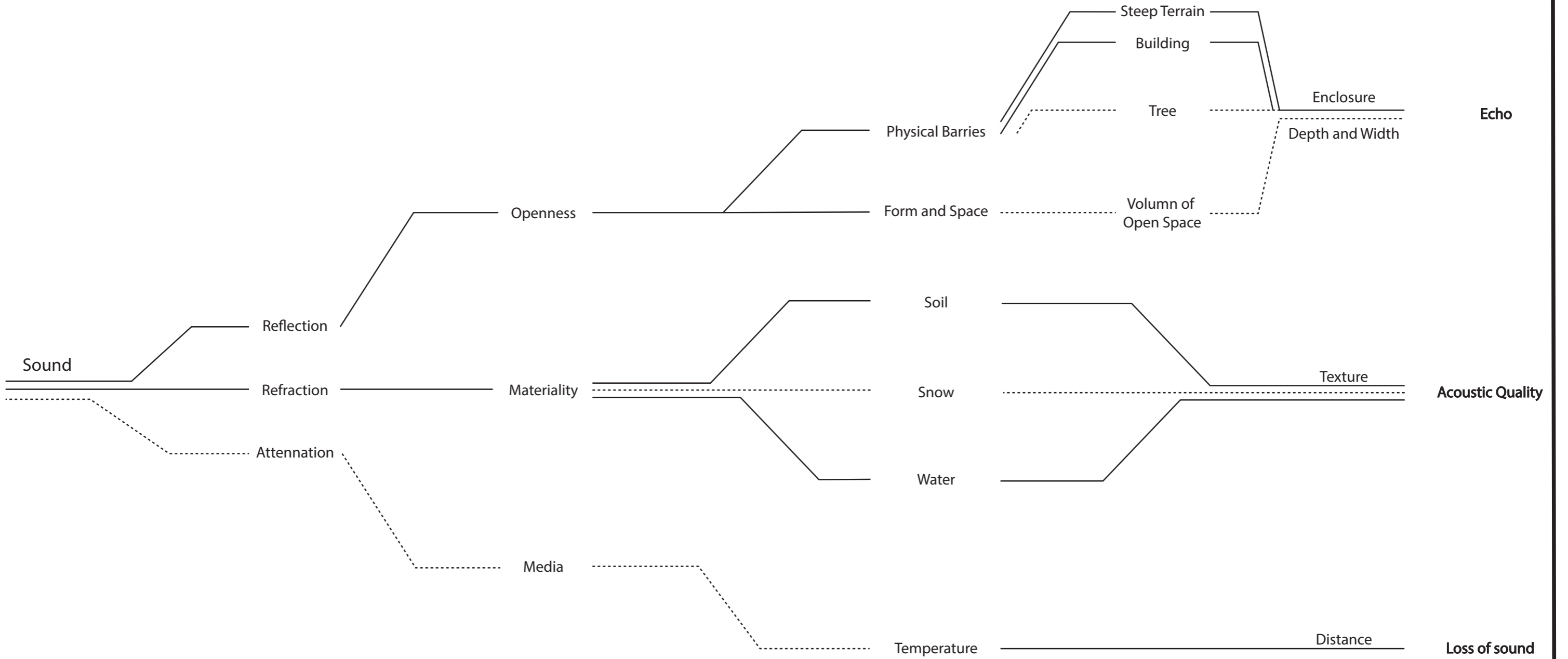
Today, the area are replaced by high-rise buildings and intersections. All the boats were moved. The river ends at 500m away from harbour and water runs through culvert to the harbour.



Sound



Sound



Texture of Sound



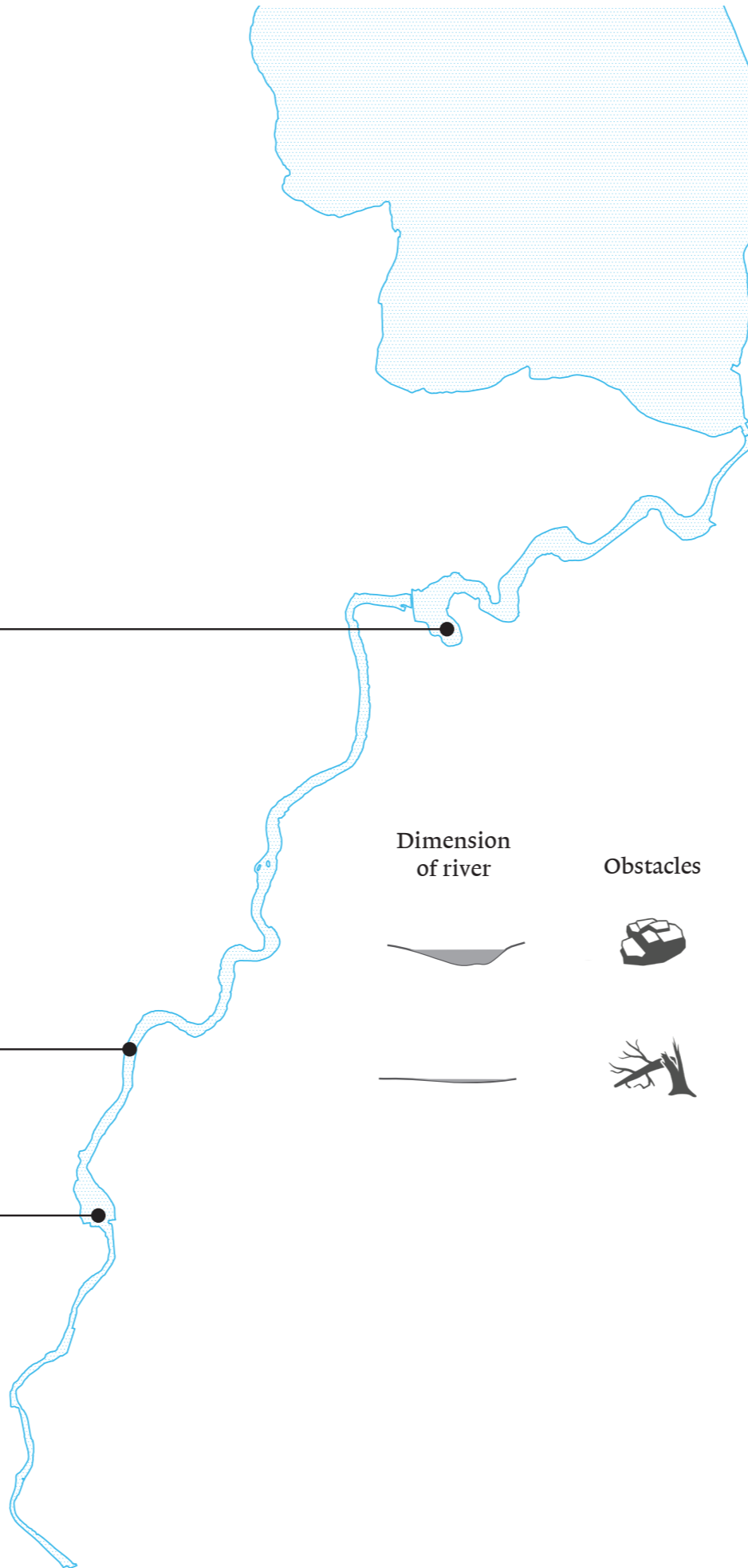
Smooth



Coarse



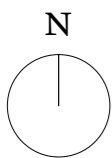
Rough



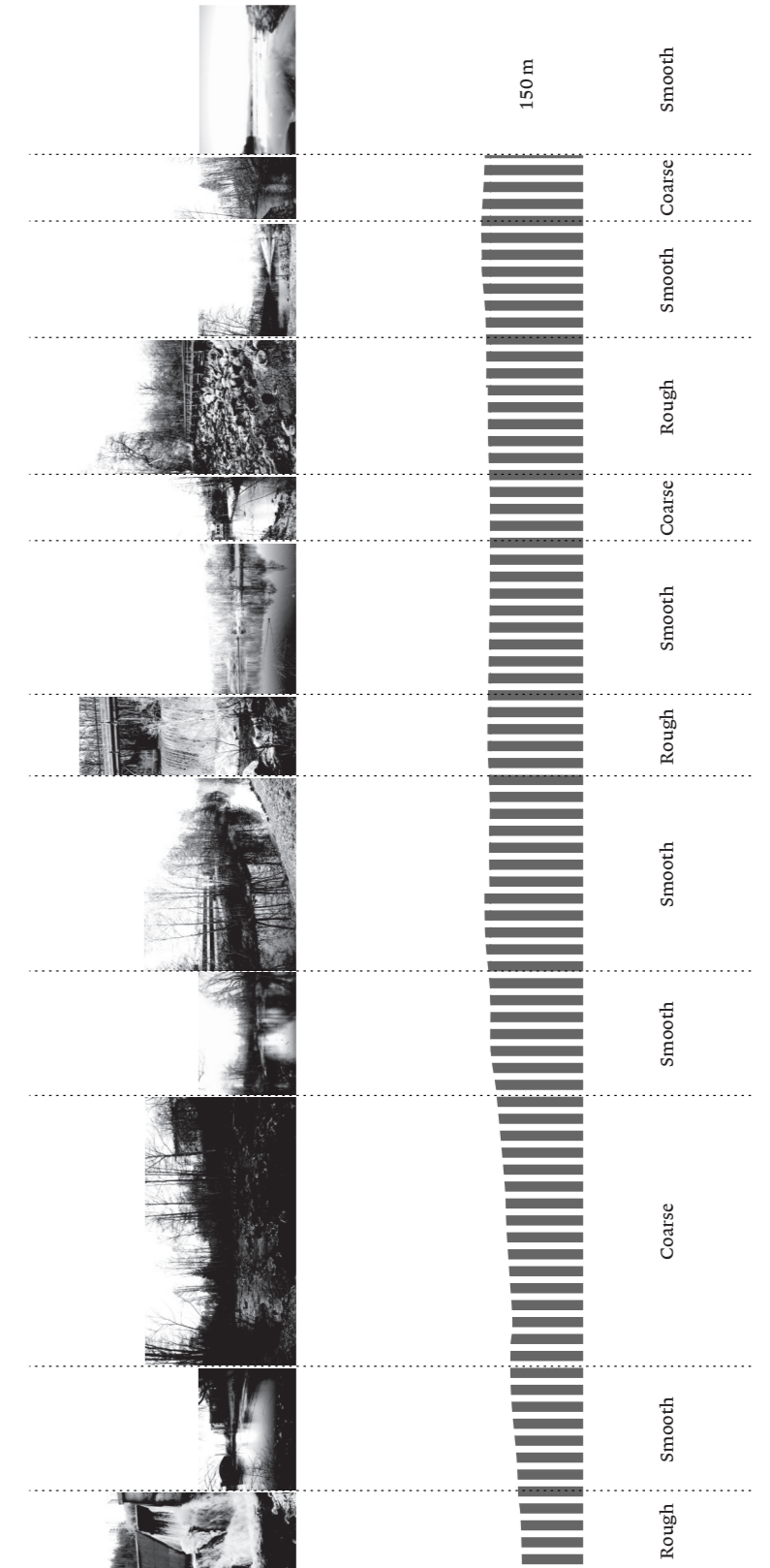
Dimension of river



Obstacles



Up-stream
From Maridalsvannet to Nydalen



Echo of Sound



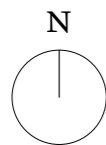
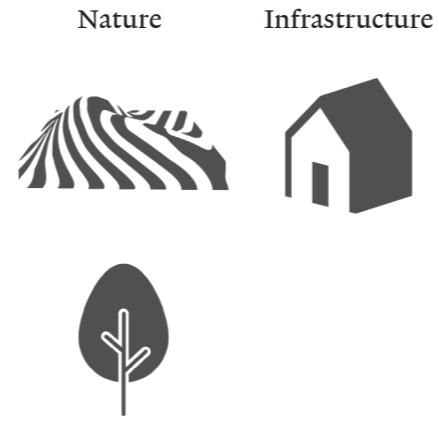
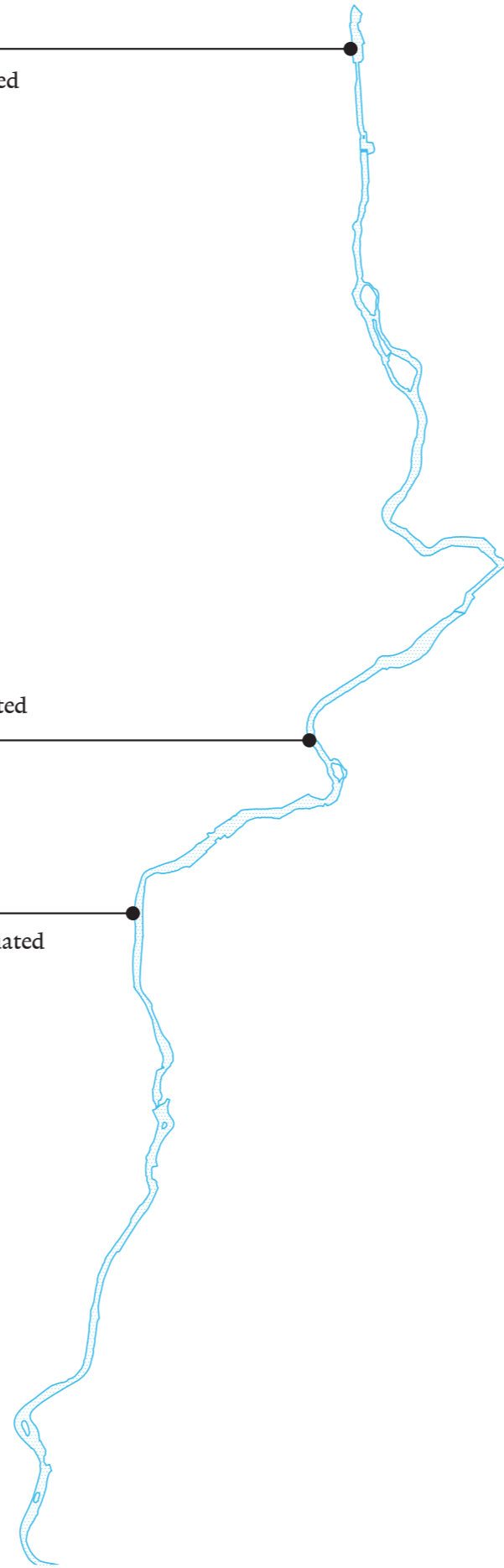
Reflected



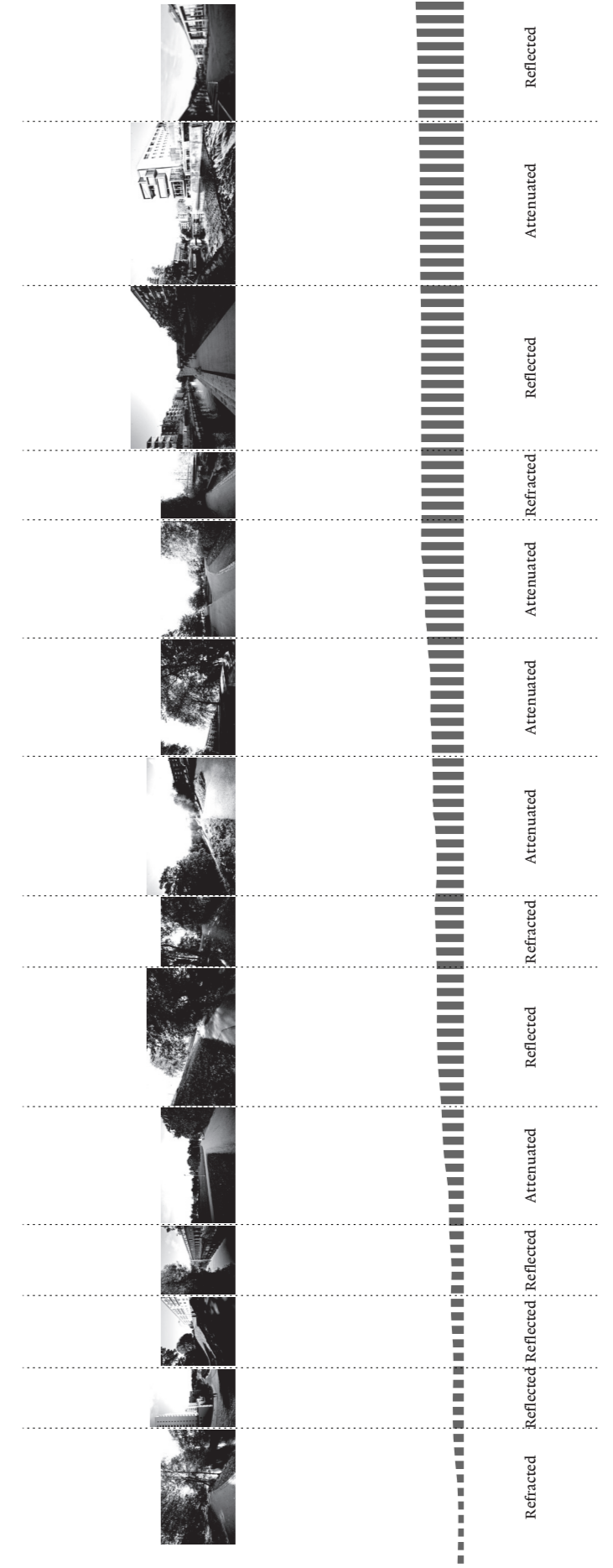
Refracted



Attenuated



Mid-stream
From Sagene to Grünerløkka



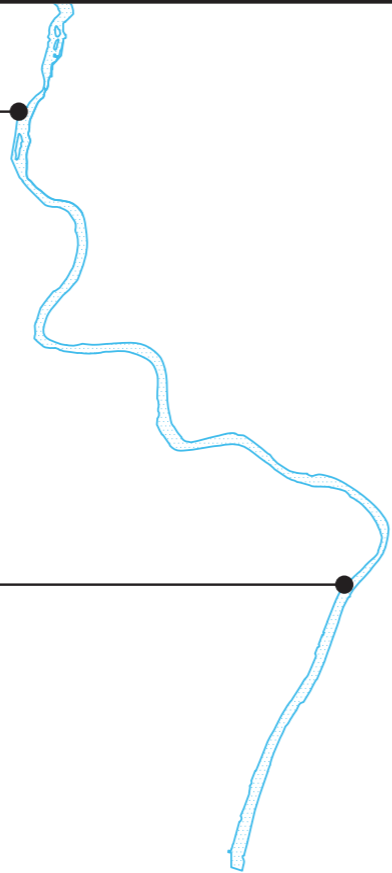
Complexity of Sound



Pure



Mixed



Bird



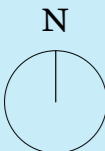
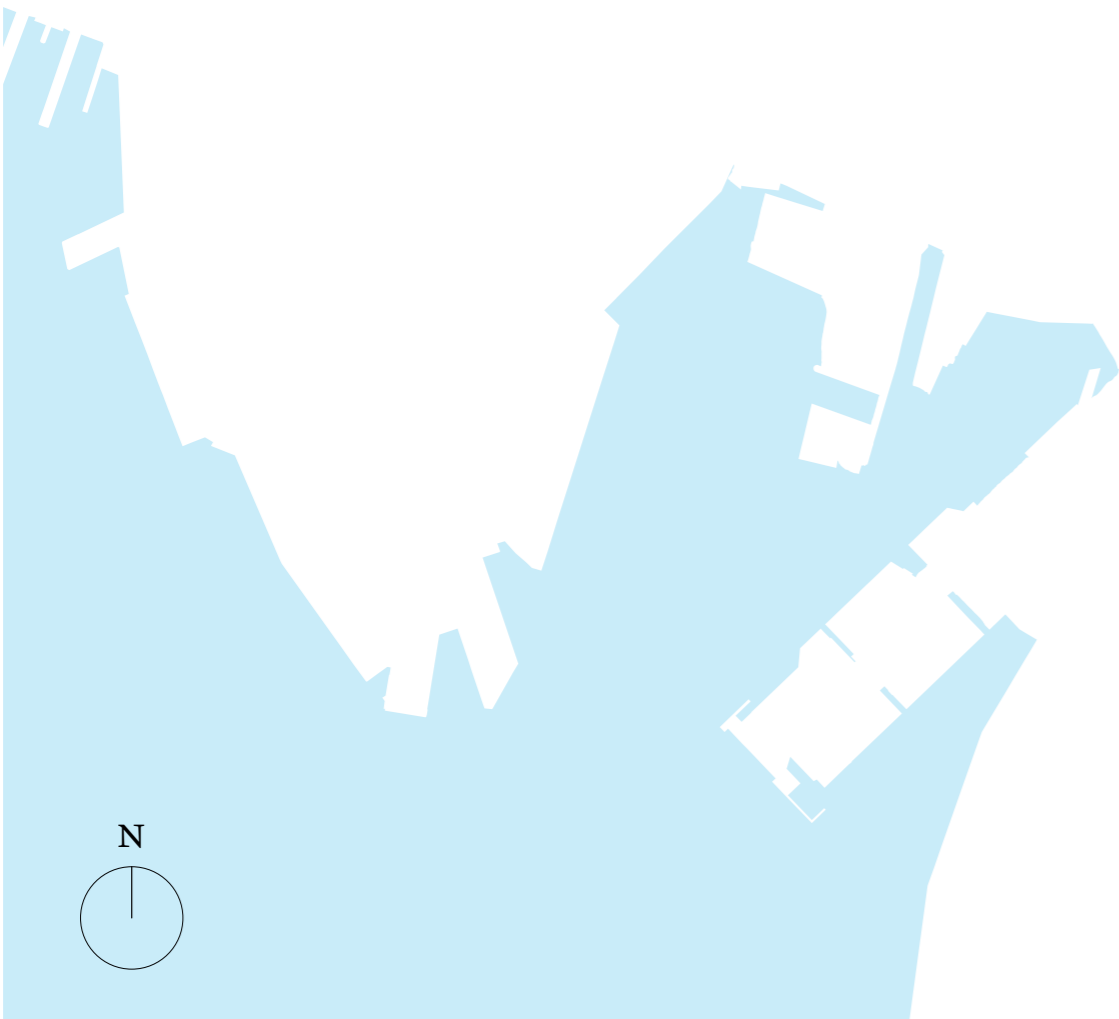
Nature



Happening



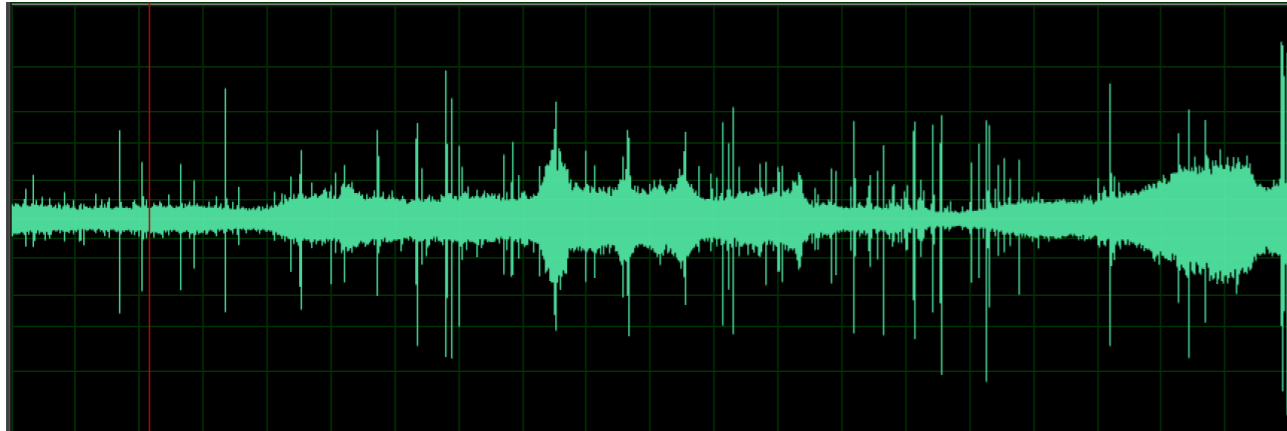
Pure
Pure
Pure
Mixed
Mixed
Mixed
Mixed
Mixed



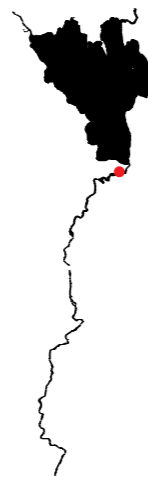
Down-stream
From Vaterland to Bjørvika

Acoustic Quality

Up-stream
From Maridalsvannet to Nydalen

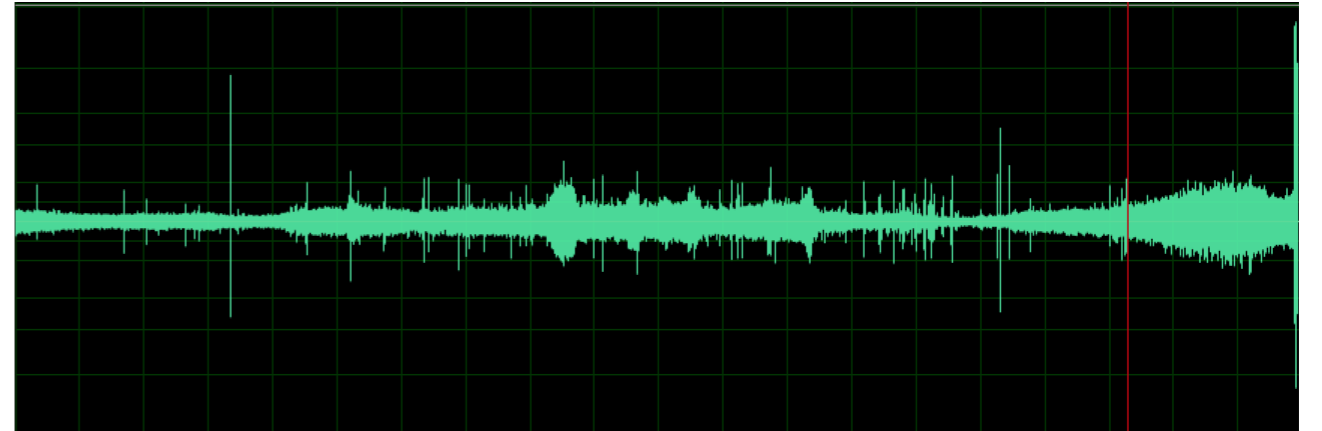


Original Sound Wave



Acoustic Quality

Up-stream
From Maridalsvannet to Nydalen



Hearing lost Sound Wave

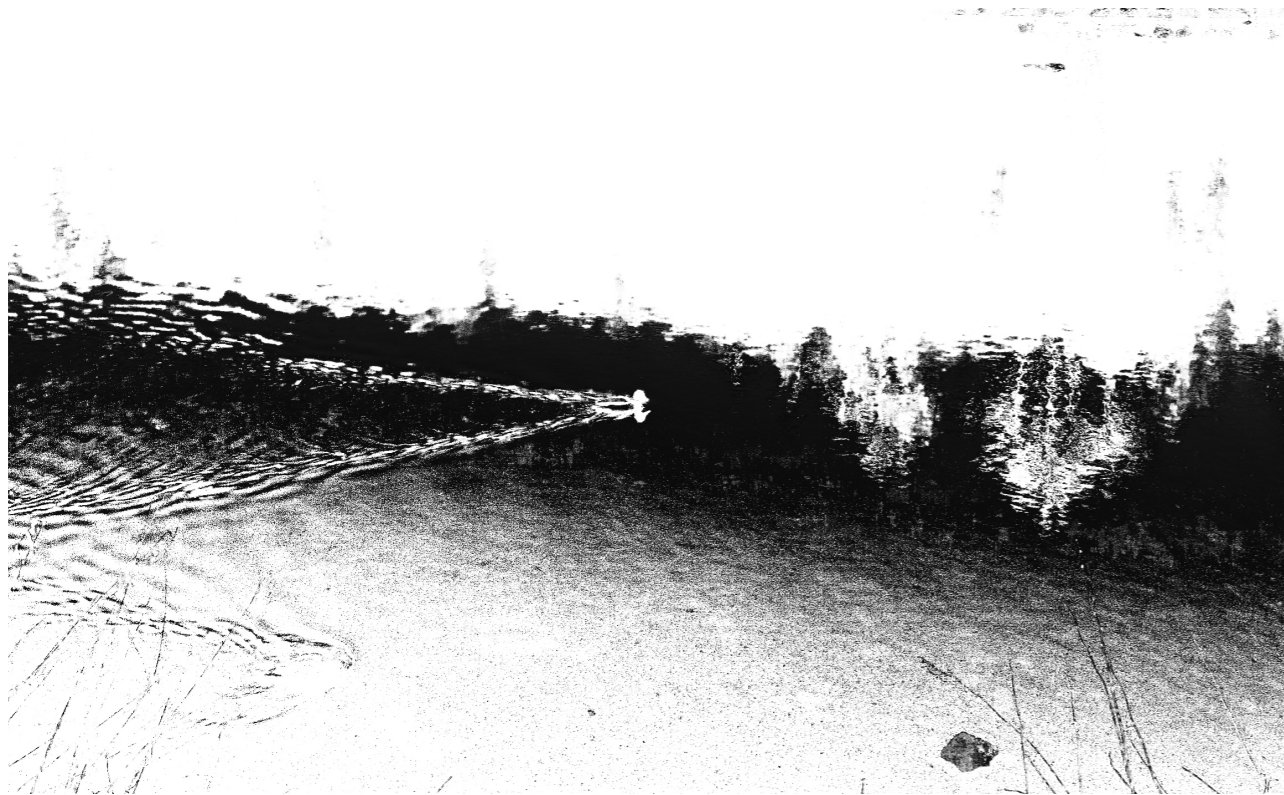


Soundscape

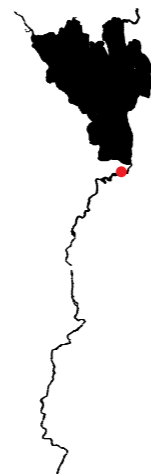


Acoustic Texture

Up-stream
From Maridalsvannet to Nydalen



Still 58.63dB



Acoustic Texture

Up-stream
From Maridalsvannet to Nydalen



Steady 62.39dB

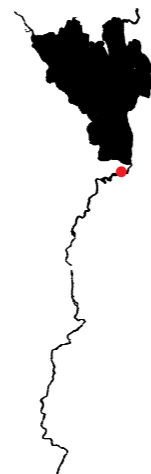


Acoustic Texture

Up-stream
From Maridalsvannet to Nydalen



Speedy 67.31dB



Acoustic Texture

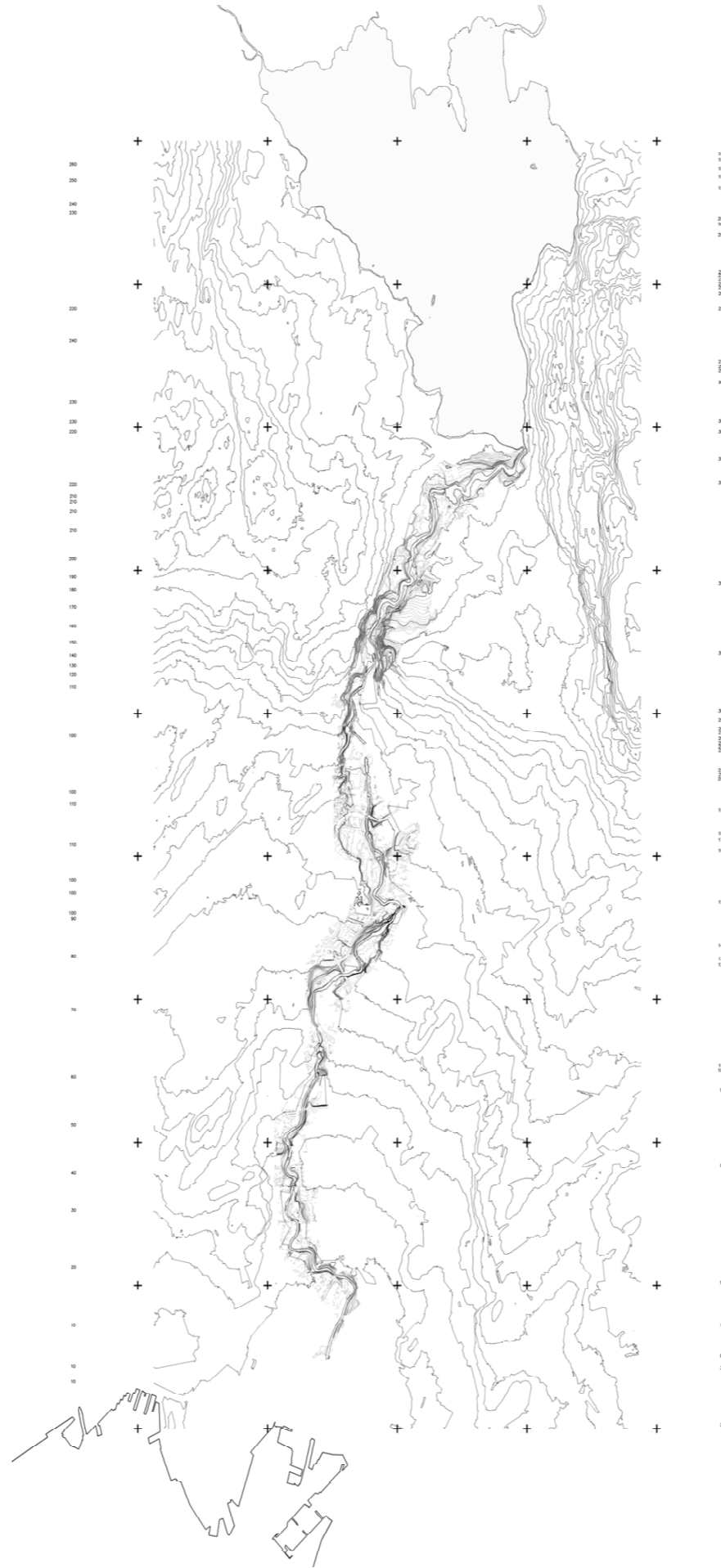
Mid-stream
From Sagene to Grünerløkka



Vigorously 76.28dB



Topographic VS Echo

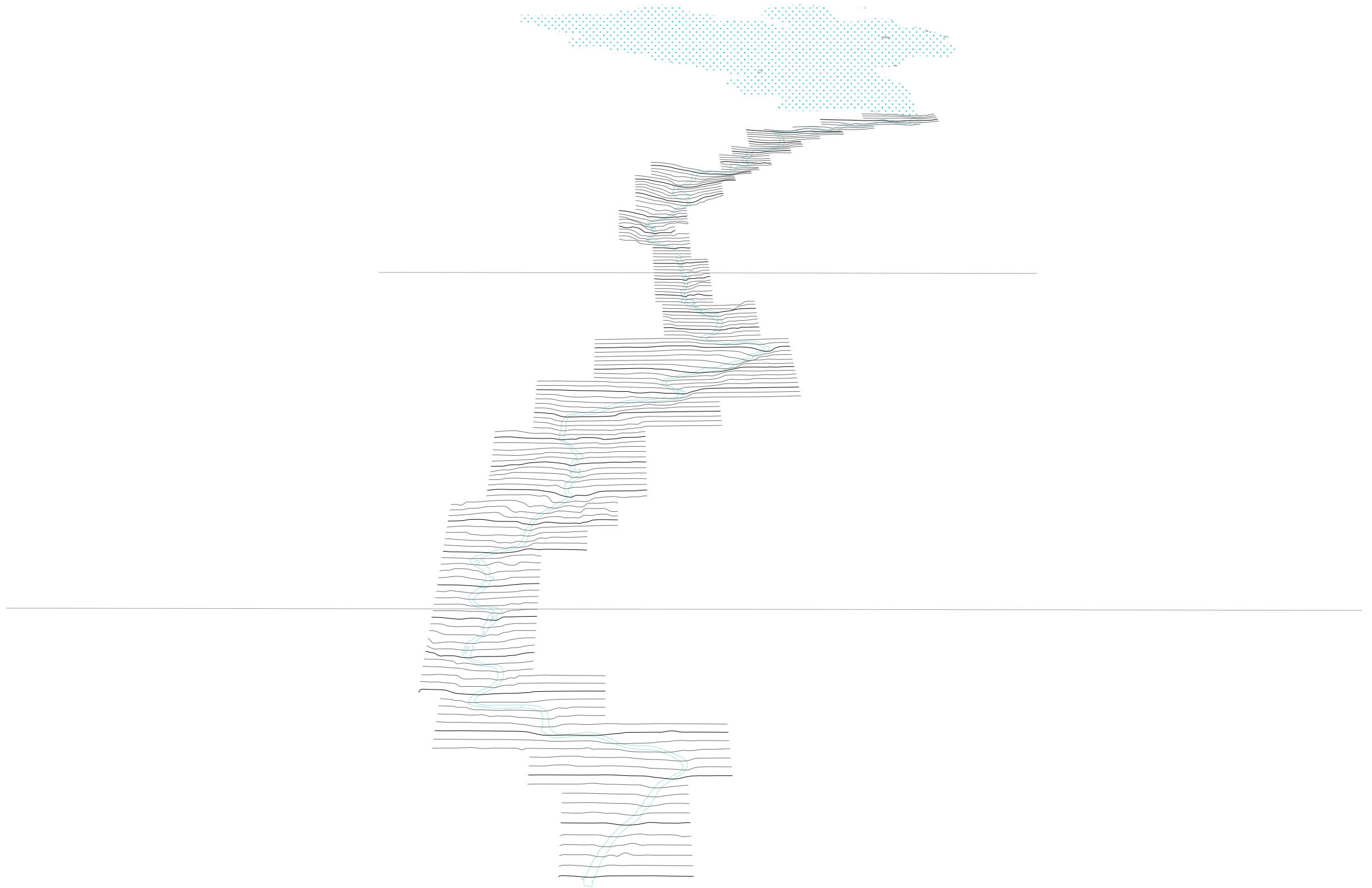


Topographic VS Echo

Upstream

Midstream

Downstream



Topographic VS Echo

Upstream



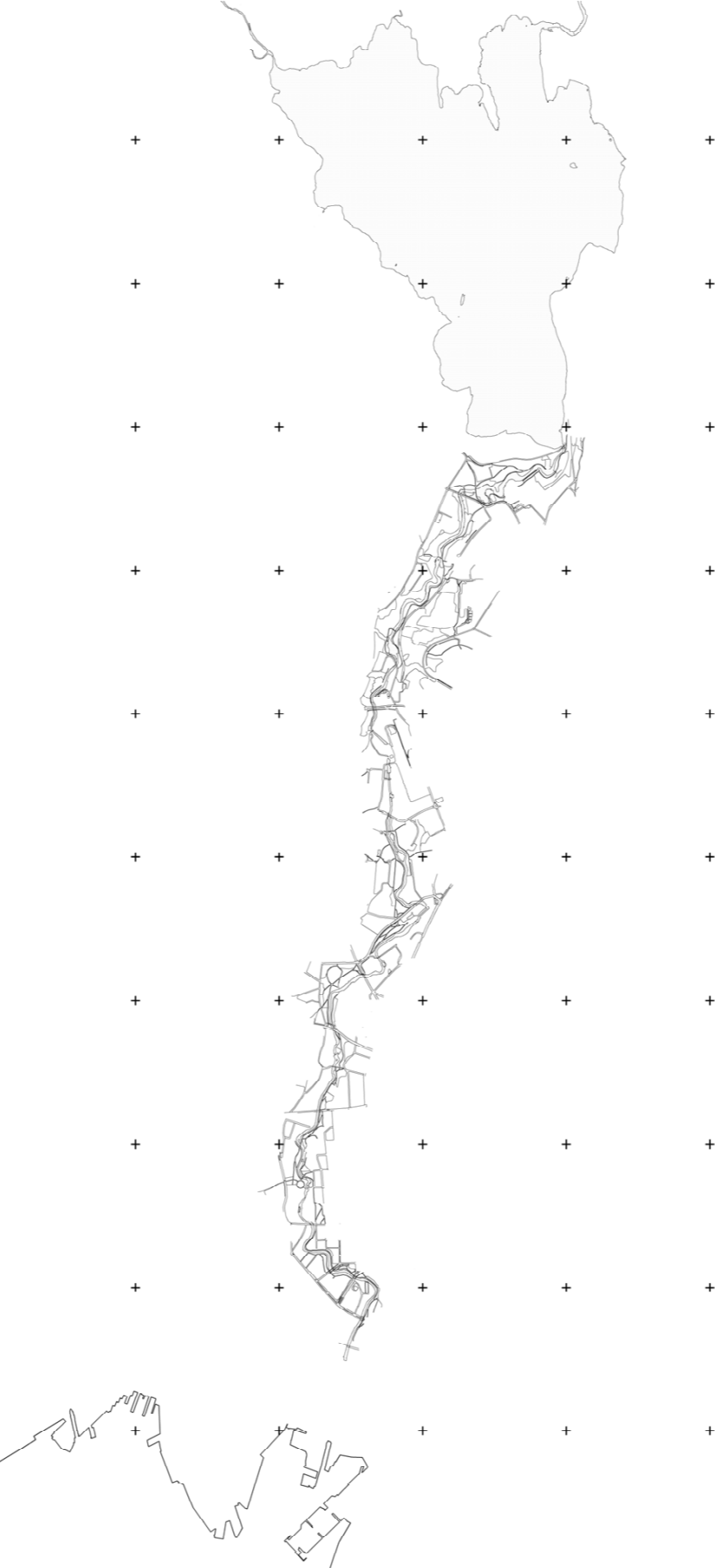
Midstream



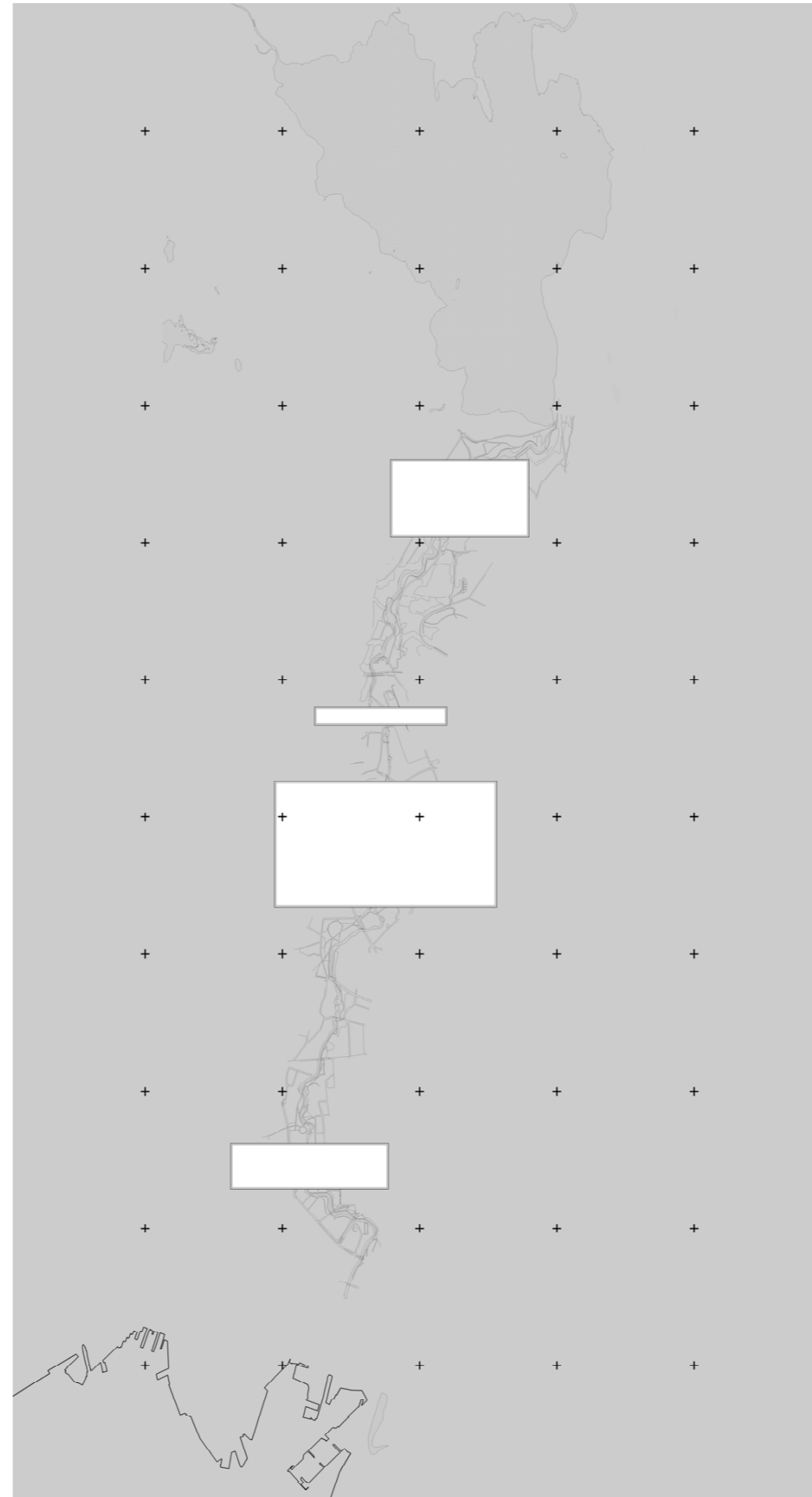
Downstream



Acoustic network



Acoustic Disconnection



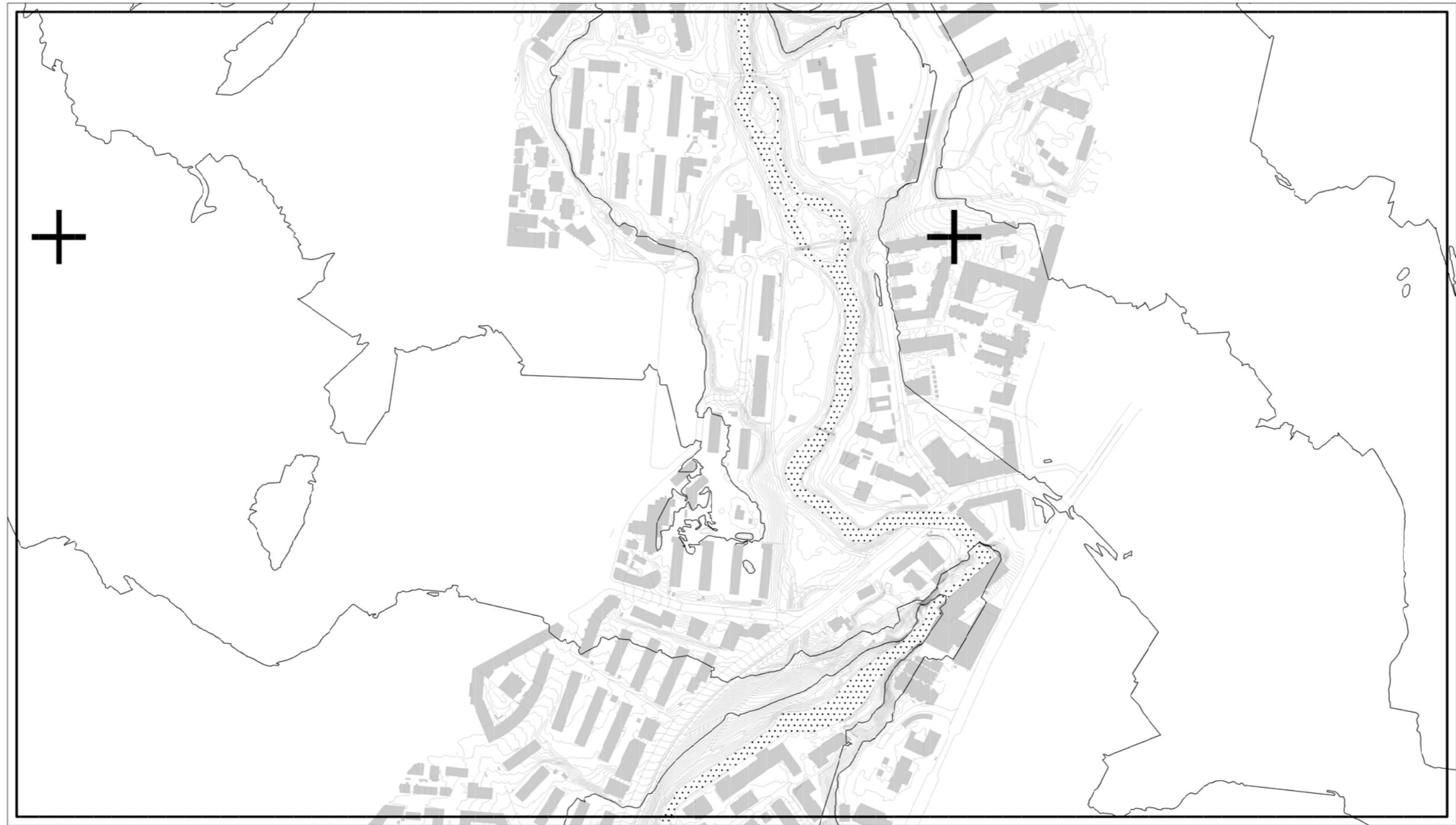
Acoustic Disconnection



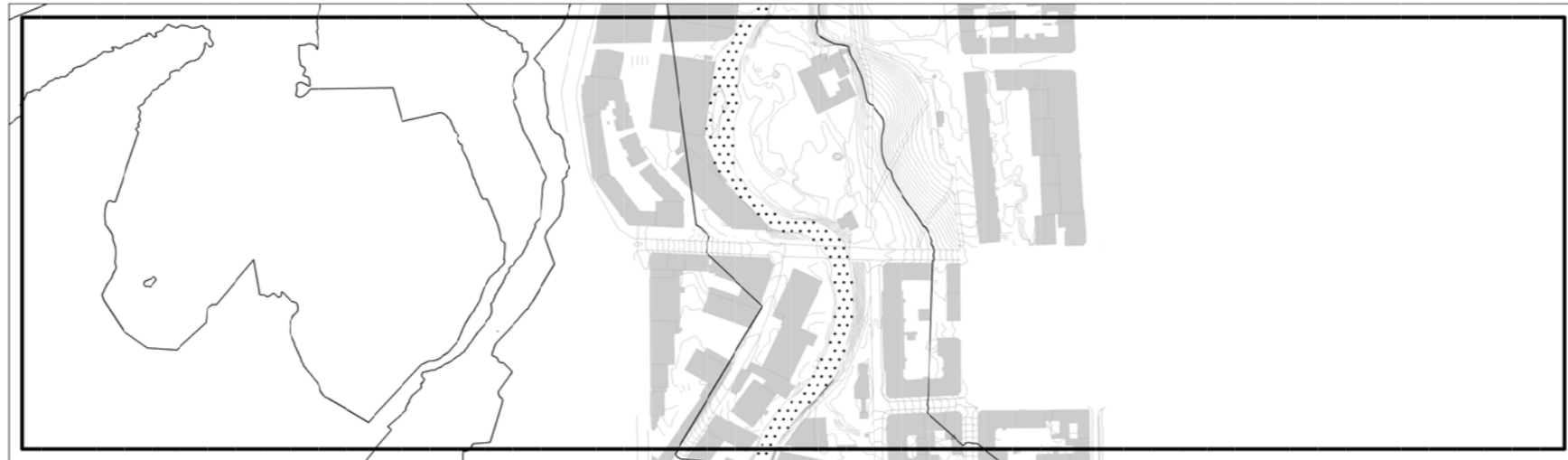
Acoustic Disconnection



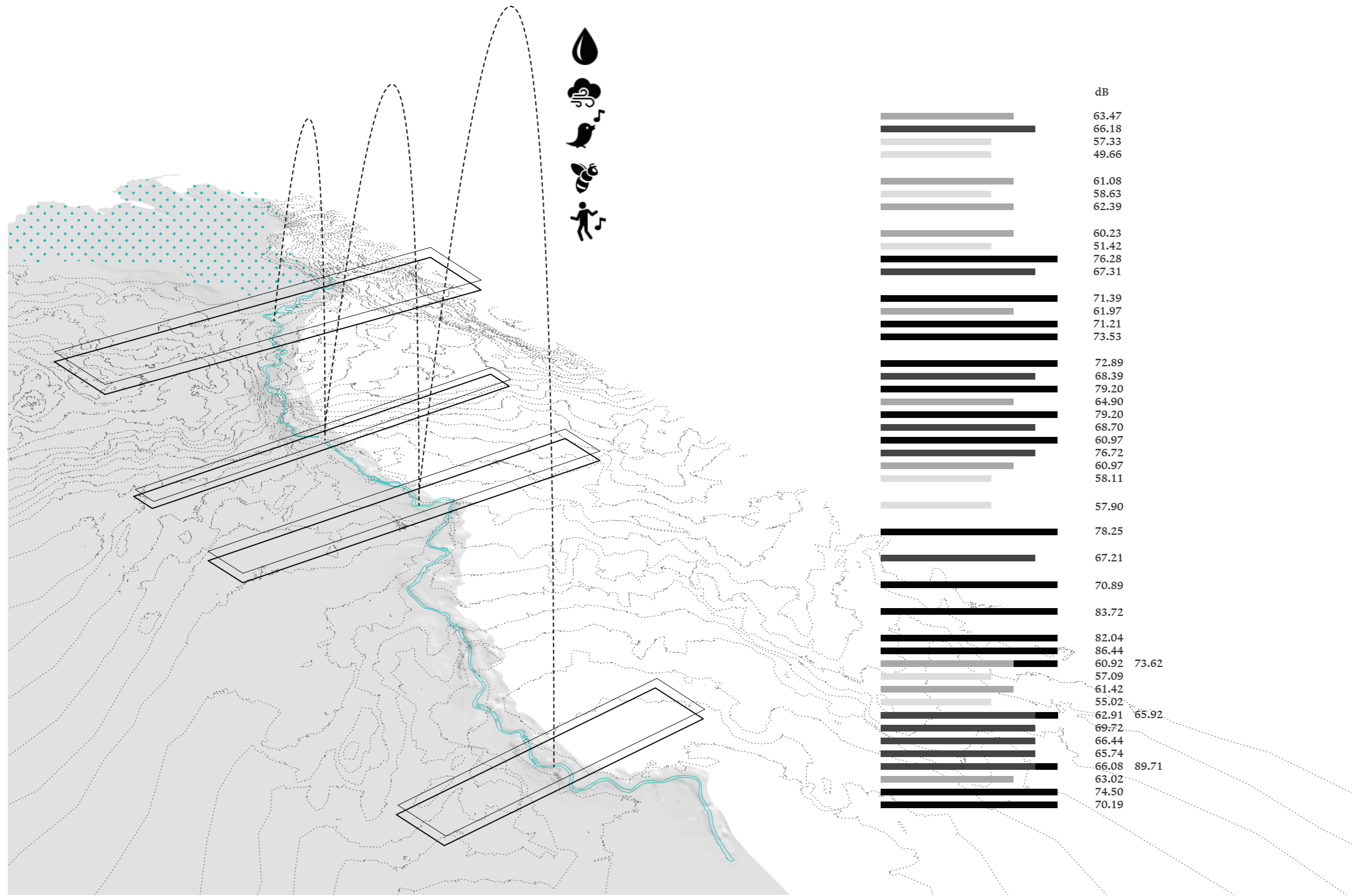
Acoustic Disconnection



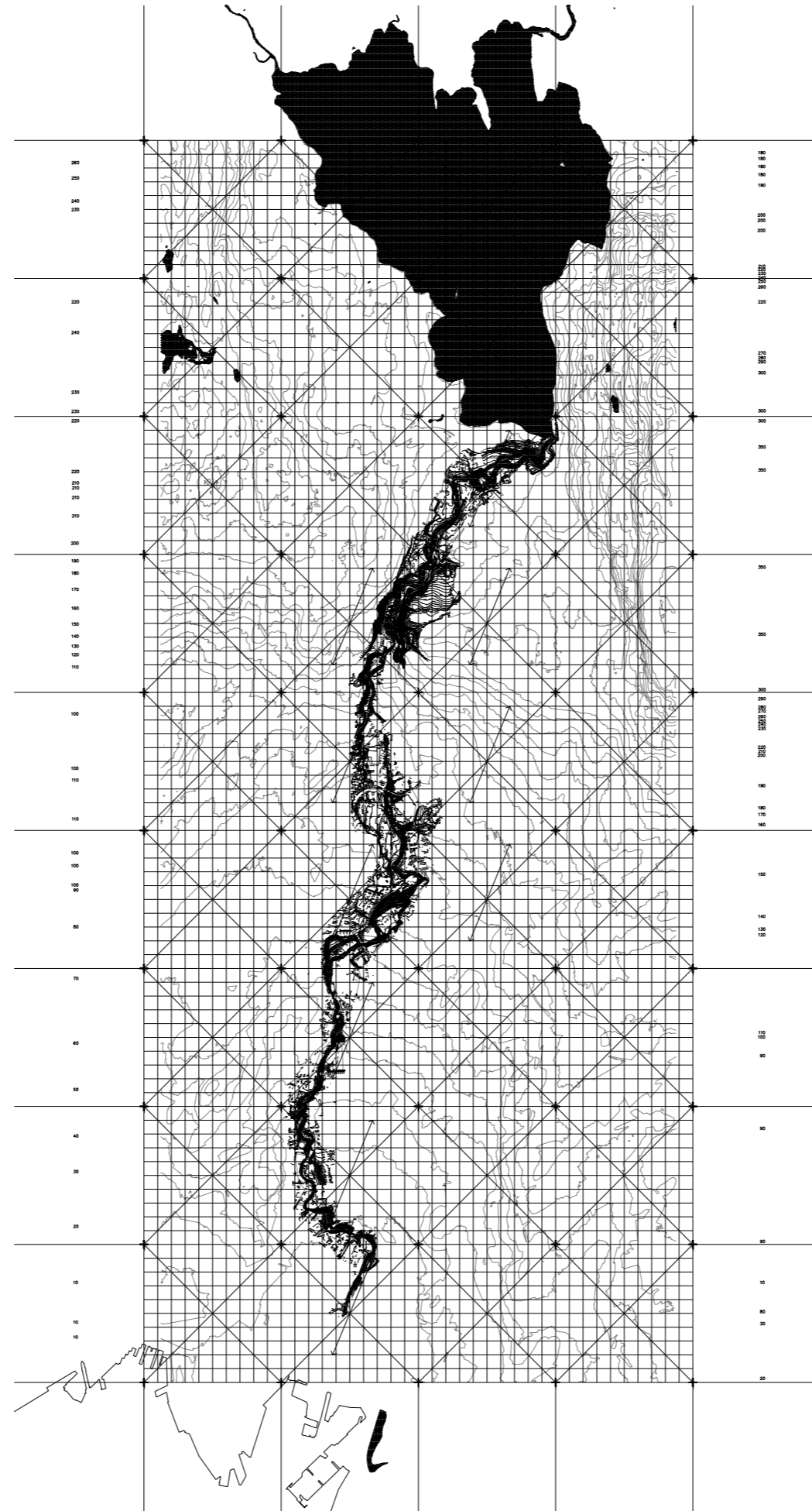
Acoustic Disconnection



Acoustic re-connection



Smell network



Smell network

