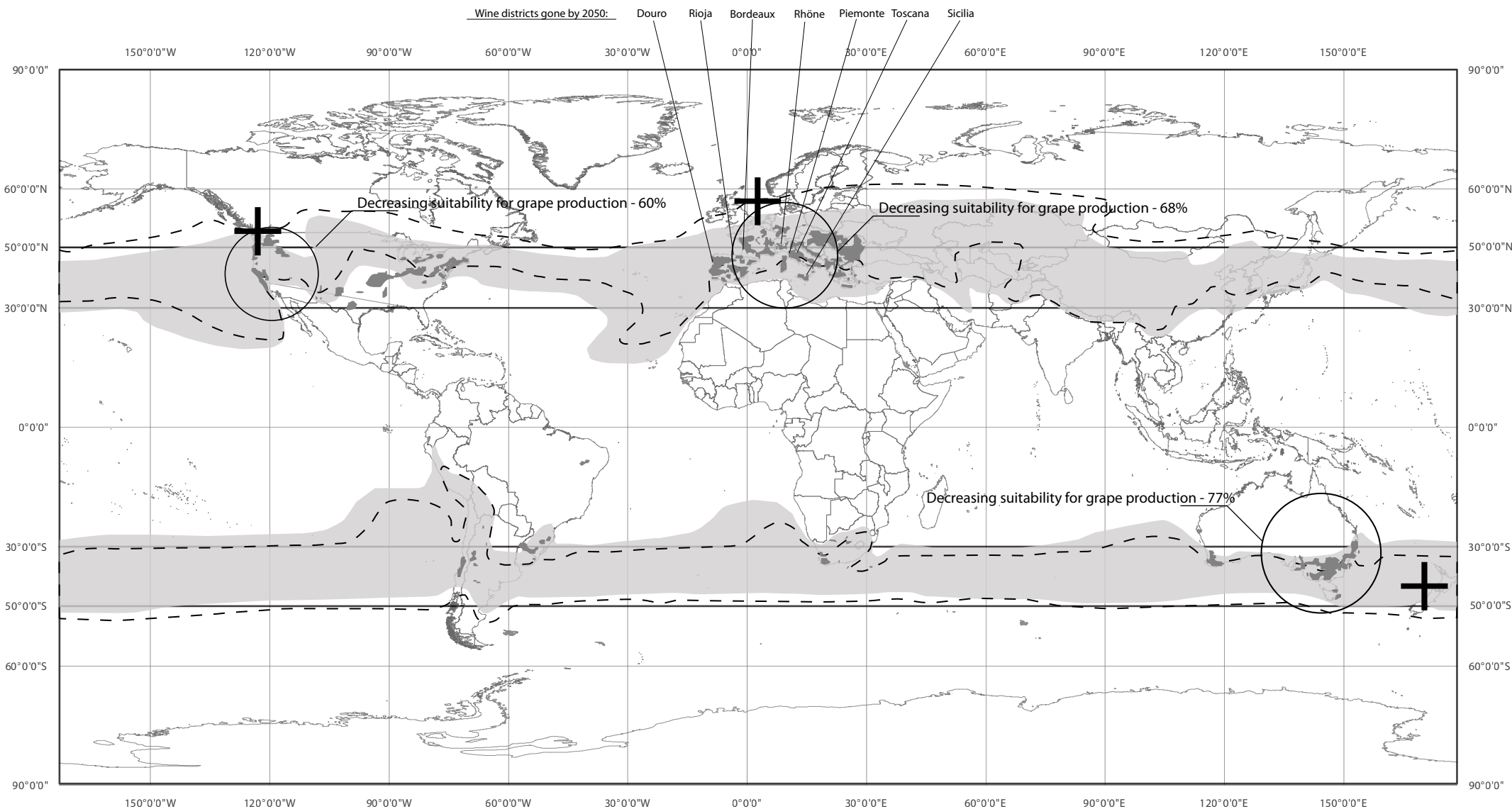


Sources:

- Maps and GIS:
 - Wilderness without major infrastructure development:
<http://www.miljødirektoratet.no/no/Tema/Miljøovervaking/Inngressfri-naturområde-i-Norge-/Fylkeskart/>
 - Off-shore and onshore activity: <http://www.petroleumskartet.no>:
 - GIS: <https://www.geonorge.no>
 - Climate zones for growing edible plants -
<http://www.hageselskapet.no/klimasonekart/>
 - Temperature projections 2100: <http://www.miljostatus.no/kart/>
 - Increasing growing seasons:
<http://www.miljostatus.no/tema/klima/klimainorge/klimainorge-2100/>

Literature and diagram:

- Gjerde, K. Ø. *Ølbeyster i Norge in Norsk Oljemuseum Årbok 2011, (2011)*
http://www.norskolje.museum.no/wp-content/uploads/2016/02/3398_426a5f5a6f2a43d2ad6fde43ec5814c4.pdf
- Gjerde, K. Ø. *Oljelandet og ny næring langs kysten in fortellinger om kystnorge, (2011)*
<http://www.kyst-norge.no/Dokmnttr/Oljelandet.pdf>



Changing suitability for grape production



1:150 000 000

Longitudinal "sweet spot" moves latitudinal towards the poles.

--- 2100
 ■ 2000

12-22 % Growing Season Isotherms
 Northern Hemisphere Apr. - Oct.
 Southern Hemisphere Oct. - Apr.

Wine producing regions

Regions losing grape production due to global warming
 - Burgund and Alsace (France), Oregon, Napa and Santa Barbara (US)

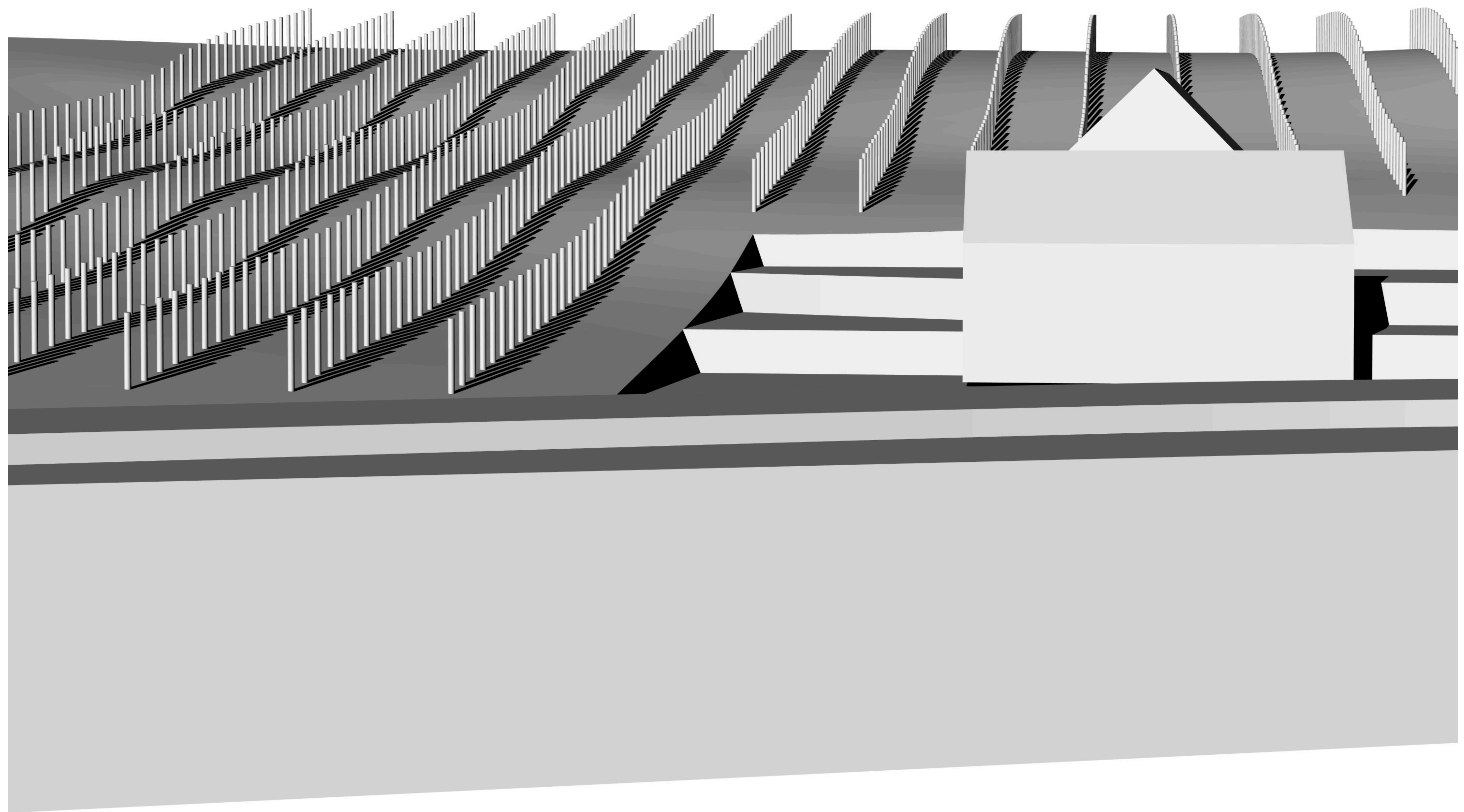
New suitable regions for wine production, North European - (England, Denmark, Sweden),
 New Zealand and Western North America

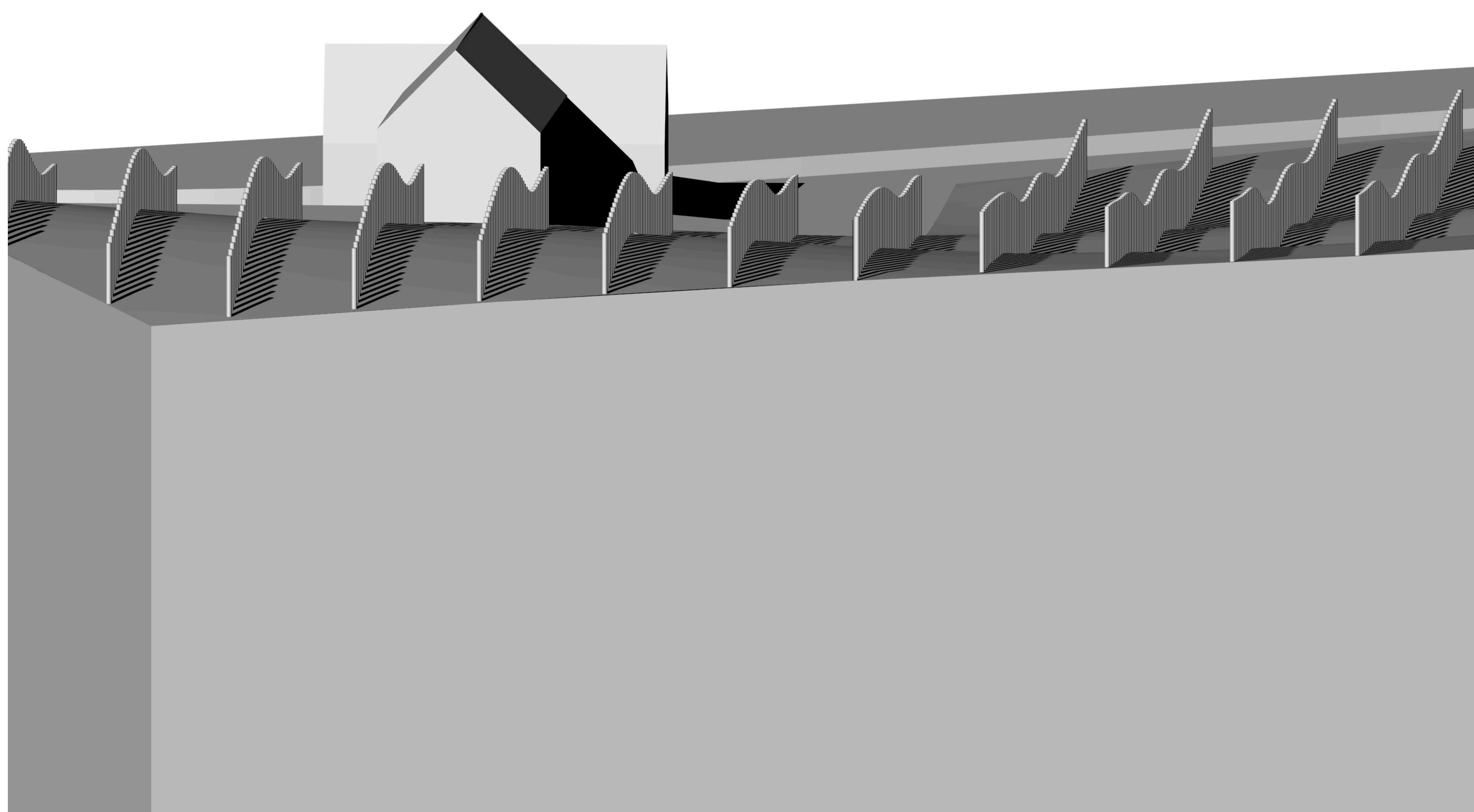
Table 1. Ecological footprint of viticulture 2050, RCP 8.5

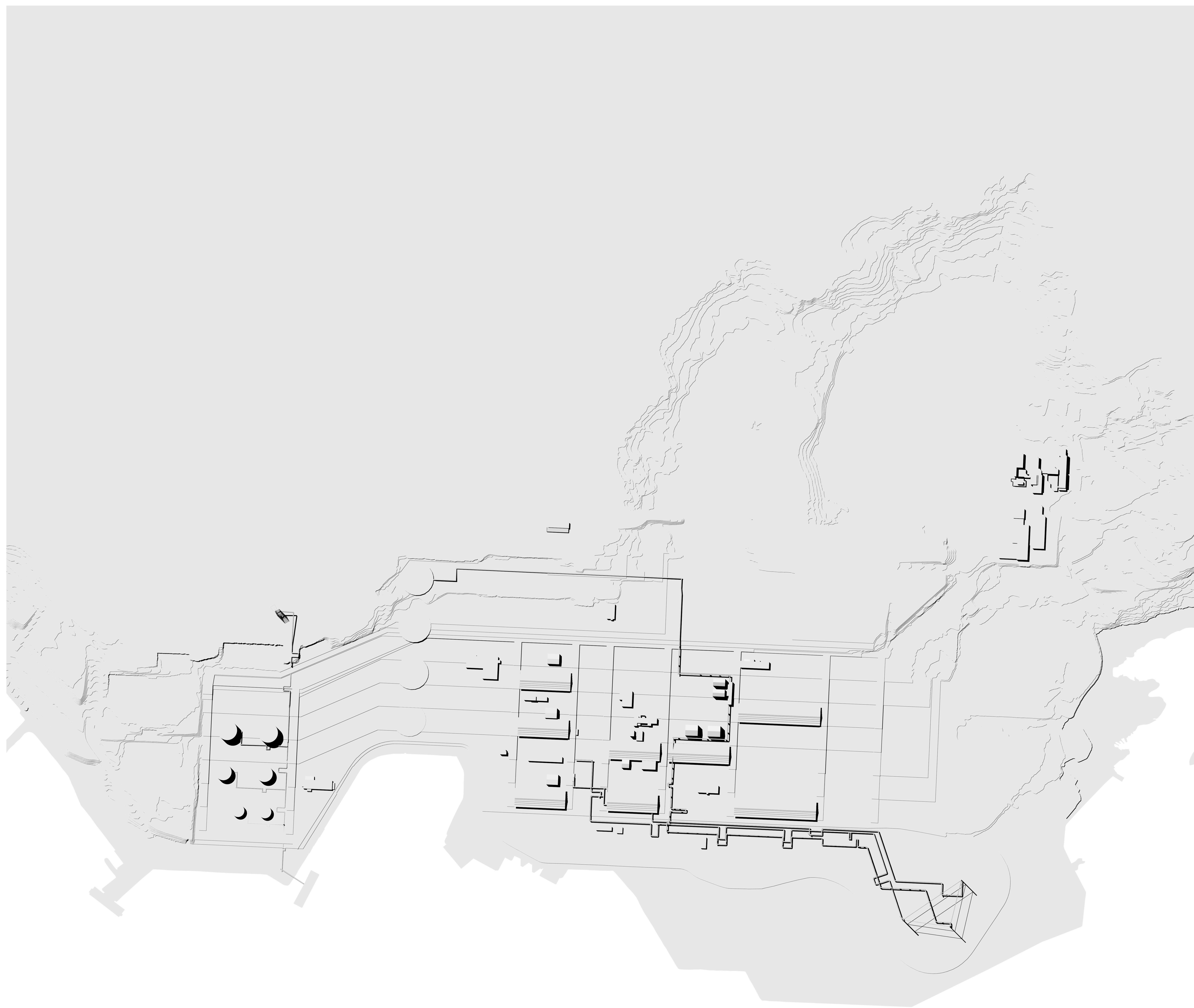
2050 RCP 8.5	Net change in area suitable for viticulture, mean % (quantiles)	Ecological footprint 2000, % area (ha × 10 ⁹)*	Ecological footprint trend to 2050, % mean change (quantiles)
California	-60 (-42, -55, -66, -73)	29.8 (2.8)	10 (2, 5, 11, 27)
Chile	-25 (0, -17, -29, -55)	0.8 (0.05)	0 (-38, -25, 38, 50)
Mediterranean Europe	-68 (-39, -61, -78, -86)	2.4 (1.8)	342 (125, 263, 392, 525)
Cape floristic region	-51 (-41, -44, -54, -66)	46.0 (2.5)	14 (9, 11, 15, 19)
Australia (Med)	-73 (-51, -67, -76, -87)	44.0 (15.1)	-5 (-16, -8, 0, 6)
Australia (non-Med)	-22 (-15, -19, -23, -31)	40.9 (13.8)	2 (0, 2, 5, 11)
Northern Europe	99 (58, 83, 118, 149)	1.1 (2.5)	191 (-10, 10, 291, 618)
New Zealand	168 (104, 124, 216, 264)	6.6 (0.1)	126 (98, 103, 152, 174)
Western North America	231 (96, 201, 259, 338)	44.1 (4.9)	16 (2, 12, 23, 28)

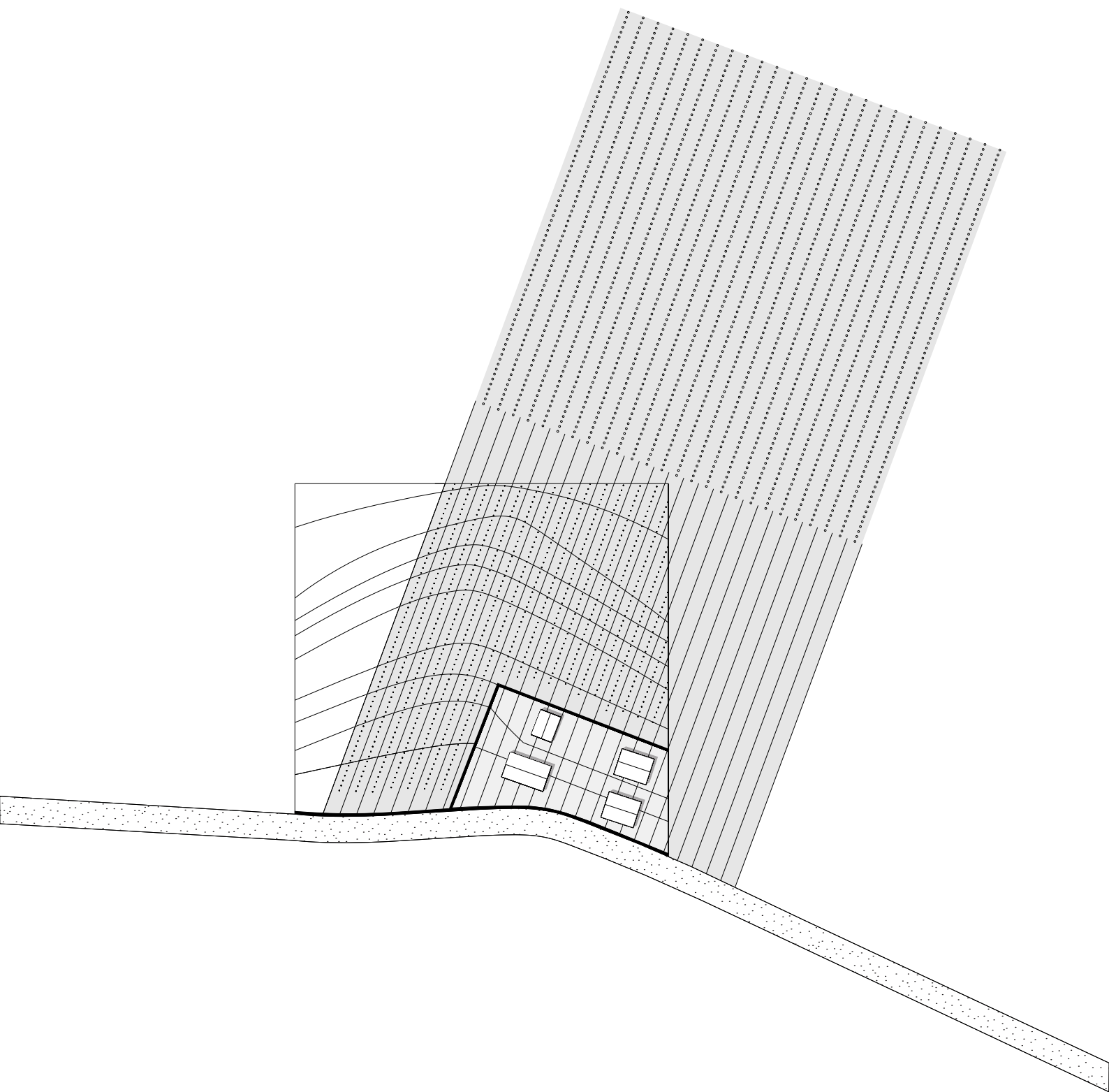
Ensemble means are shown with quantiles shown in the order 5%, 25%, 75%, and 95%. RCP 4.5 values are given in Table S1. Med, Mediterranean climate; non-Med, non-Mediterranean climate.

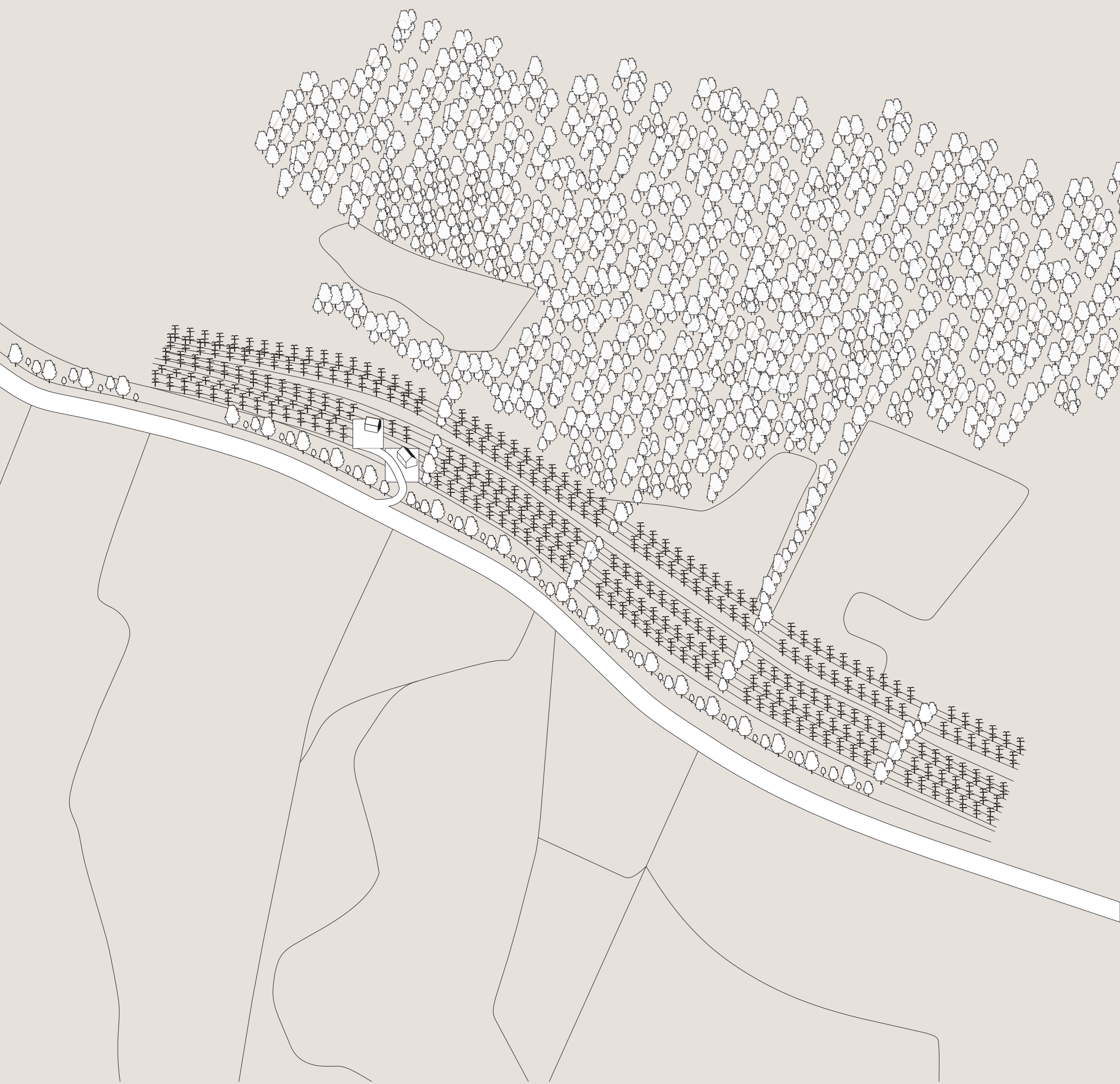
*Ecological footprint is the percentage of suitable viticulture area that intersects with natural lands as defined by Hill < 10 (27).

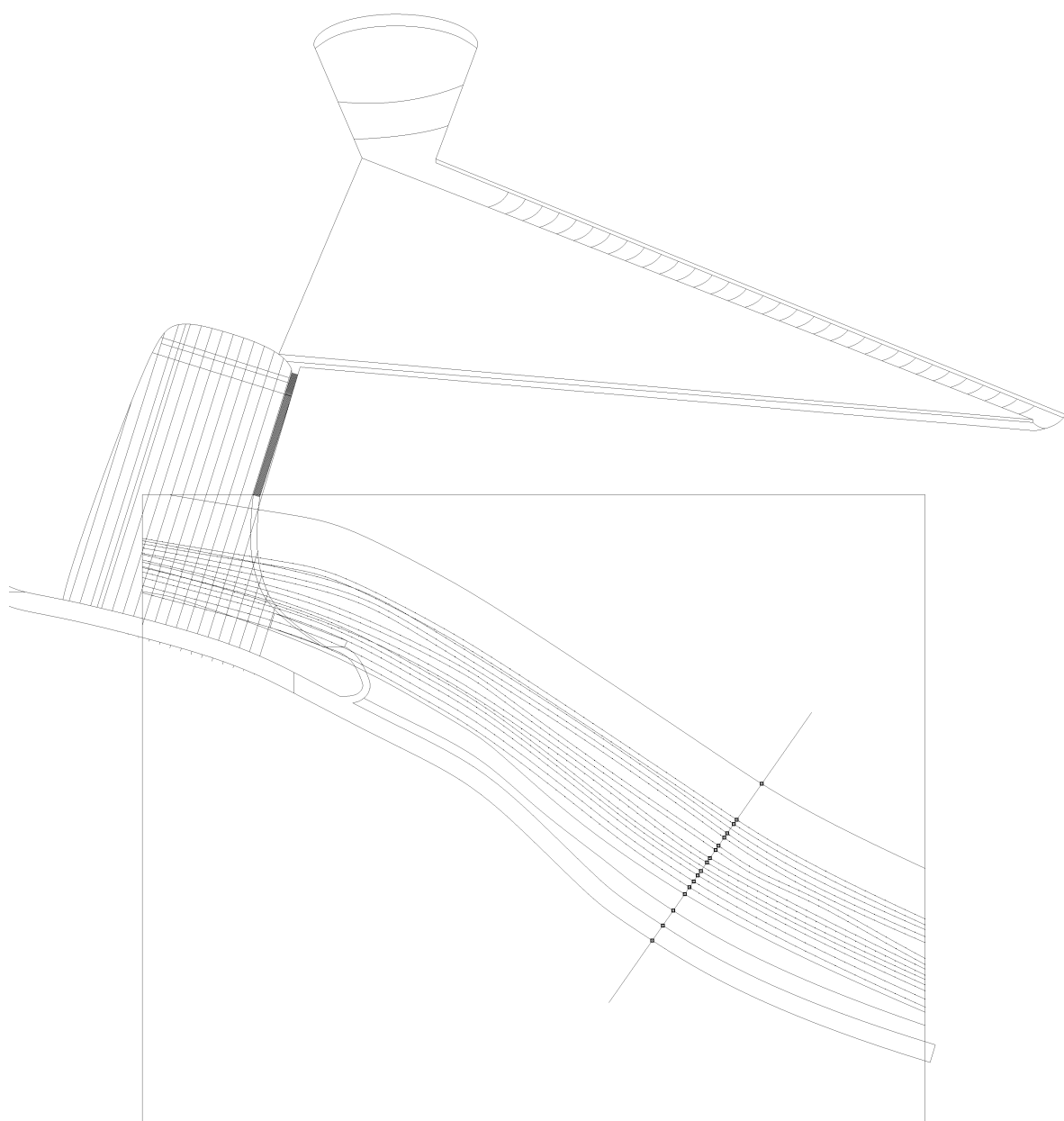


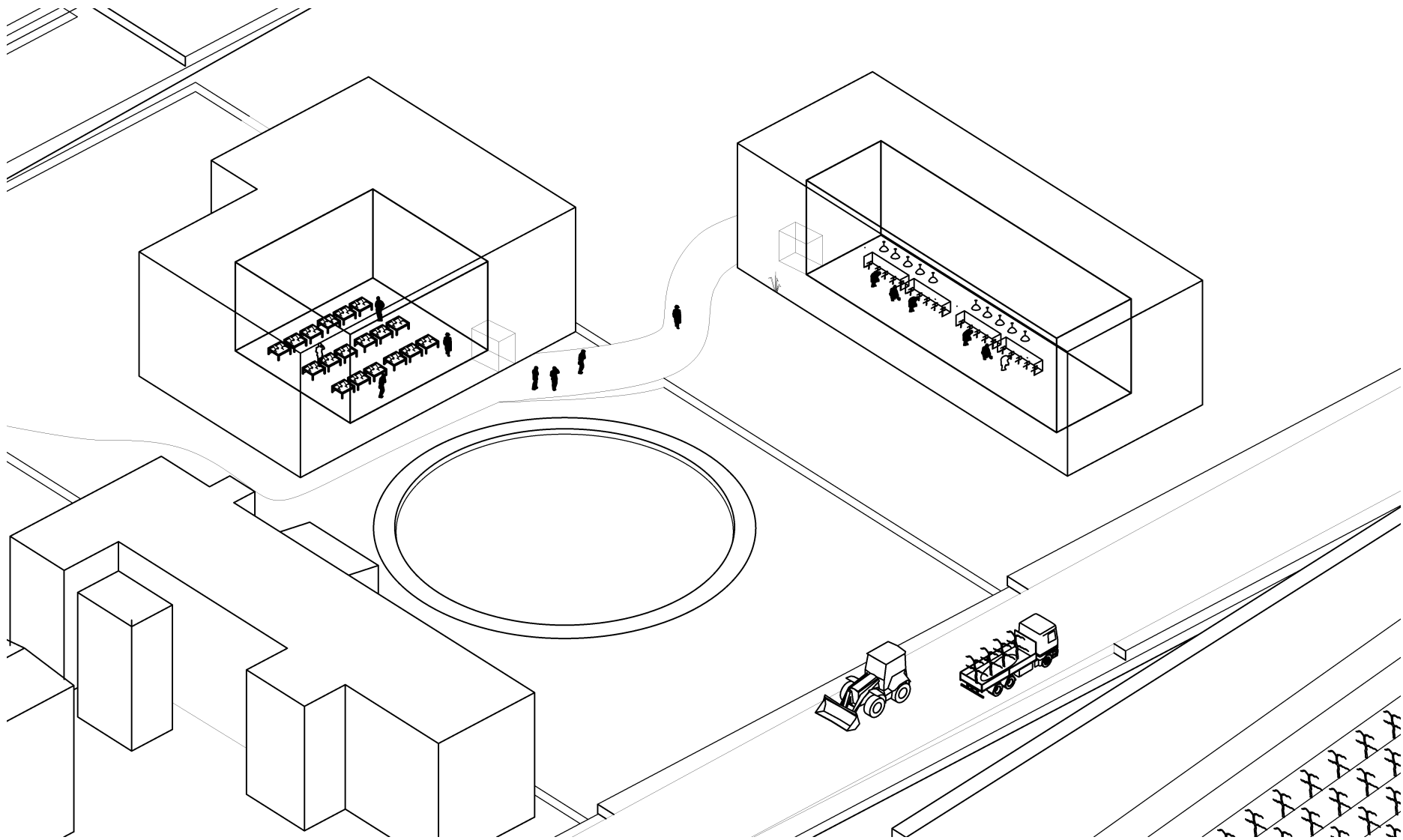


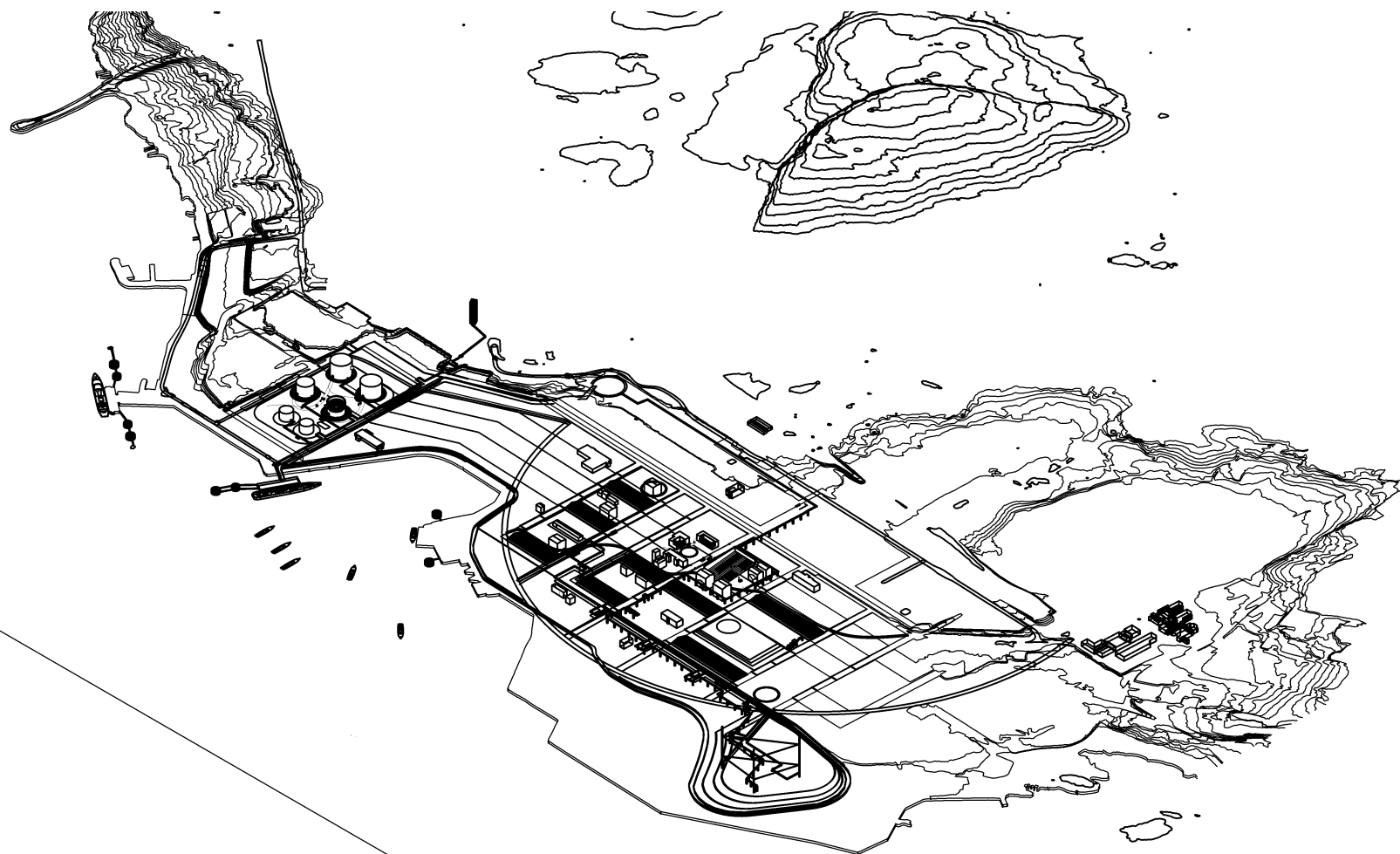


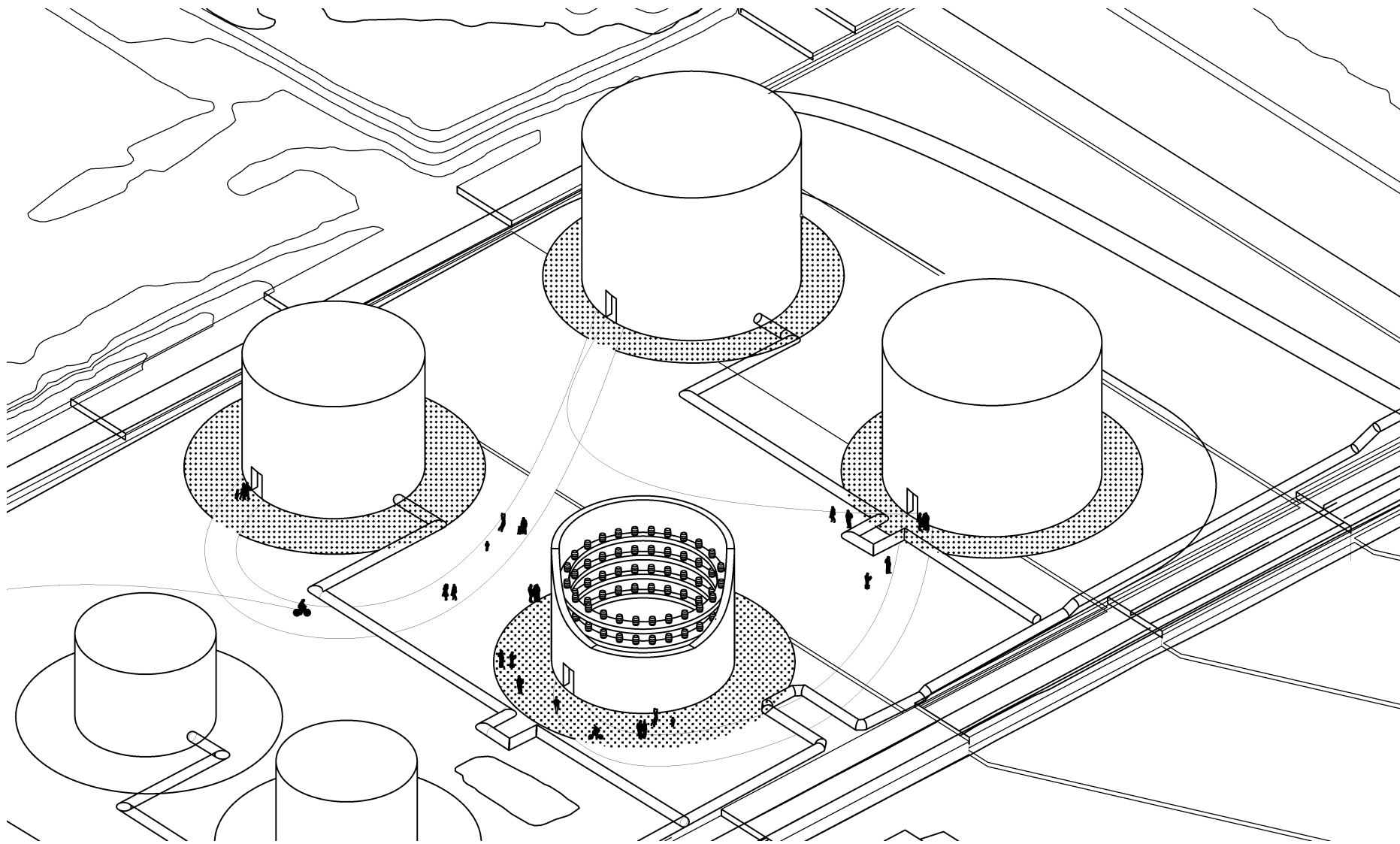


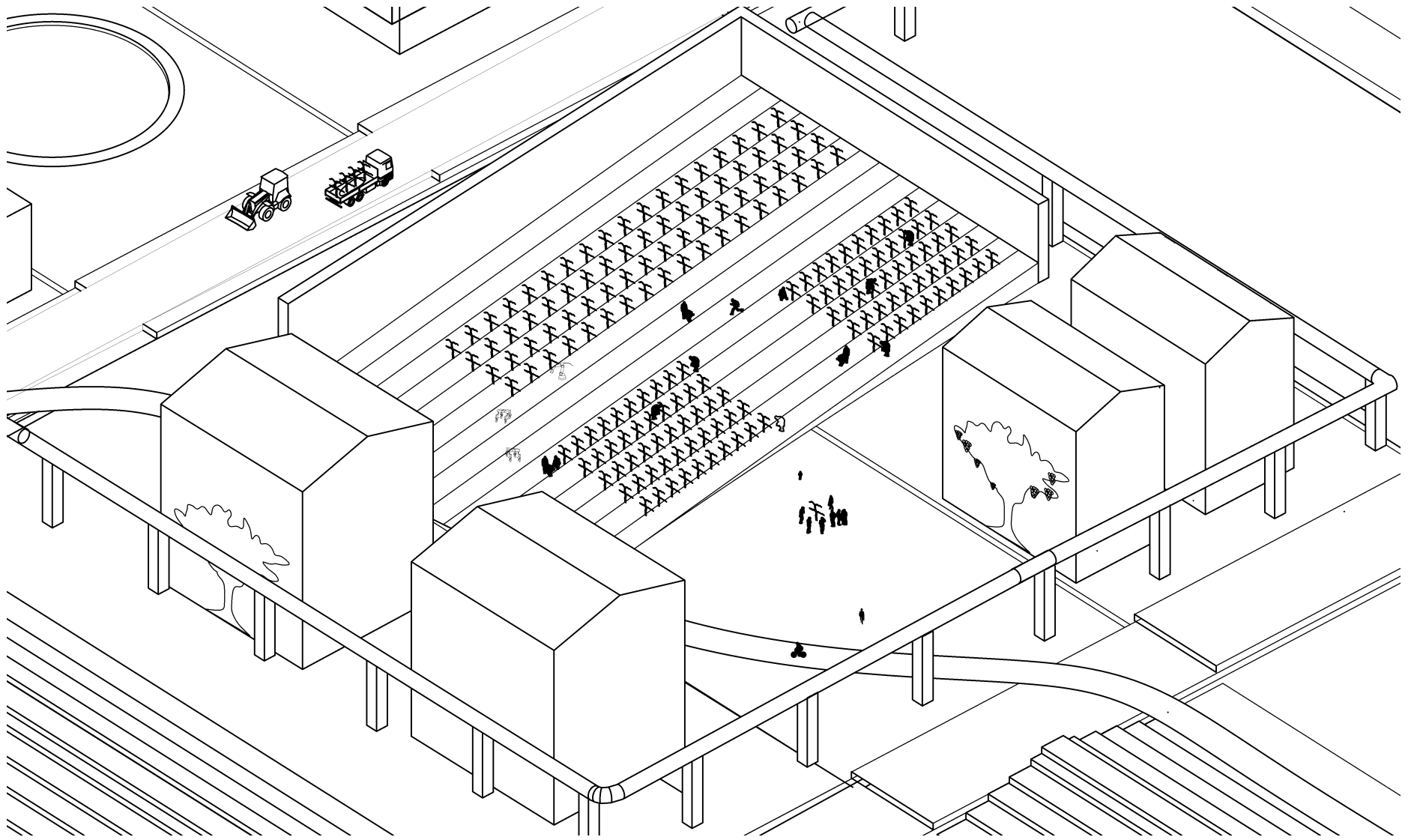


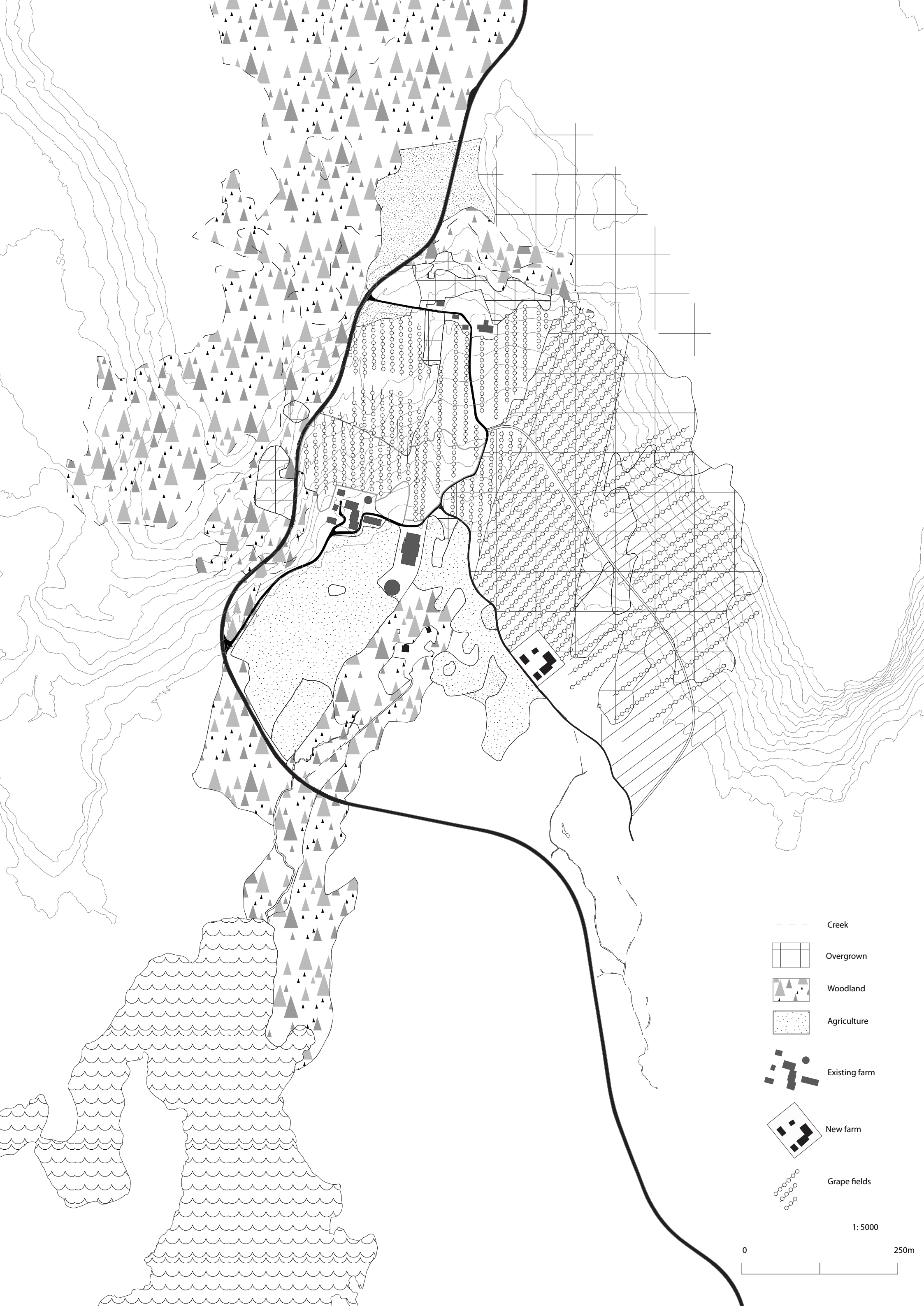












- Creek
- Overgrown
- Woodland
- Agriculture
- Existing farm
- New farm
- Grape fields

1: 5000

0 250m



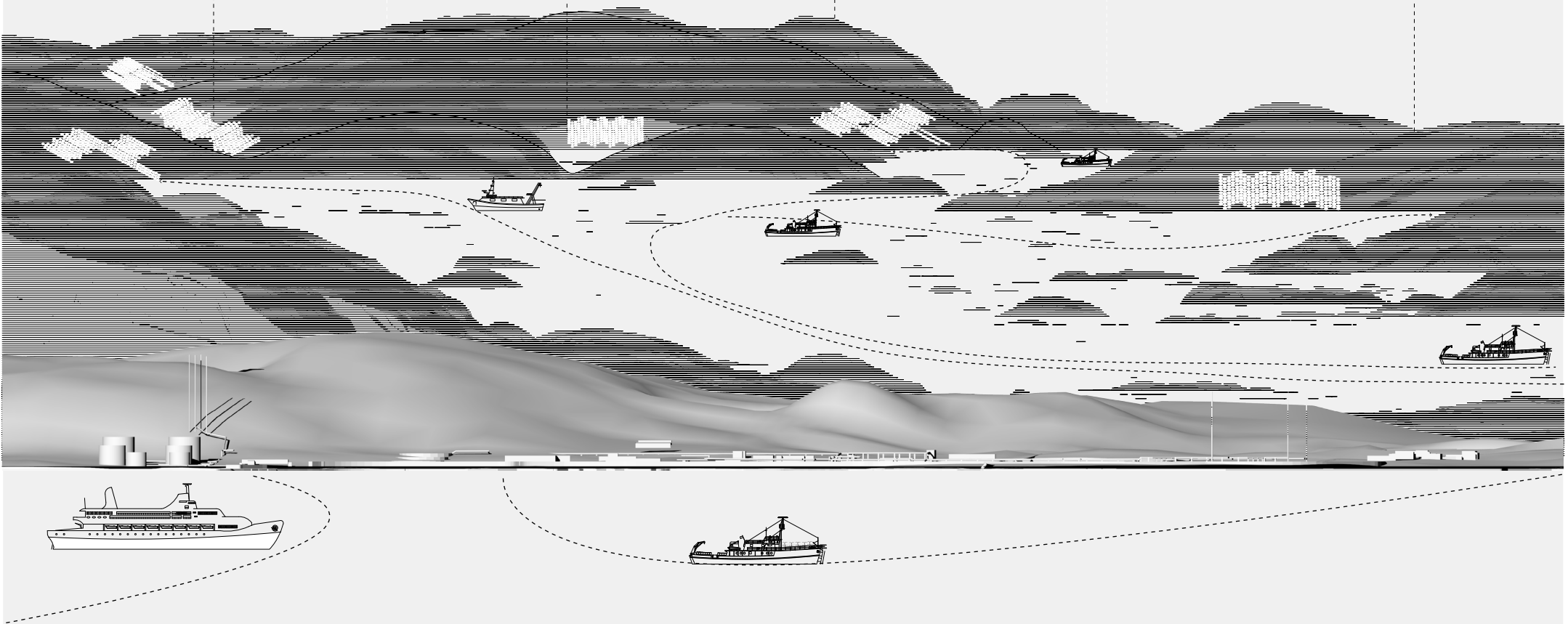
The productive hinterland

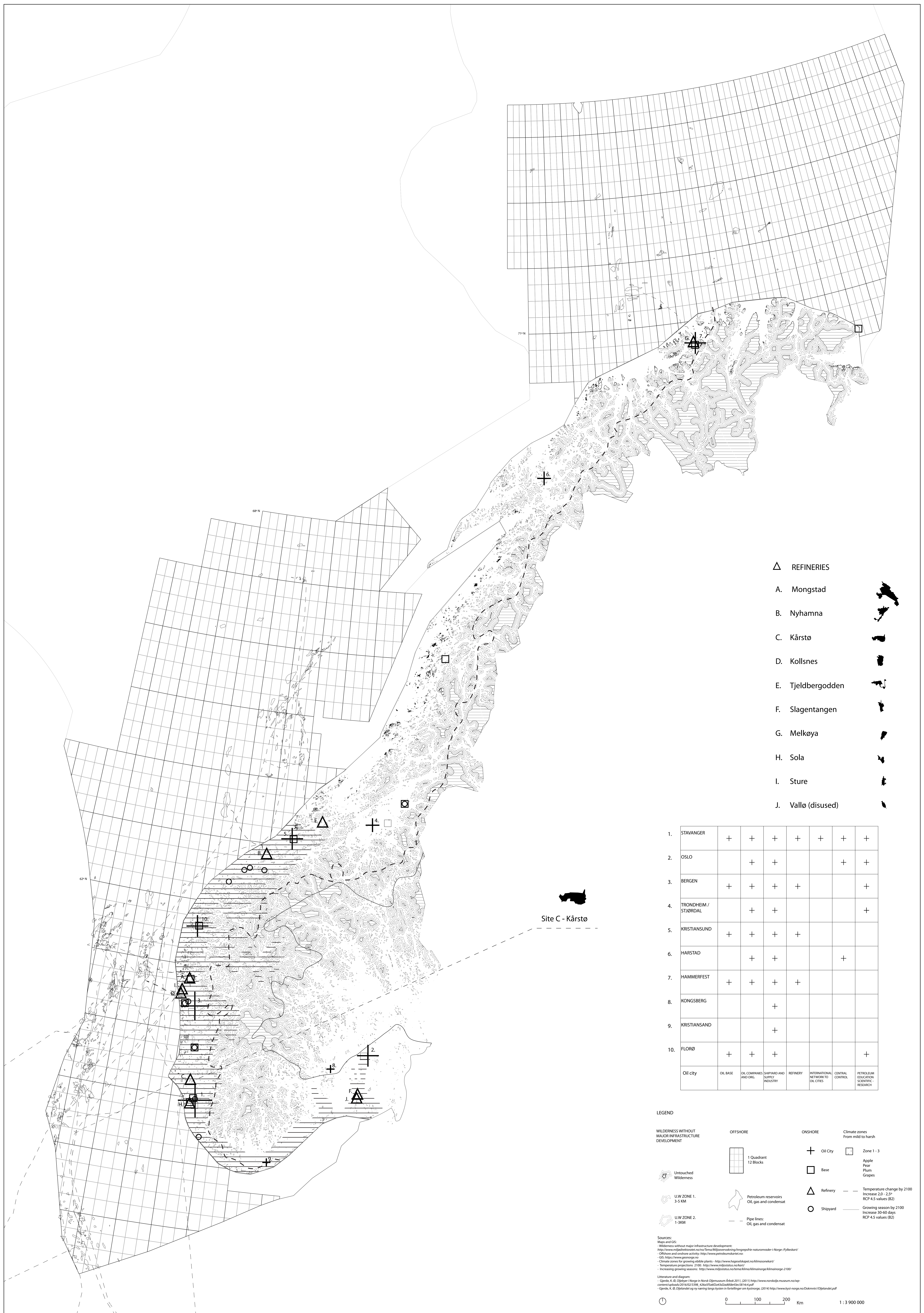
Grape
Plum








Grape
Cherry

Grape
Apple
Pear

The settlement

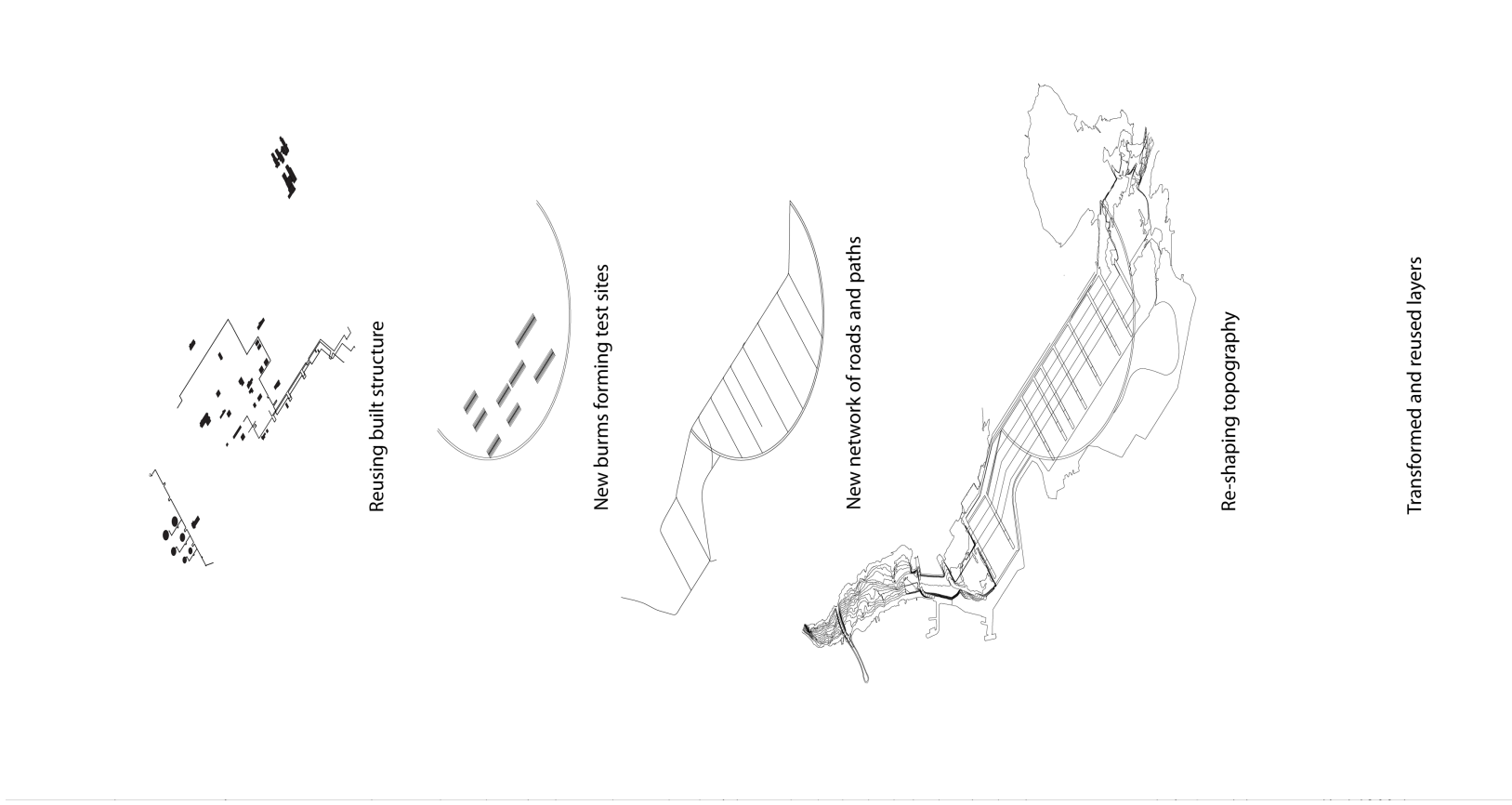




Grapes											
Hasansky Sladki Russian Rosewine	<input type="checkbox"/>	<input type="checkbox"/>	Cold-hardy, -25-35°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Harvest - early September.	<input type="checkbox"/>	<input type="checkbox"/>	
Skandia Minnesota, USA	<input type="checkbox"/>	<input type="checkbox"/>	Cold-hardy, -20-35°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Harvest - late September.	<input type="checkbox"/>	<input type="checkbox"/>	
Guna Latvia	<input type="checkbox"/>	<input type="checkbox"/>	Cold-hardy, -20-30°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Harvest - late September.	<input type="checkbox"/>	<input type="checkbox"/>	
Solaris German White wine	<input type="checkbox"/>	<input type="checkbox"/>	Cold-hardy, -16-22°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Harvest - late September.	<input type="checkbox"/>	<input type="checkbox"/>	
Somerset Seedless USA	<input type="checkbox"/>	<input type="checkbox"/>	Cold-hardy, -30-35°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Harvest - late September.	<input type="checkbox"/>	<input type="checkbox"/>	
Zilga Latvia	<input type="checkbox"/>	<input type="checkbox"/>	Cold-hardy, -30-40°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Harvest - late September.	<input type="checkbox"/>	<input type="checkbox"/>	
Supaga Latvia	<input type="checkbox"/>	<input type="checkbox"/>	Cold-hardy, -30-35°C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Harvest - late September.	<input type="checkbox"/>	<input type="checkbox"/>	
Month	March							September			

Grapes to grow in Norway





The Wildcard - Kårstø

- 1. Showcasing area
- 2. Viticulture - Scientific research on grape
- 3. Indoor nursery

0 100 200 m

1:3000

