

Diploma in
landscape architecture
AHO 2018

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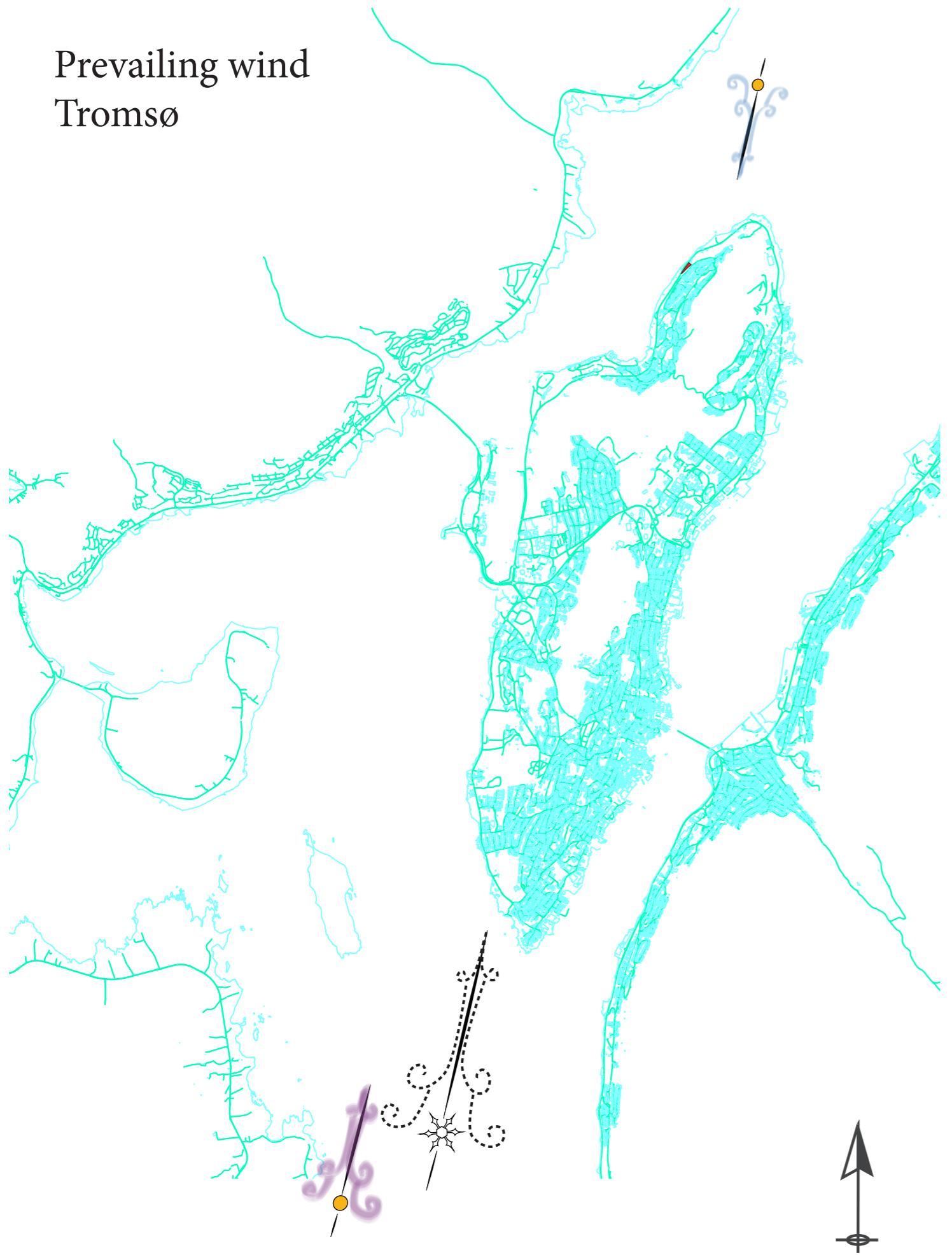
(Second supervisor:
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mensen)

External supervisor: Rose
Marie Steinsvik

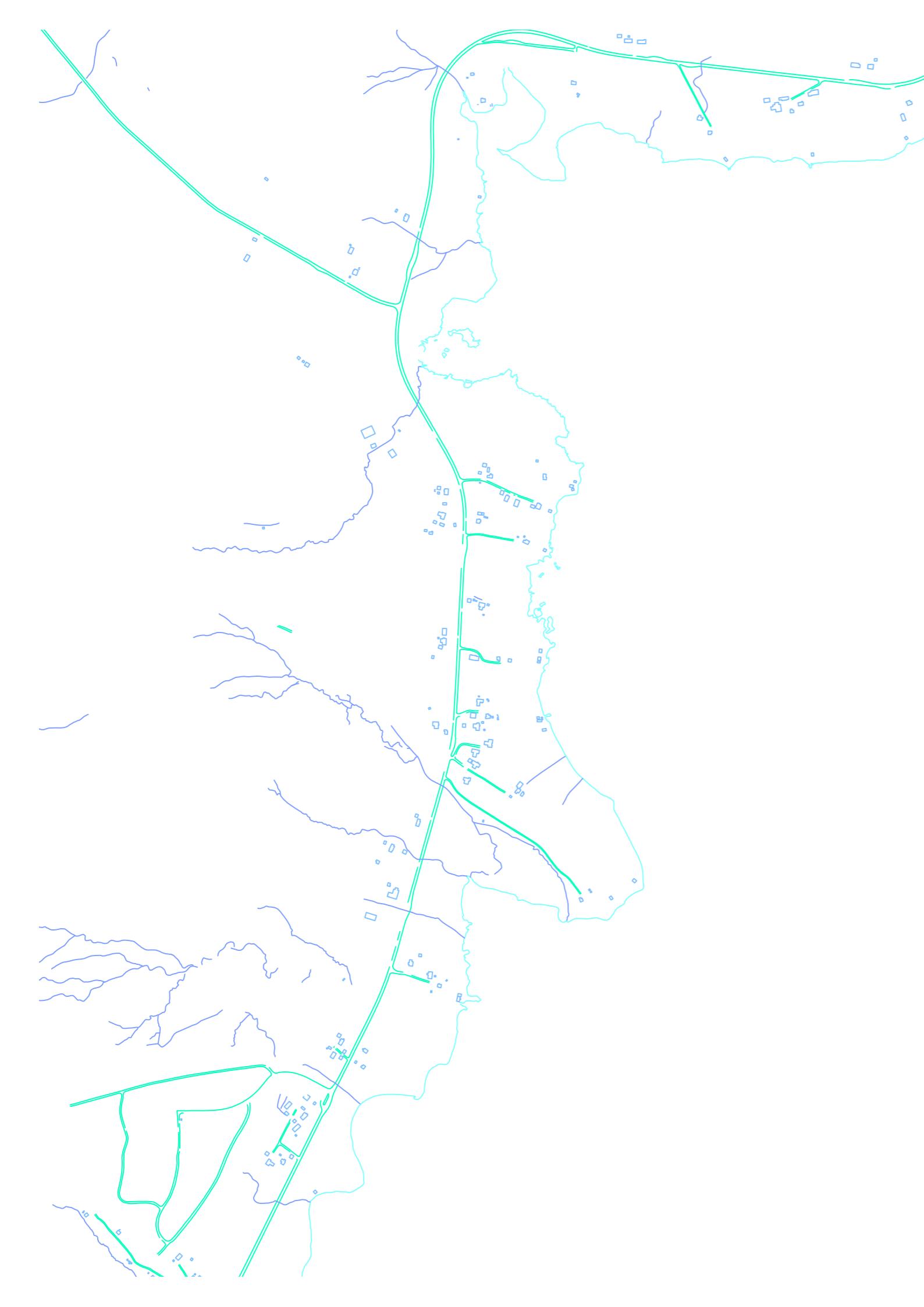


An Ideal Masterplan for Climate Adaptation in the Subarctic

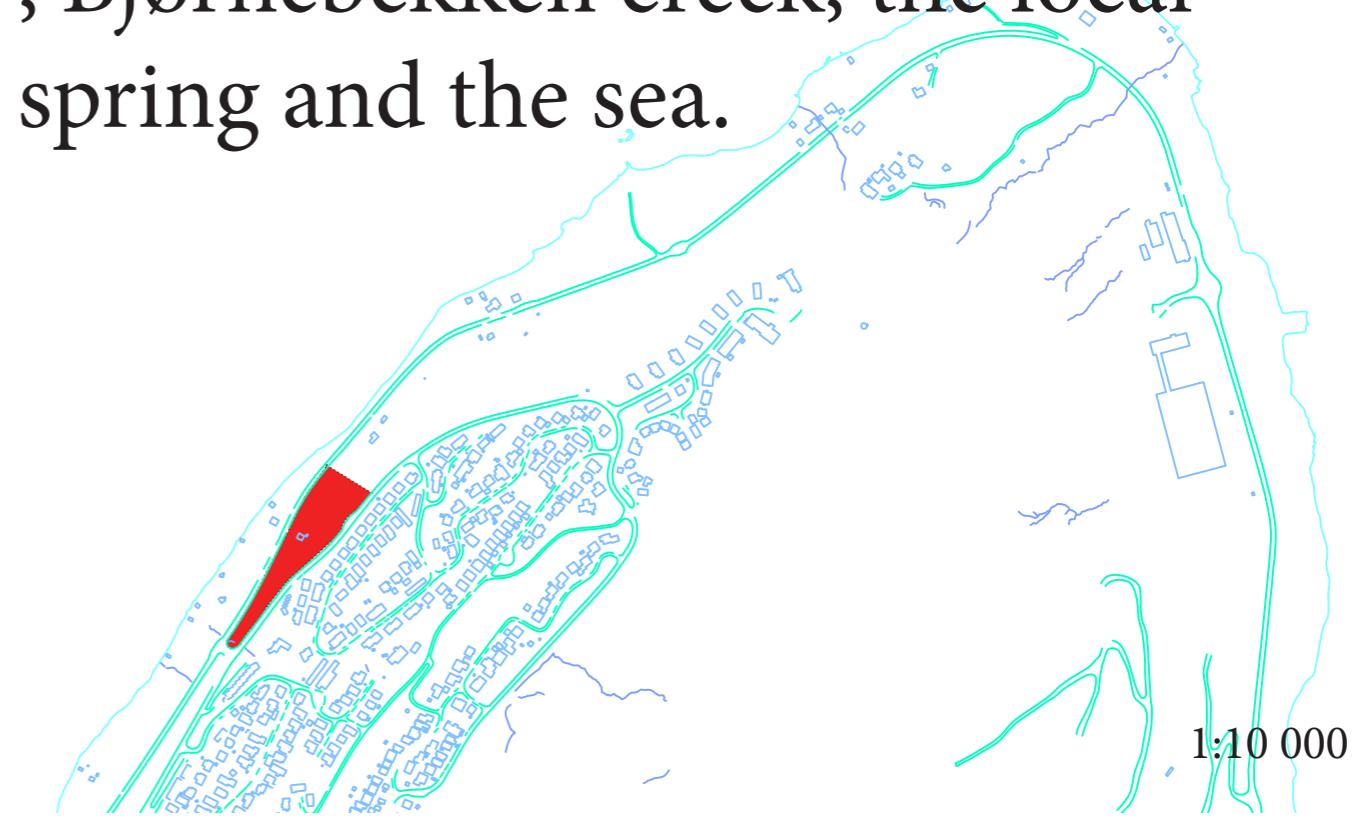
Maia Graff



Tromsø is located at 70 degree north, and has a July isoterm at 13 C. The winters have massive amount of snow, the region is dominated by wind, clouds and precipitation. The winter sun is low and is lacking between late November and late January. The summers are bright and chilly.



To build habitats for humans and non-humans: children, bats, frogs, seagulls and unregistered species. The project offers short distances to nature qualities such as views – both panoramic and to close bountiful areas of natural and planted vegetation, water ; Bjørnebekken creek, the local spring and the sea.





The main premise for the project is to maintain the natural qualities of a large plot in steep terrain. As far as possible it will preserve its natural qualities while accomadating optimally for sun, wind and snow conditions. The collective outdoor space is the projects main concern.

The plot has a rich ground cover. Trees include birch, rowan, salix and spruce, and most importantly the lot proves to have an extremely rich variety of mosses and heather (*vacinum*), and wet meadows.





Tromsø municipality masterplan from 2017 is clear about the overall plan of new housing at the plot and further north along the Bjørnebekkvegen. I concentrate on the first 300 meters.

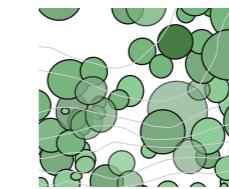
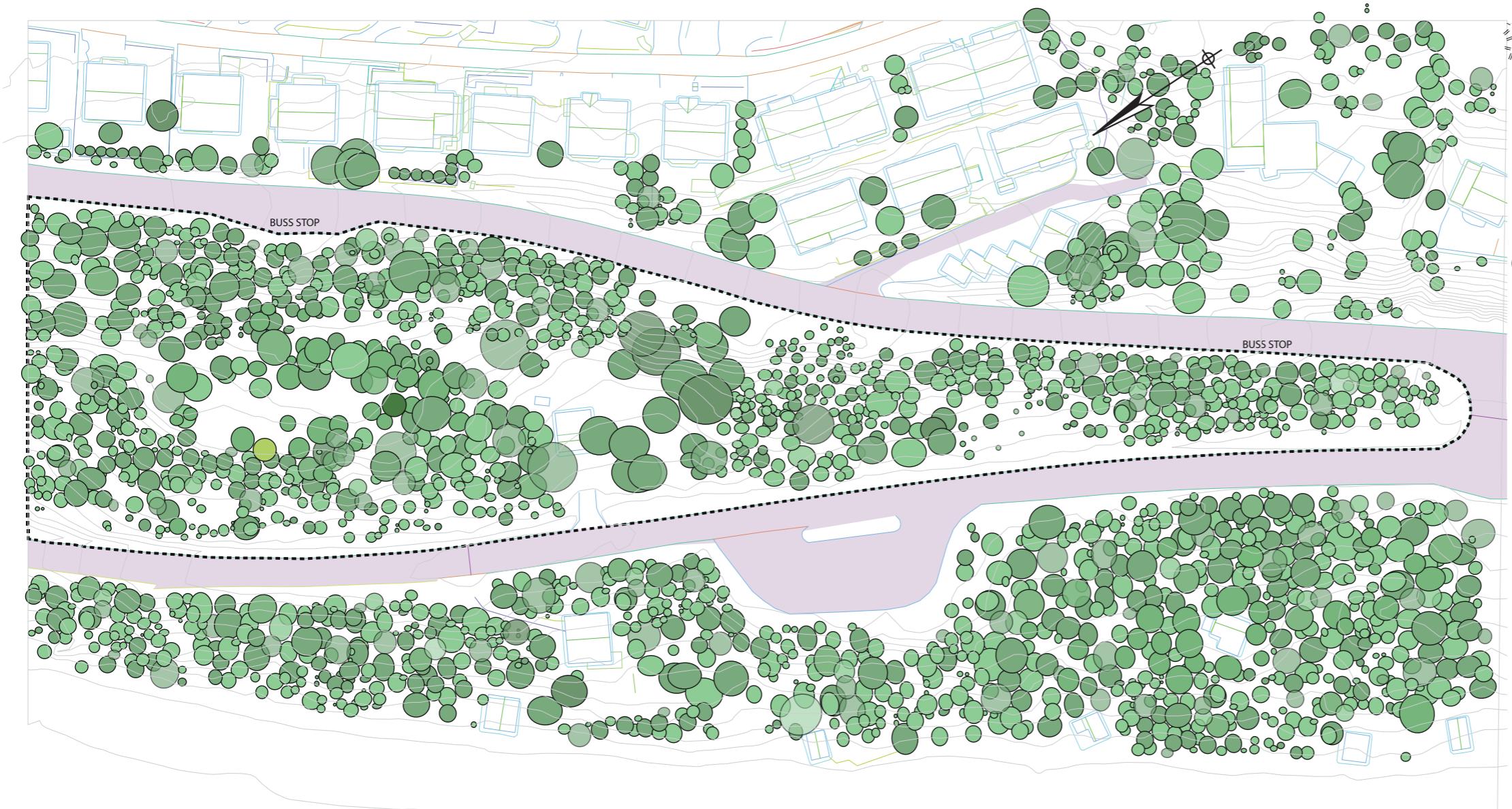
Existing structures consist of single- and chained houses, with nature playground in between. Steinsvik Arkitekter made the old masterplan in the 1980, and Bjørn Bygg did the houses.

For further analysis on the Bjørnebekk area, see the pre - diploma.



view, potential





distribution of bushes and trees



Fig. 17
MG



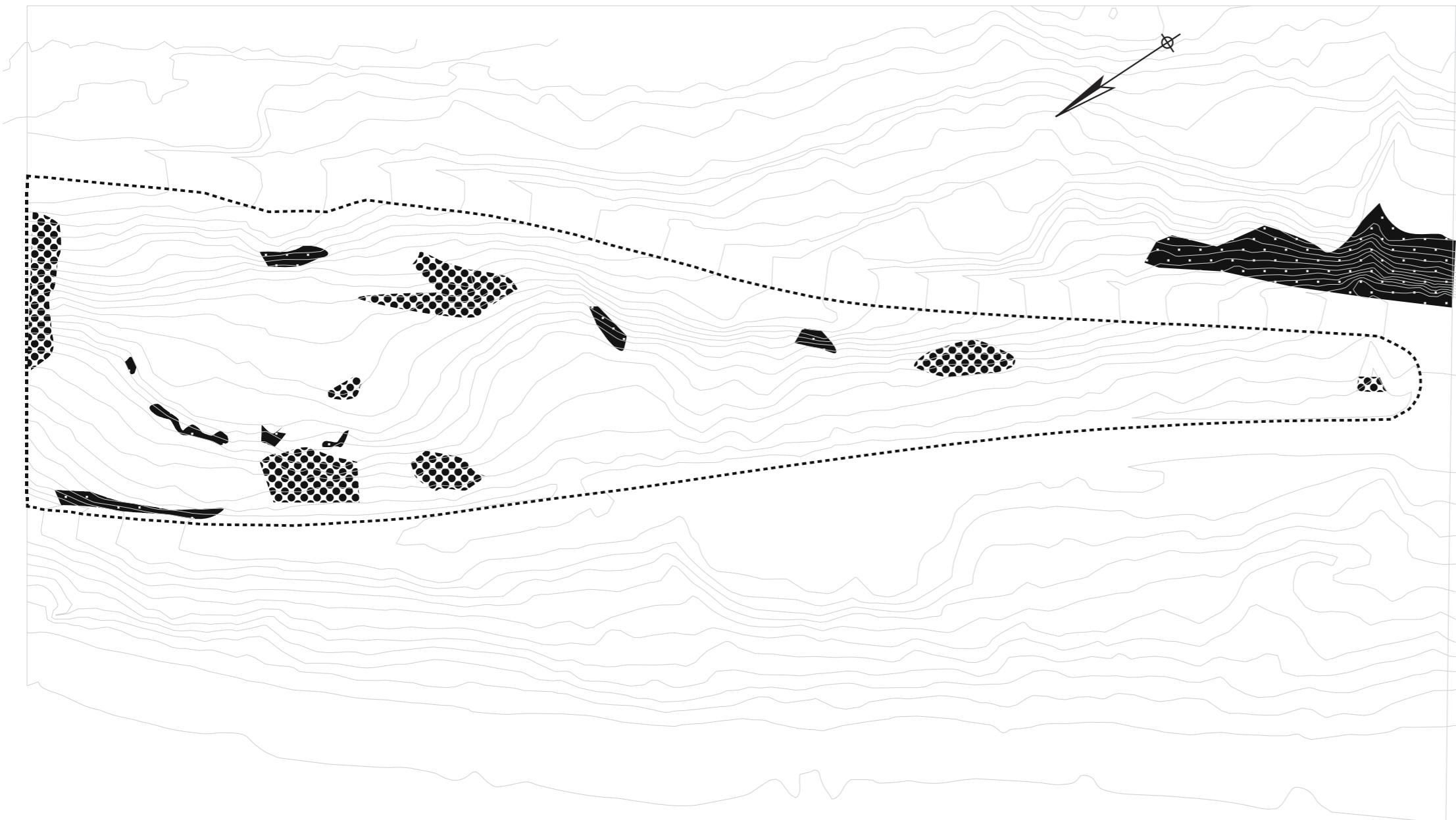
Fig. 3
MG

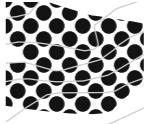


Fig. 4
MG



Fig. 5
MG



 boulders lying around on ground

 open bedrock/ vertical big boulders



Fig. 6
MG



Fig. 7
MG

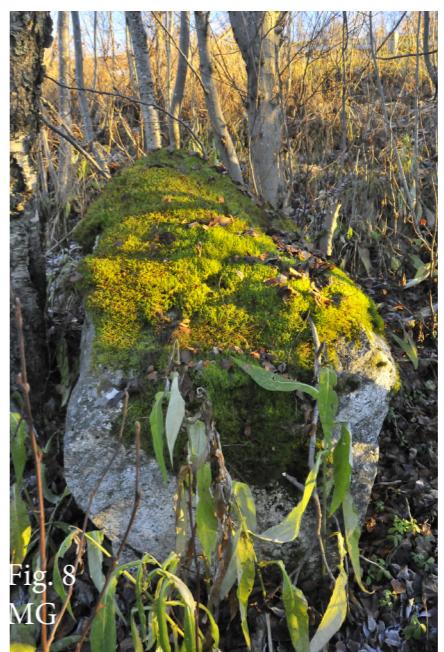
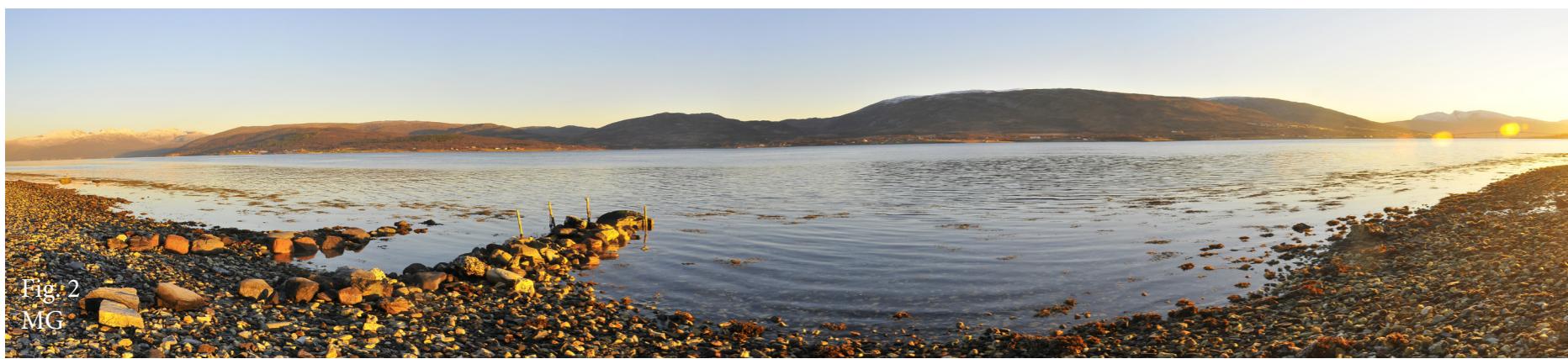
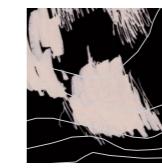
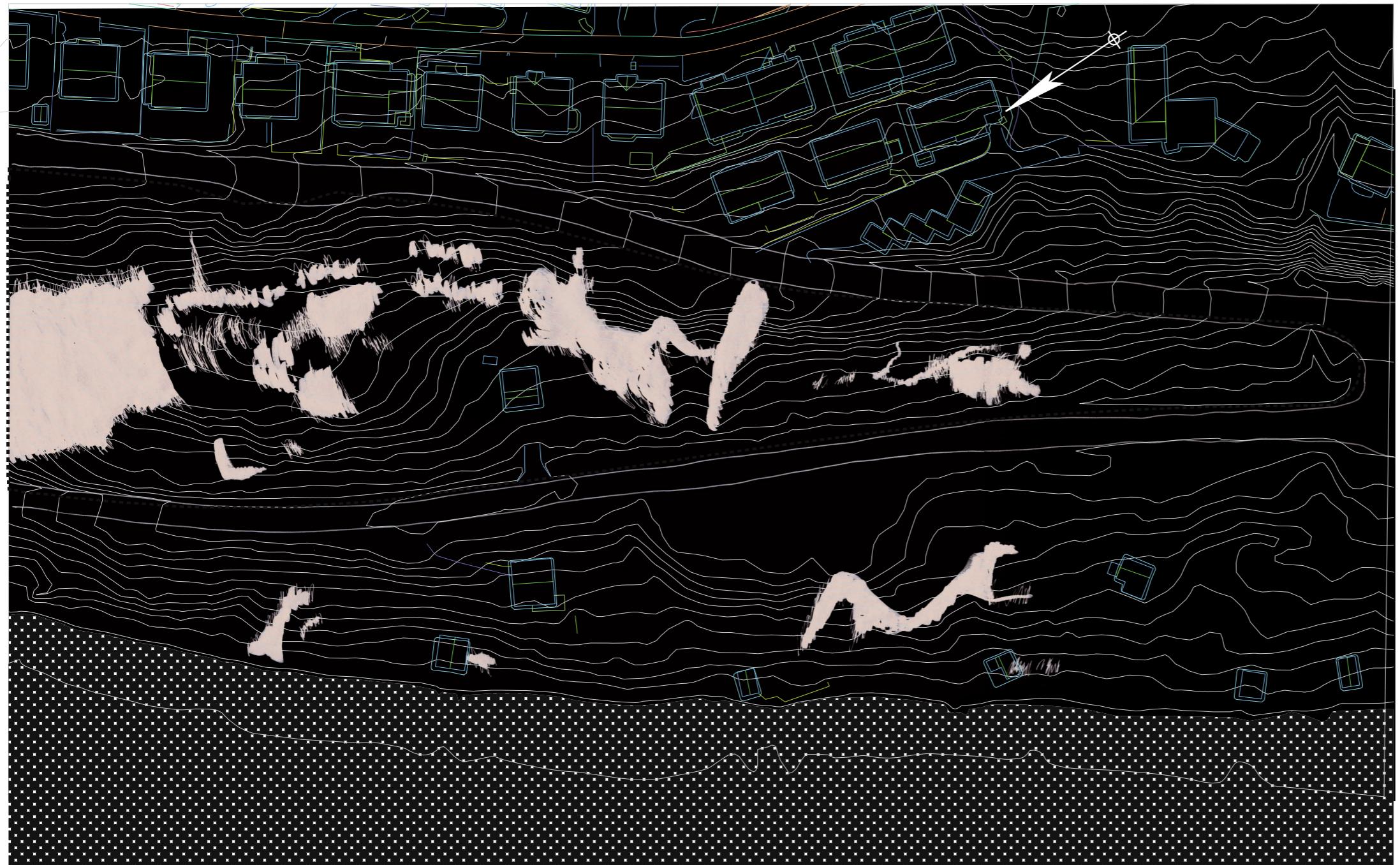


Fig. 8
MG



Fig. 9
MG

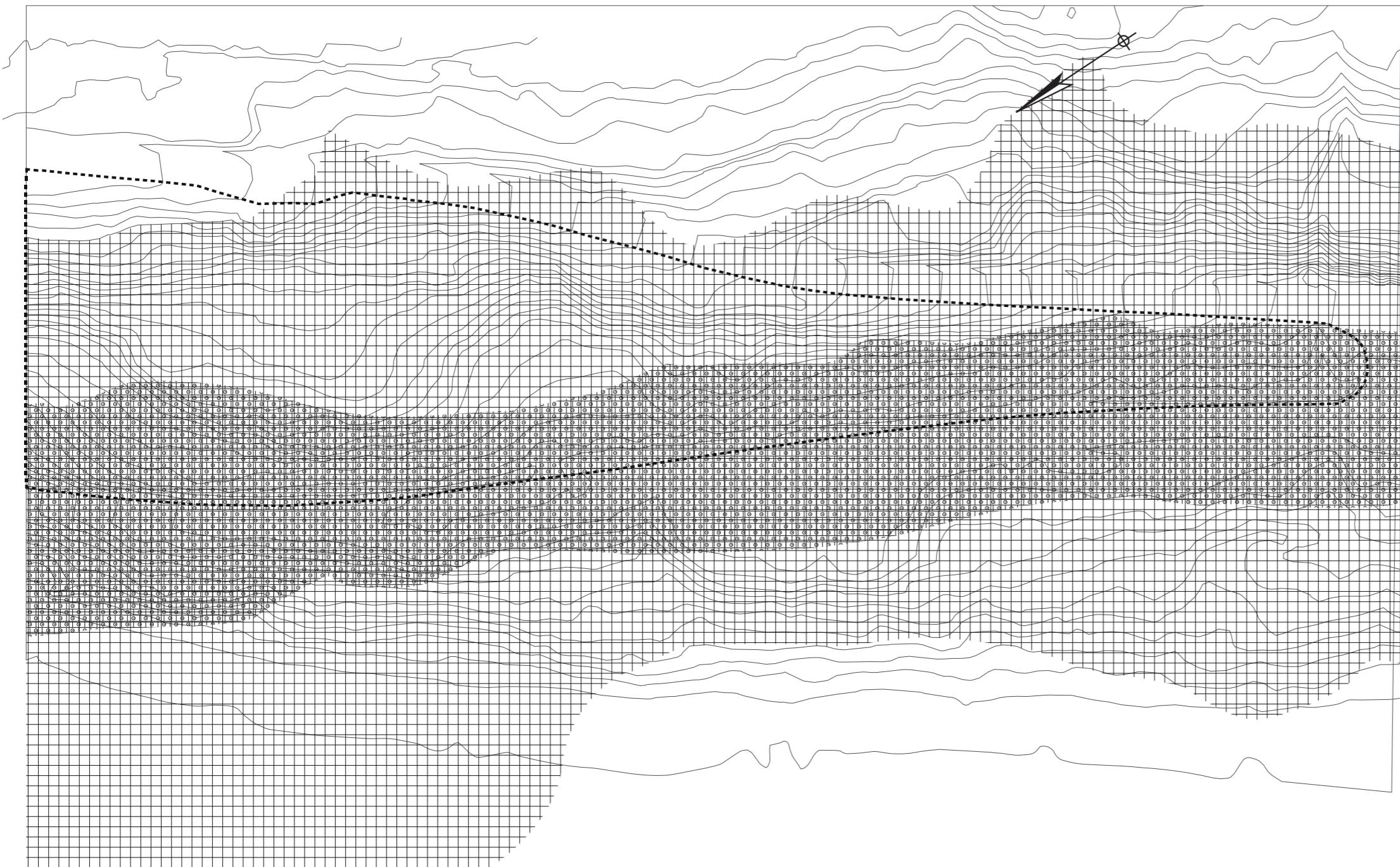




Snowpiles from
drifting snow



Fig. 13
GG



Red noise zone;
restrictions on land use



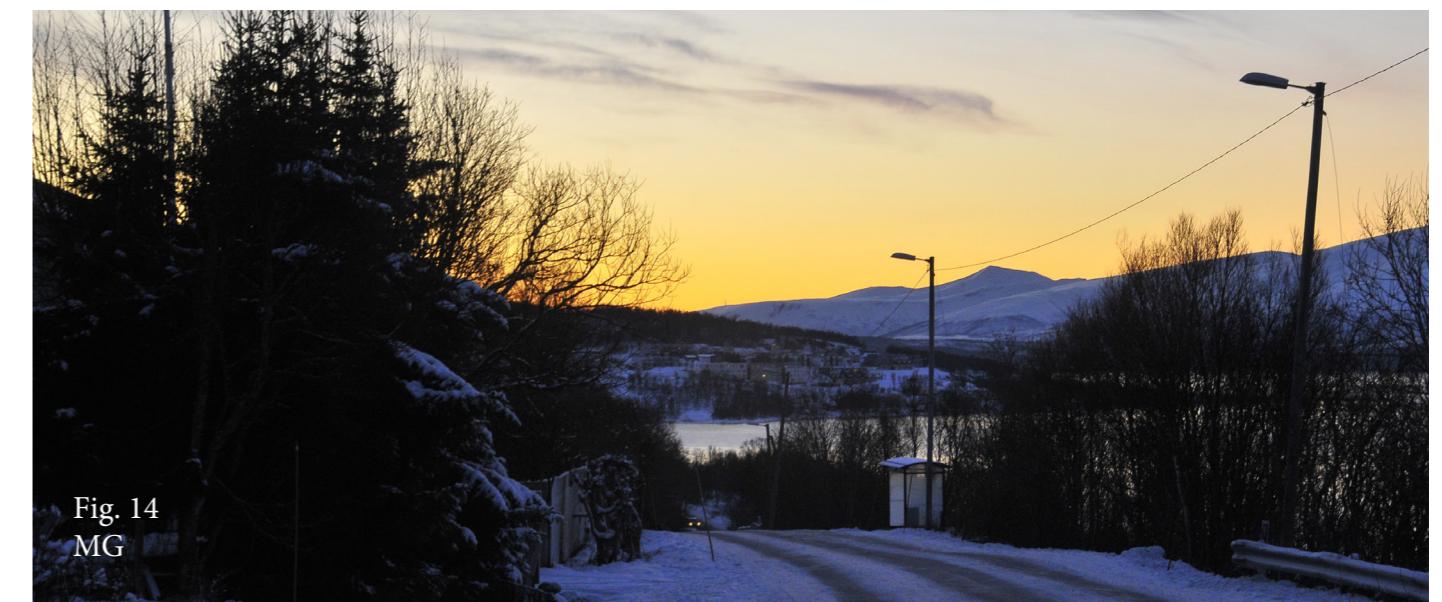


Potential entrance points from the surrounding roads without cutting of terrain and conflicting uses

Bus stops, route 28, approximately 20 minutes ride from downtown

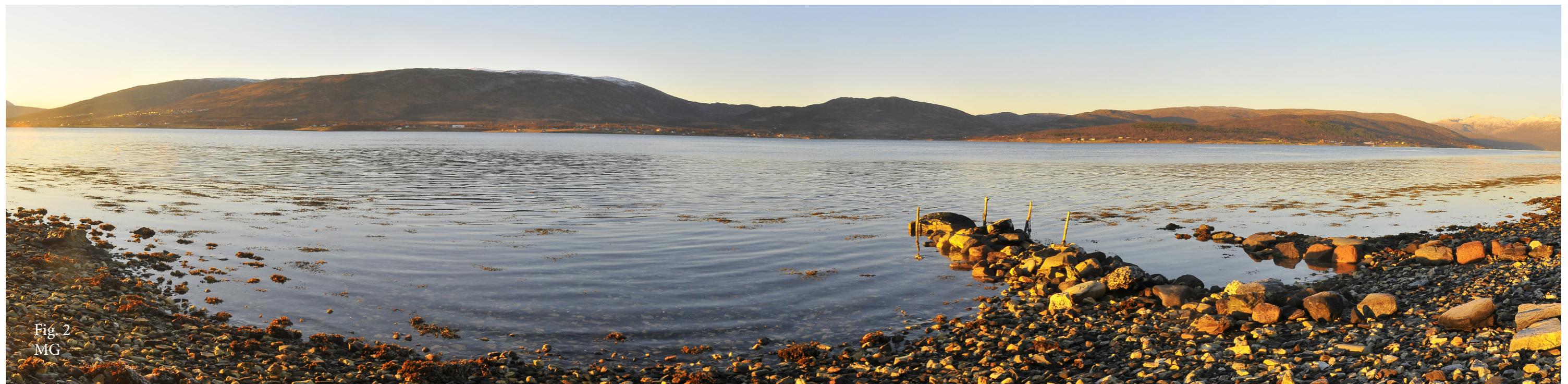
Existing roads and paved areas

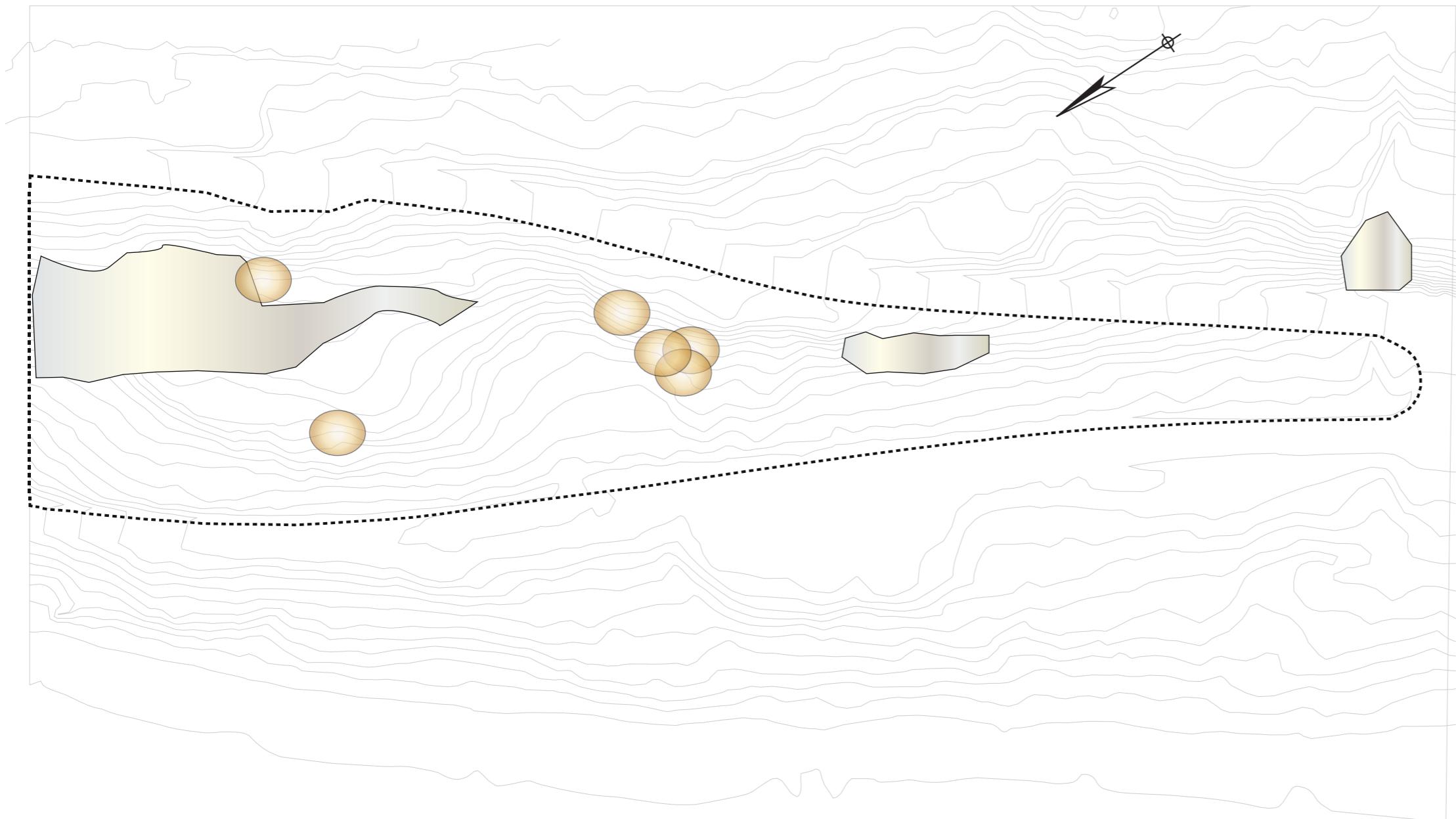
Building border, 8 meters from roads center





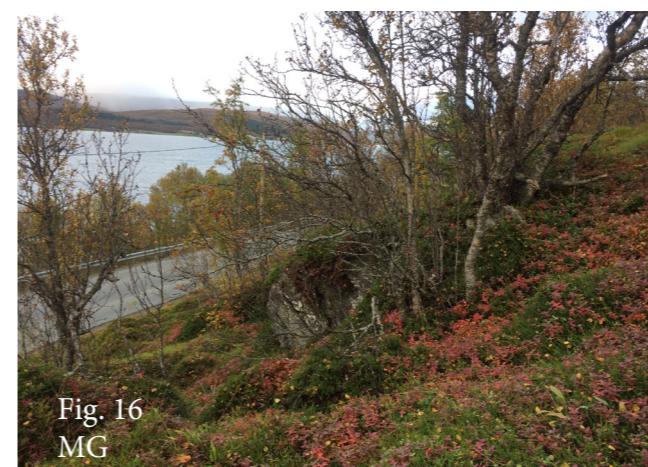
Landscape rooms, forest glades and clearings

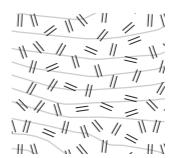
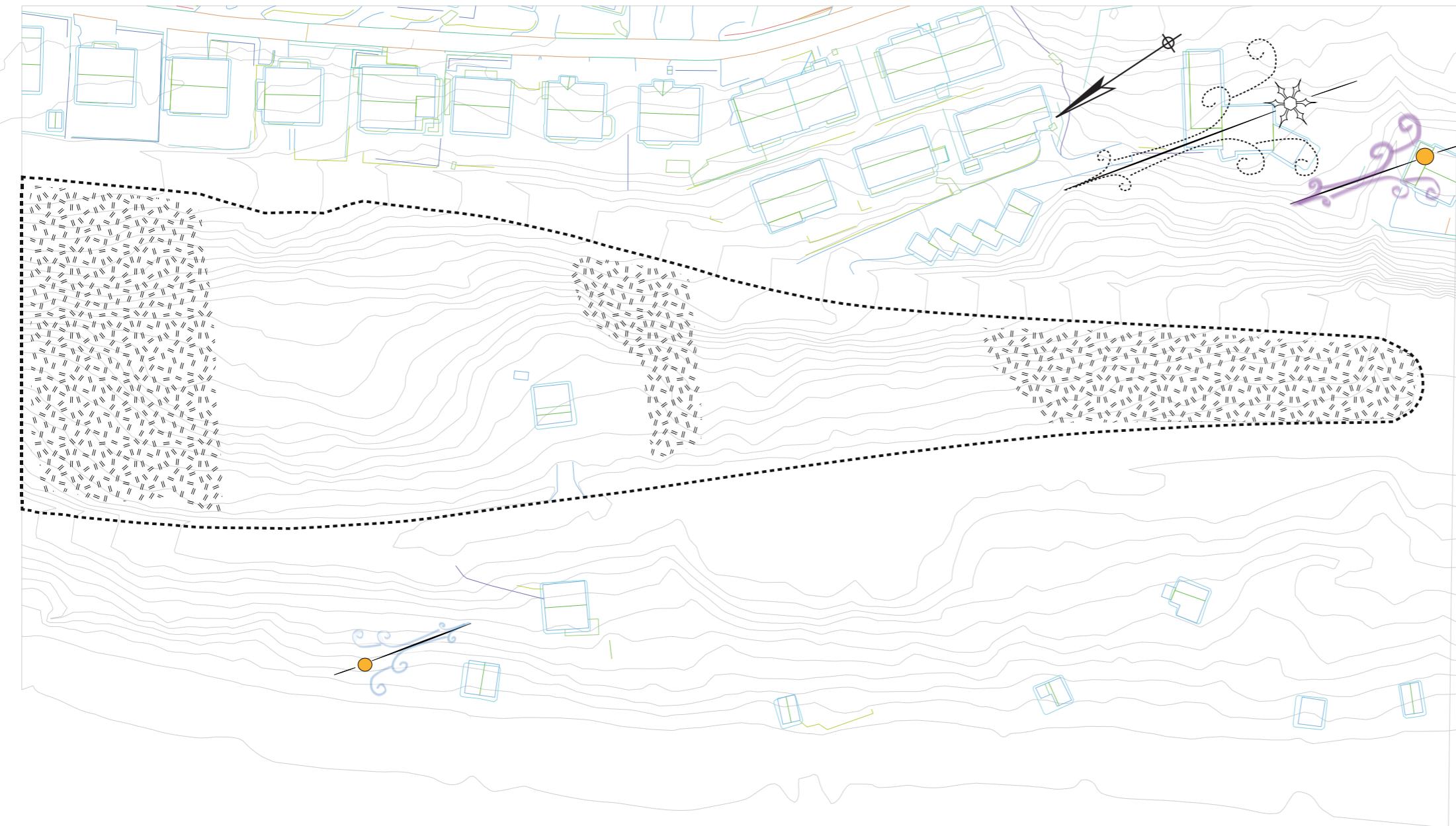




 Beautiful, scenic landscape, measured by the author's feelings

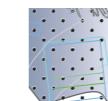
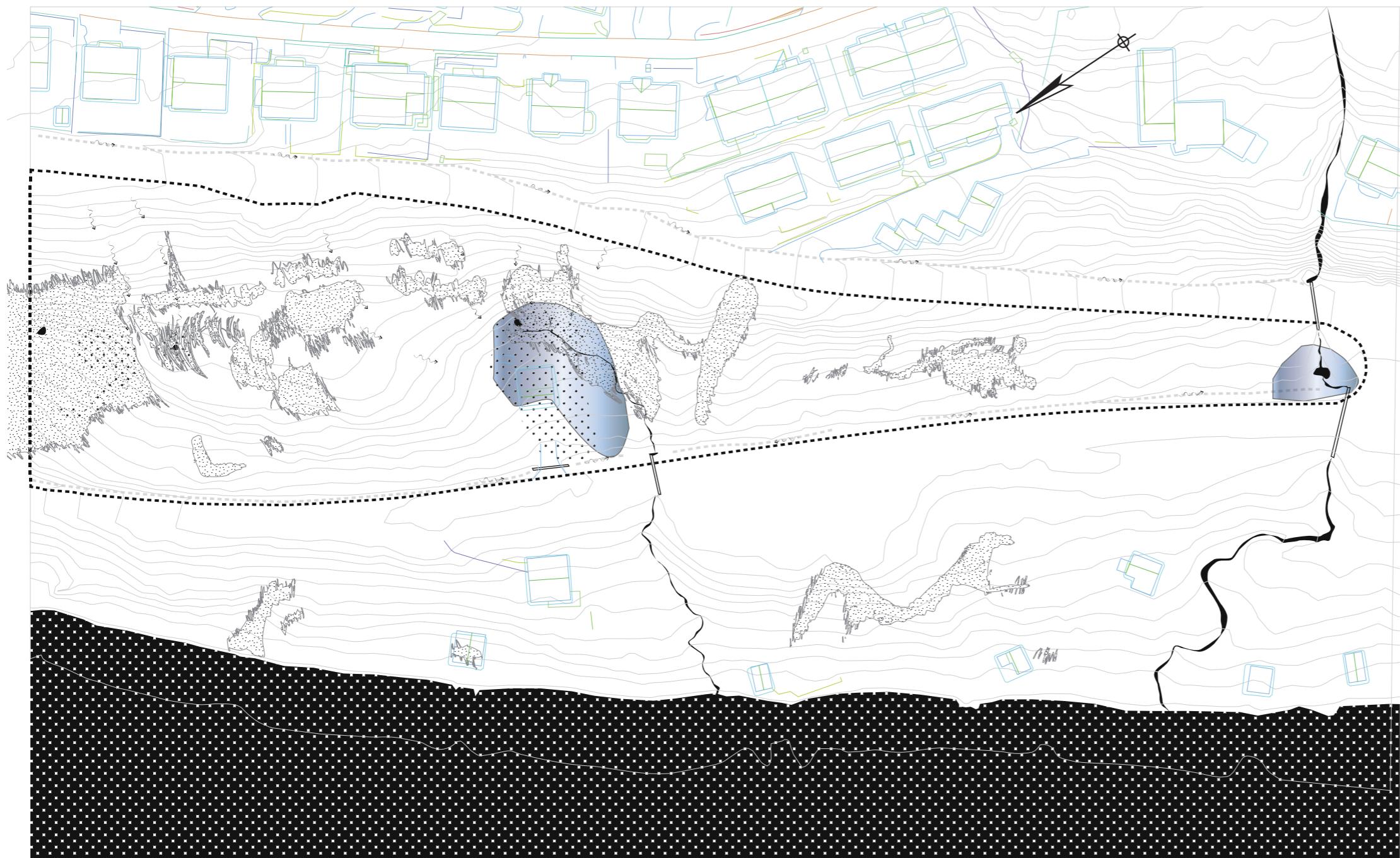
 Beautiful, trees and surroundings, measured by the author's feelings





Area of existing wood areas that is slowing the prevailing winds, and thus should be tried to be preserved when area is built

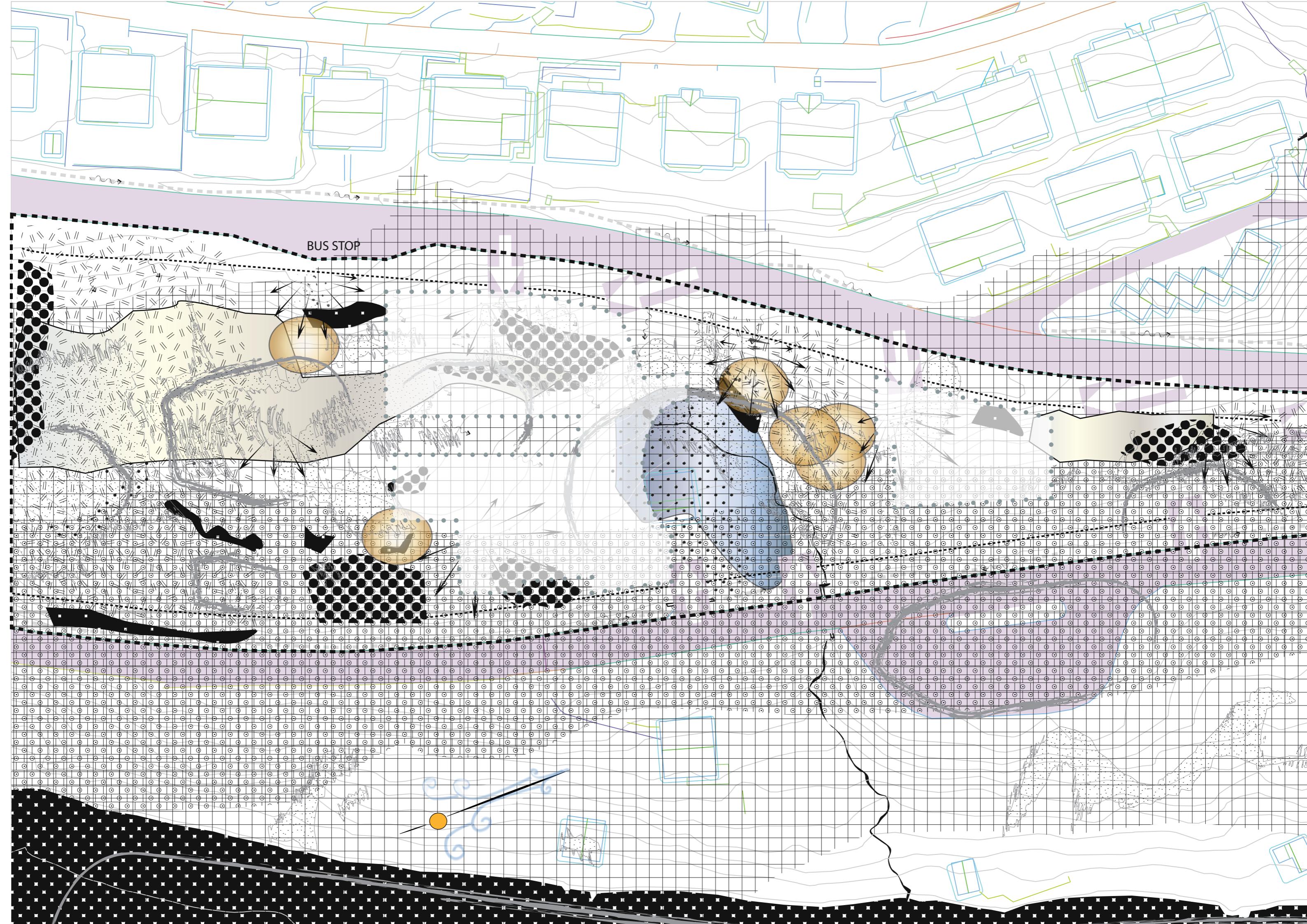


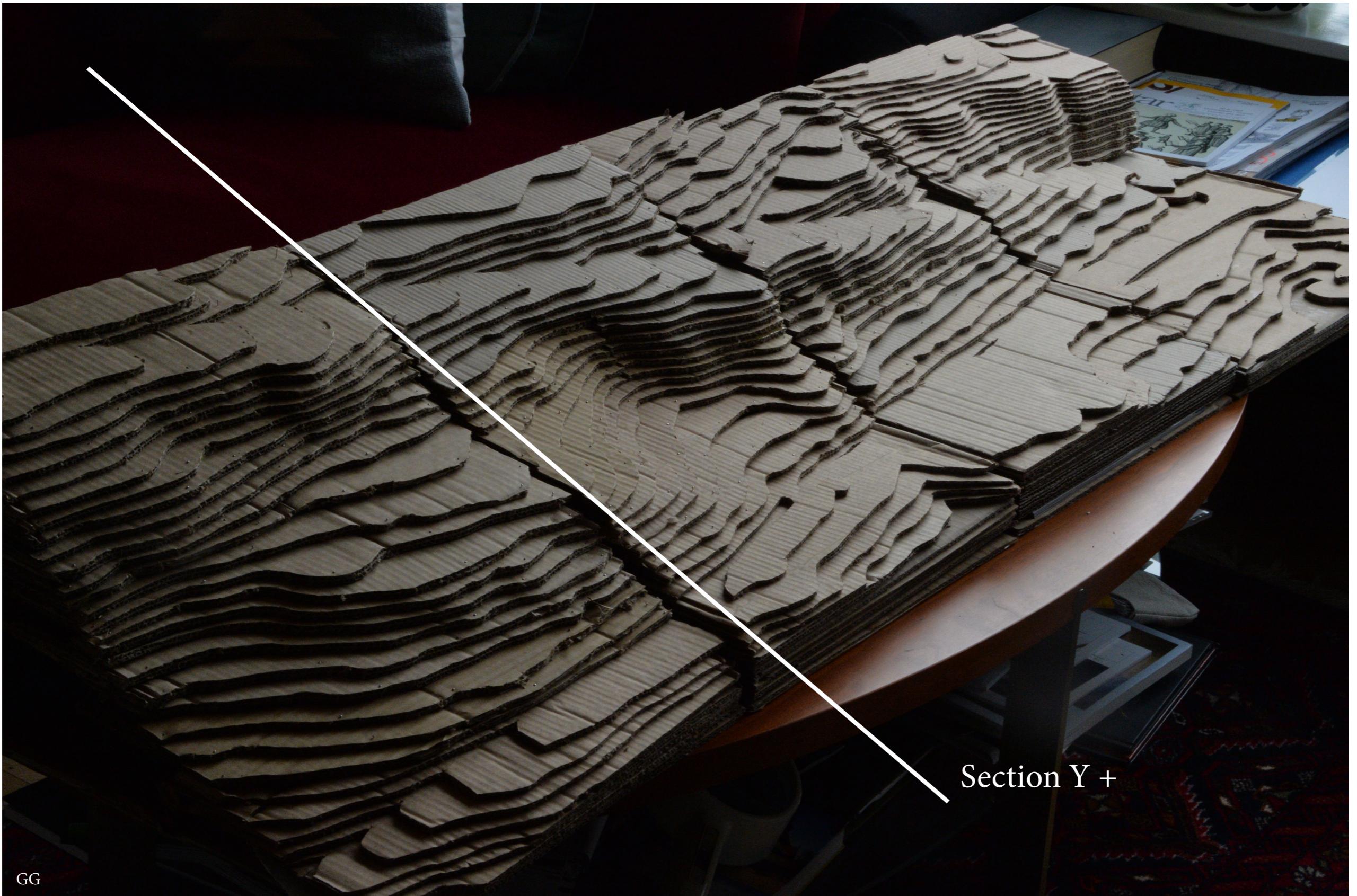


Potential water landscapes, tubing it up will remove important landscape character



Fig. 12
MG

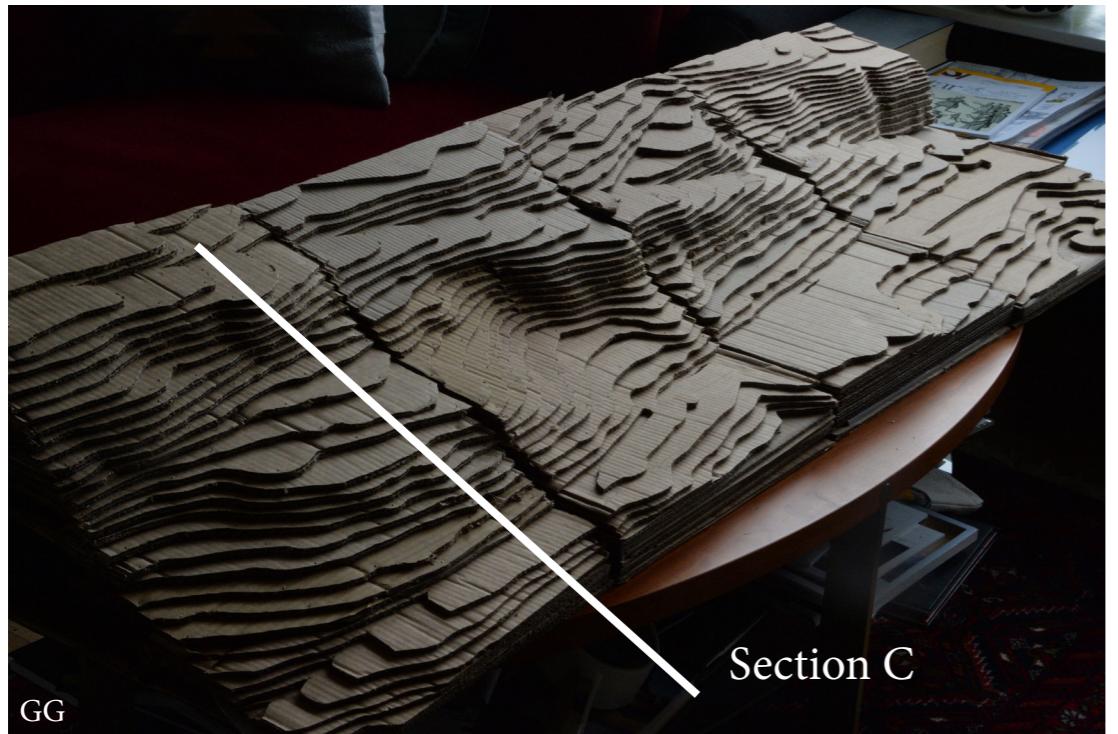


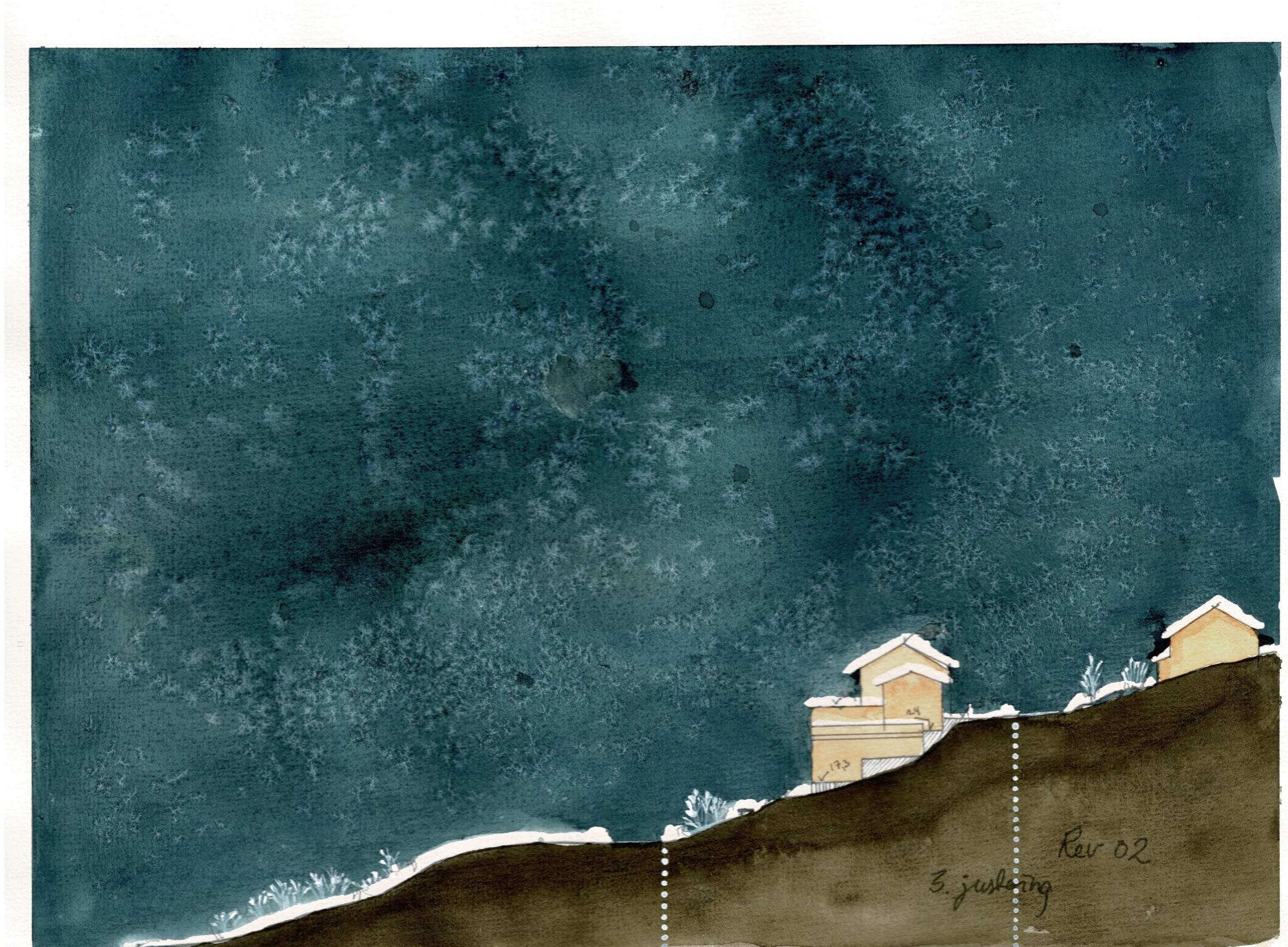
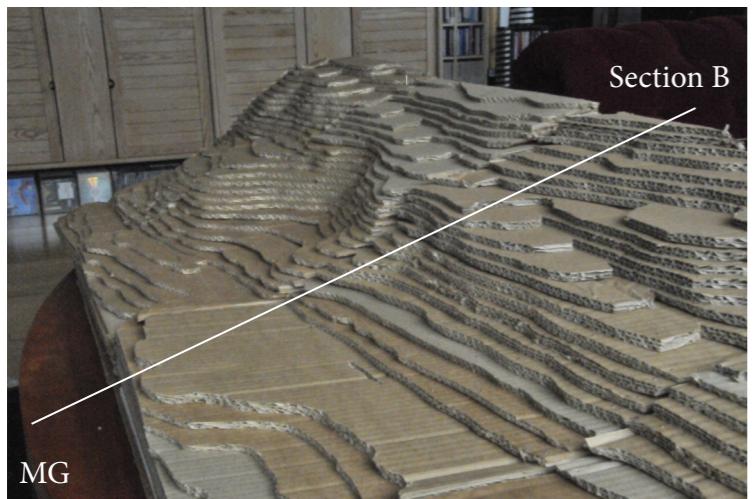


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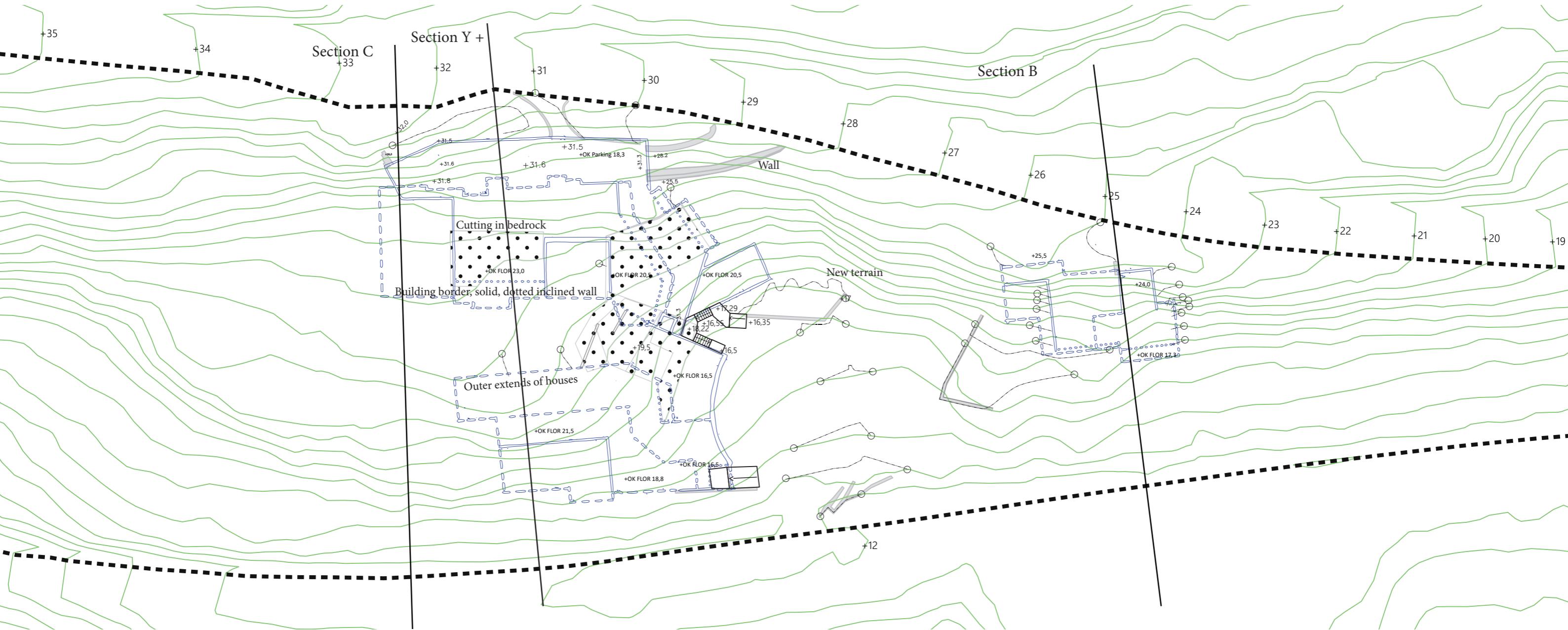
Model, cardboard, +2 meters
On hands working experience.



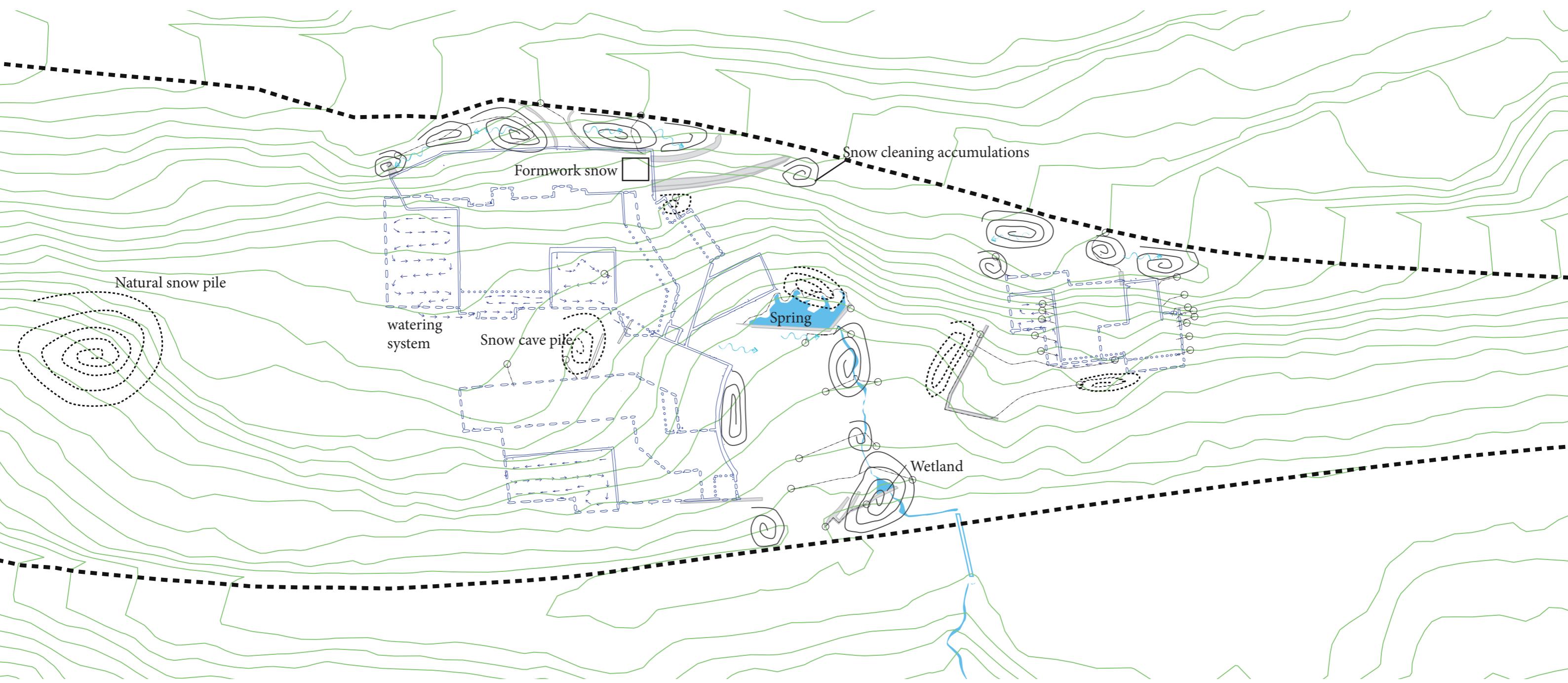




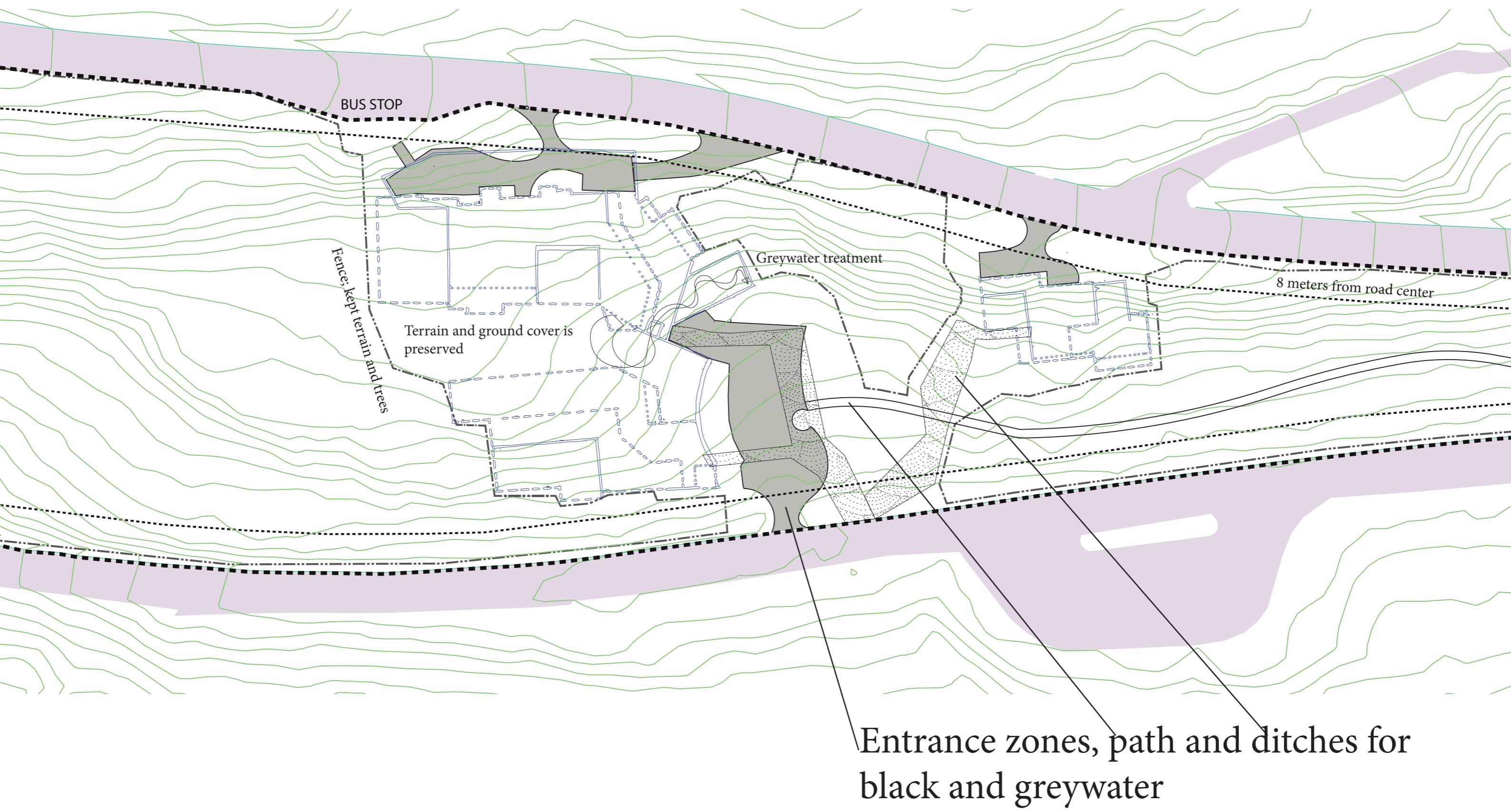
Snowy winter

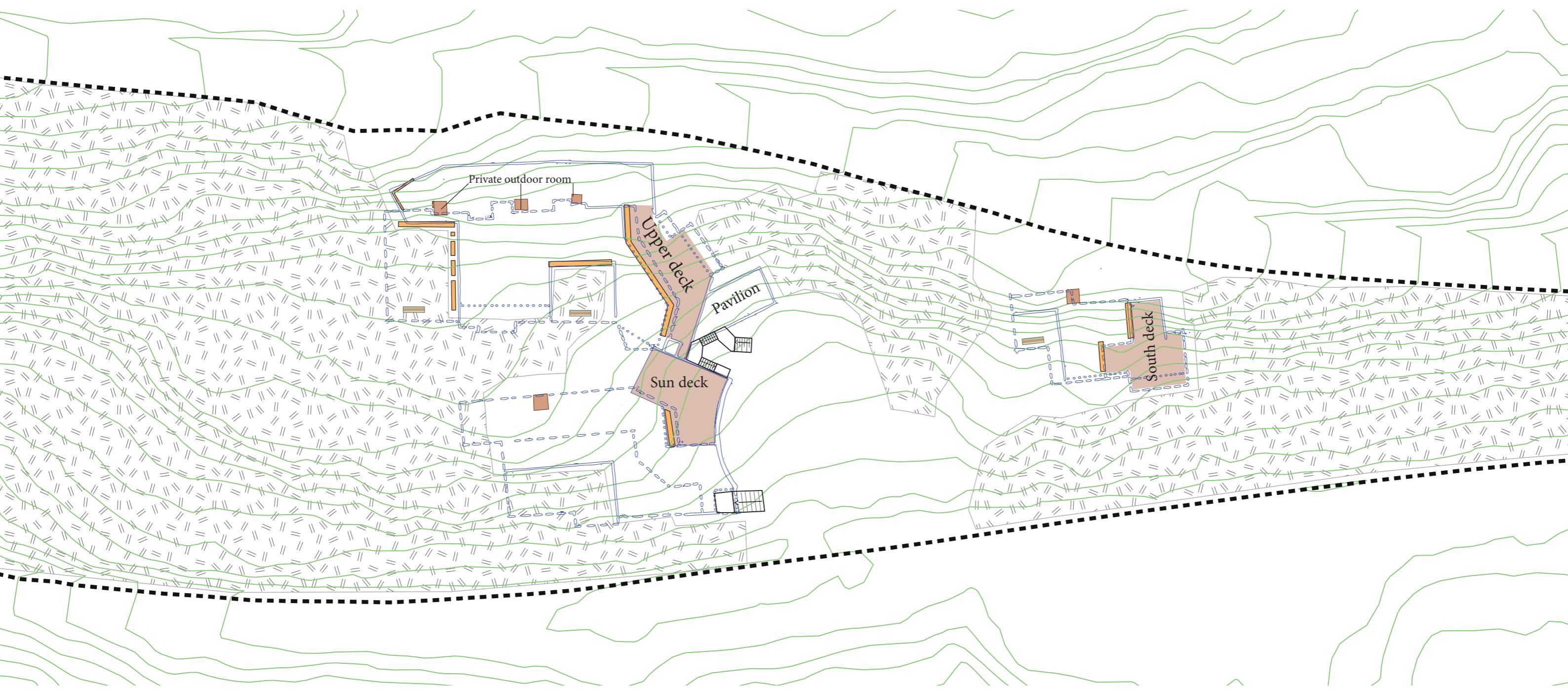


Terrain work



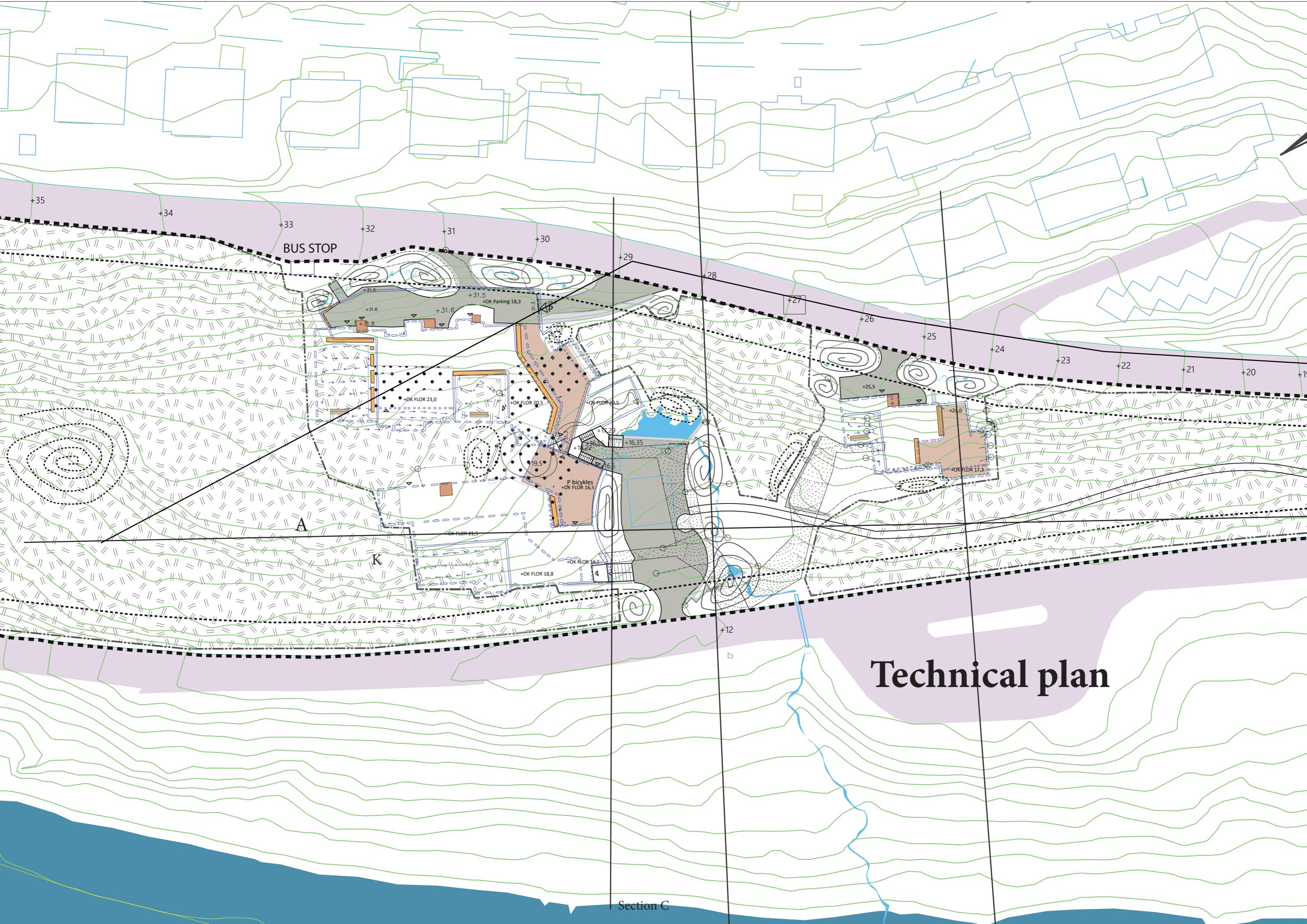
Water and snow



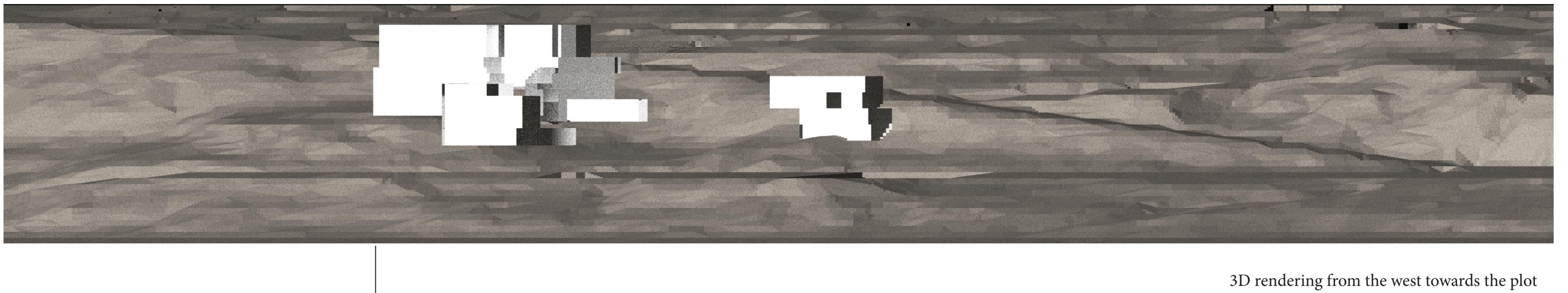


Preserved ground and
outdoor spaces and sunwalls

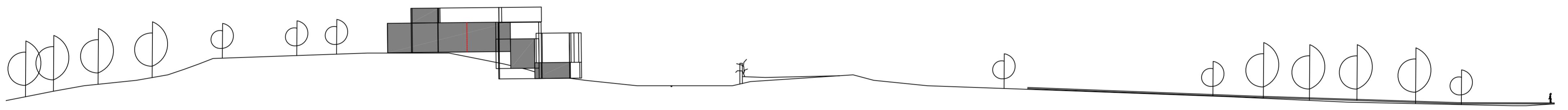
Technical plan



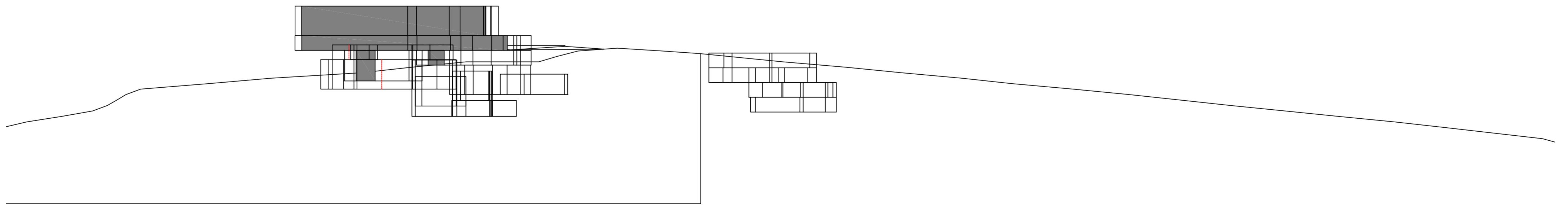
Section C



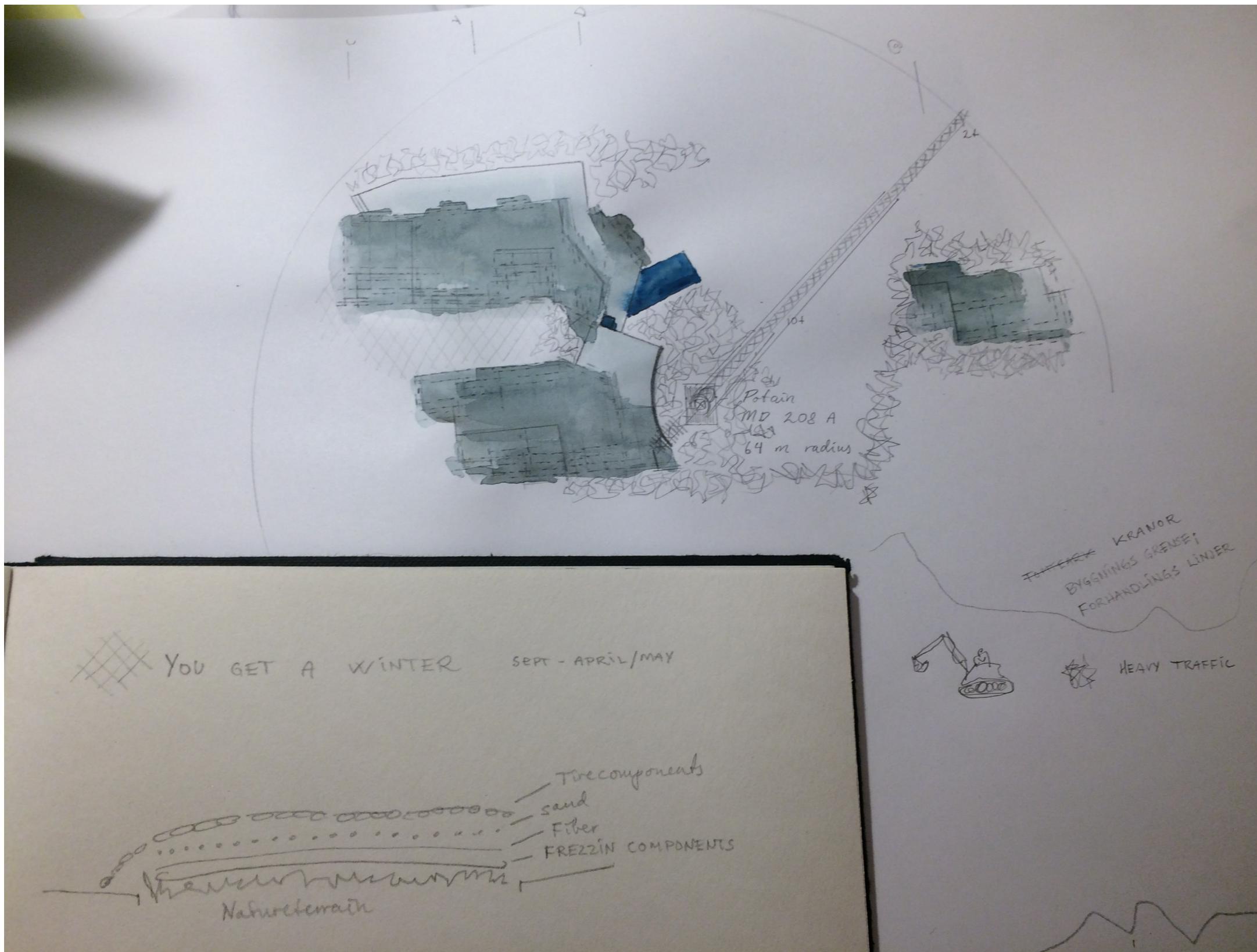
3D rendering from the west towards the plot



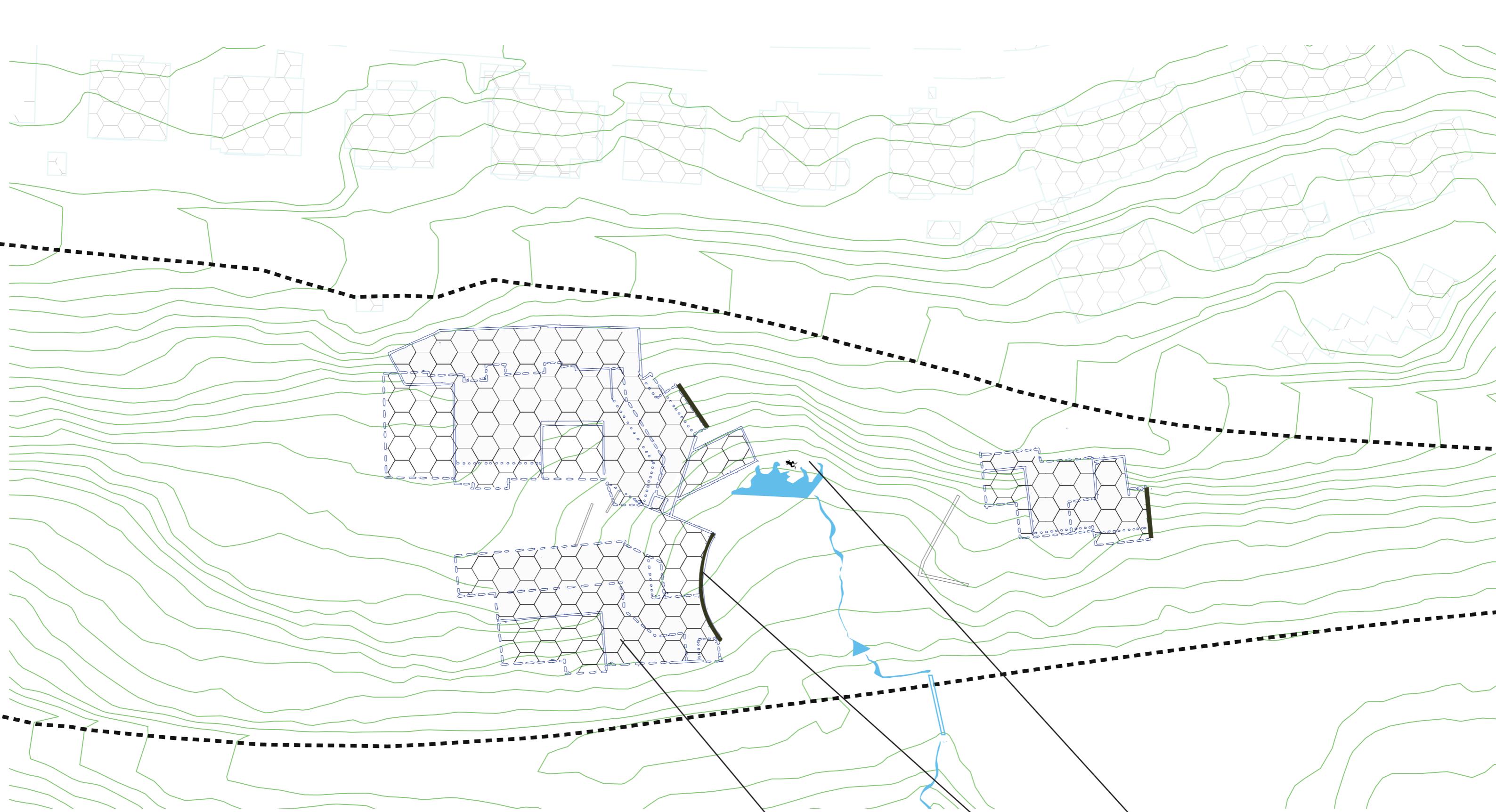
Section A-A'



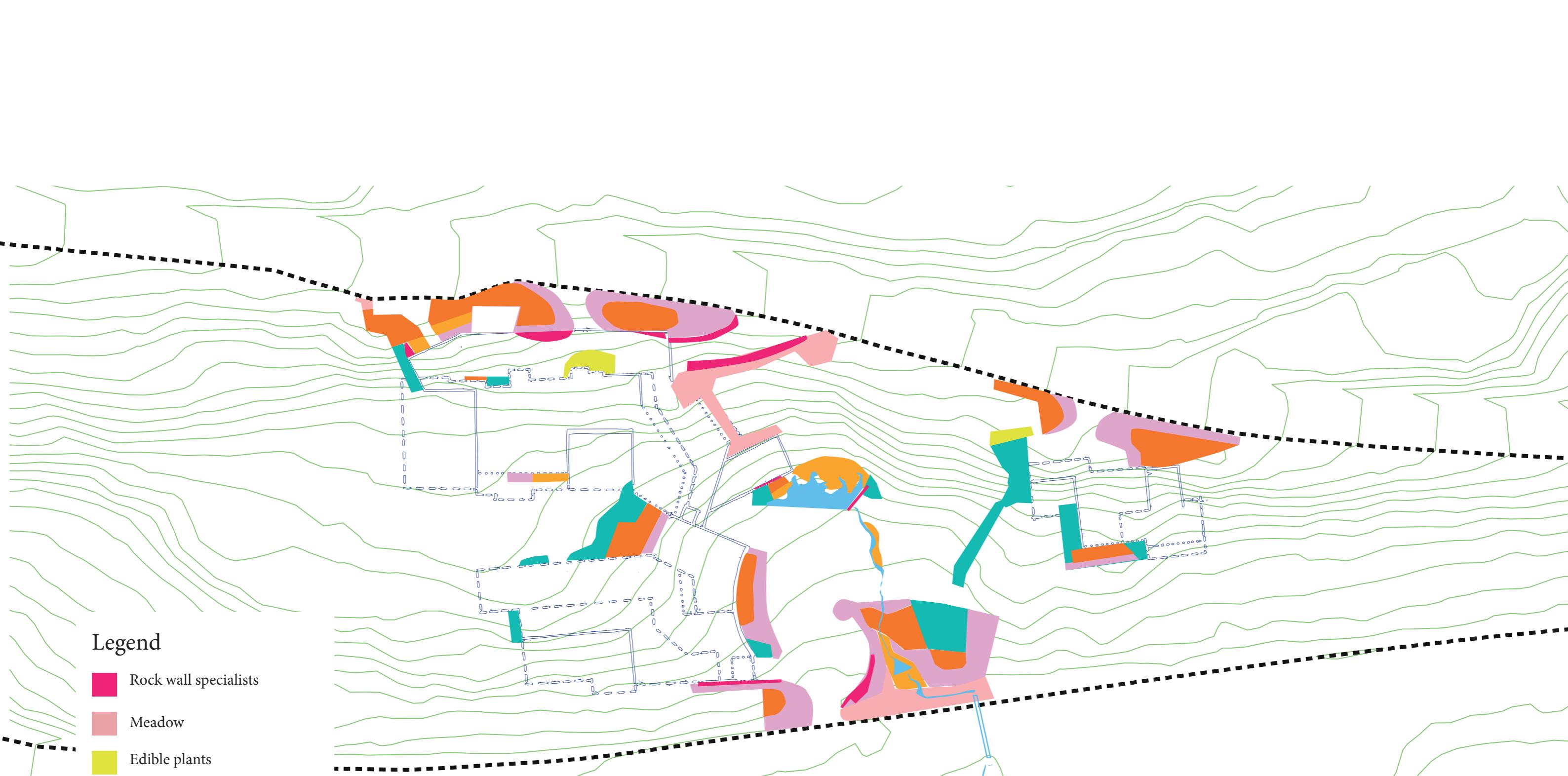
Section K-K'



Construction detail of preserved ground under and between the houses:
Freezing elements, gravel and concrete tabs on top, make sure that the
ground bears the weight of the machinery. September - May.



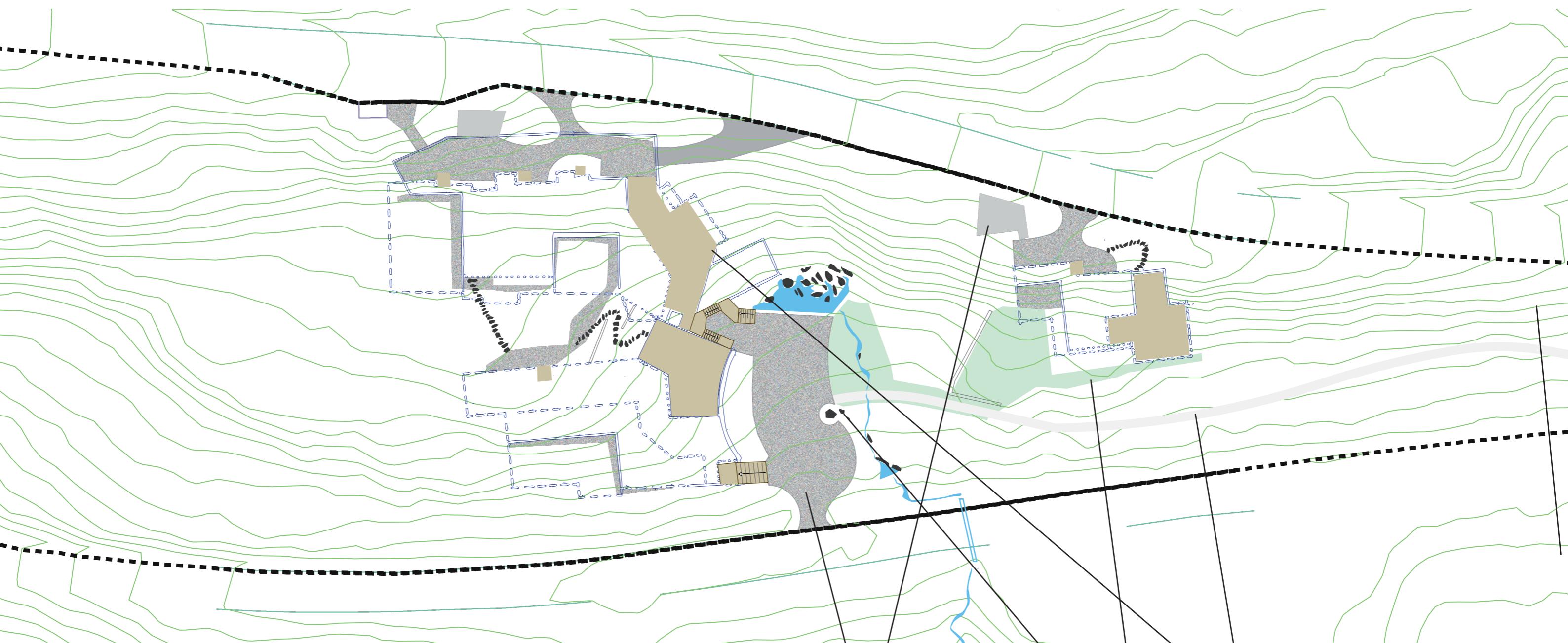
**Humans' nest, Bats' nest, Frogs' den;
Ecological elements**



Perennials and snow tolerant bushes, plant plan

Legend

- Rock wall specialists
- Meadow
- Edible plants
- Plants for wet conditions
- High plants for sunny positions
- Low plants for sunny positions
- Shadow thriving plants



Walking gravel, stones, tree decks,
playground gravel, grass, pathway;
ground materiality

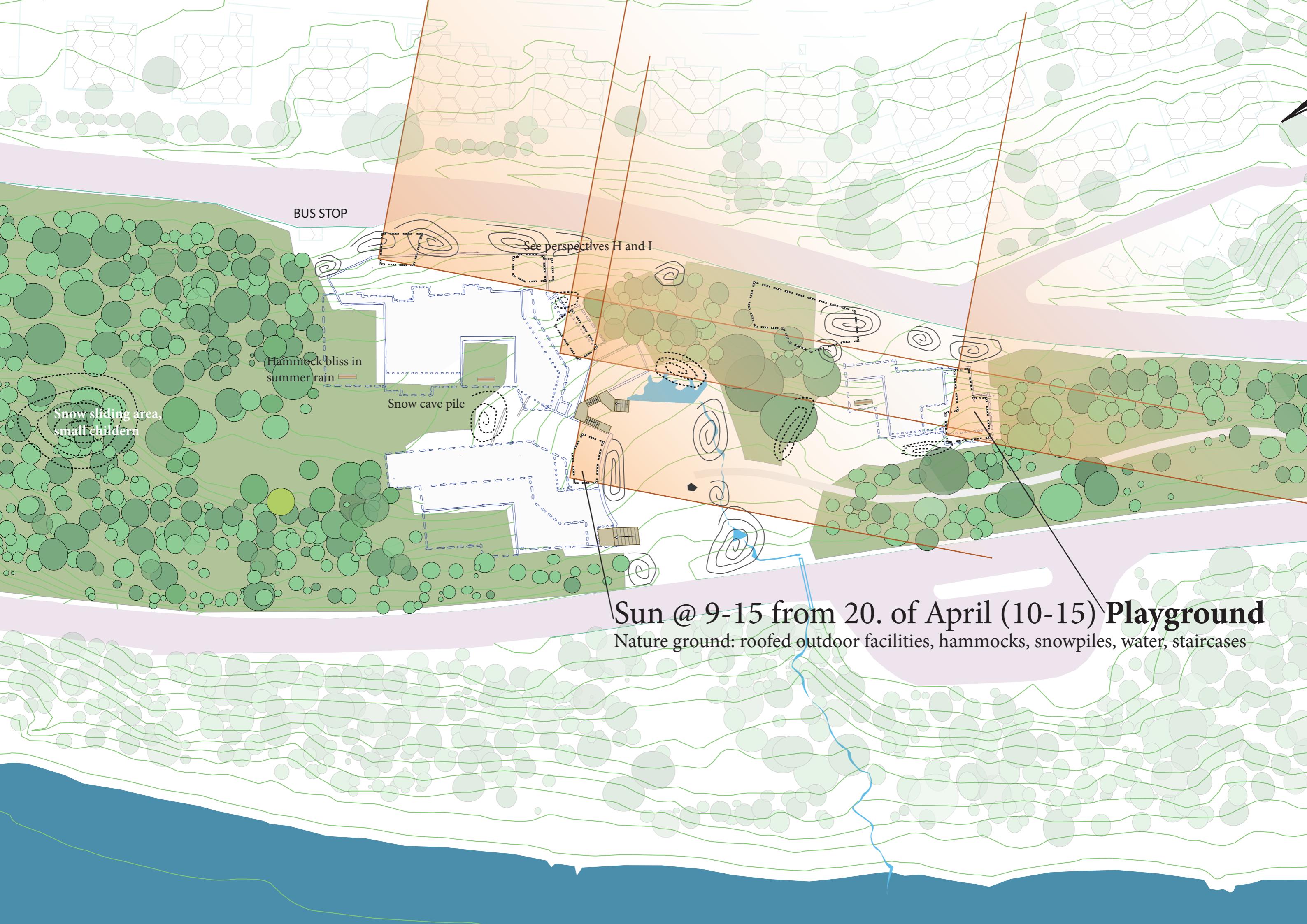
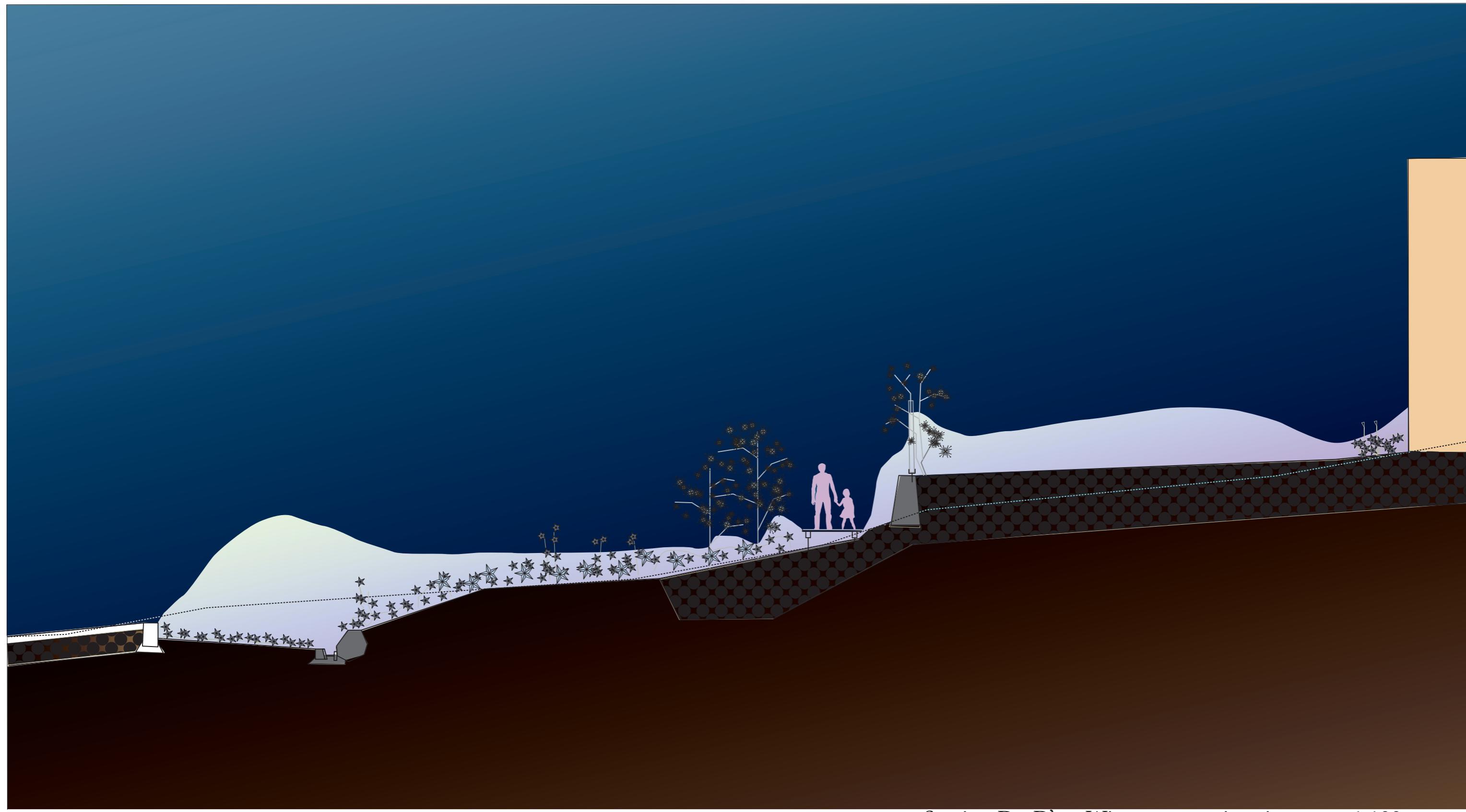


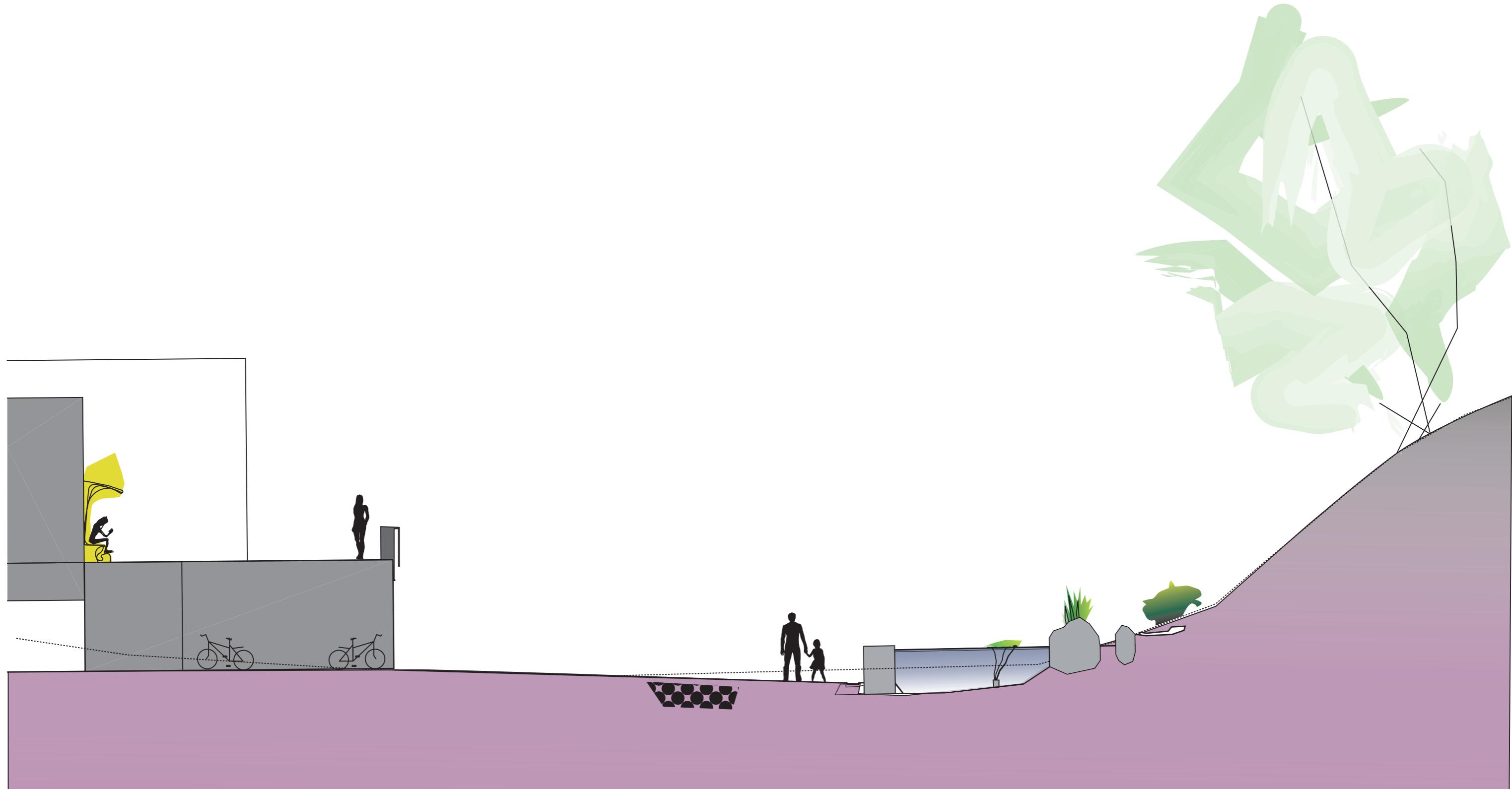
Illustration plan





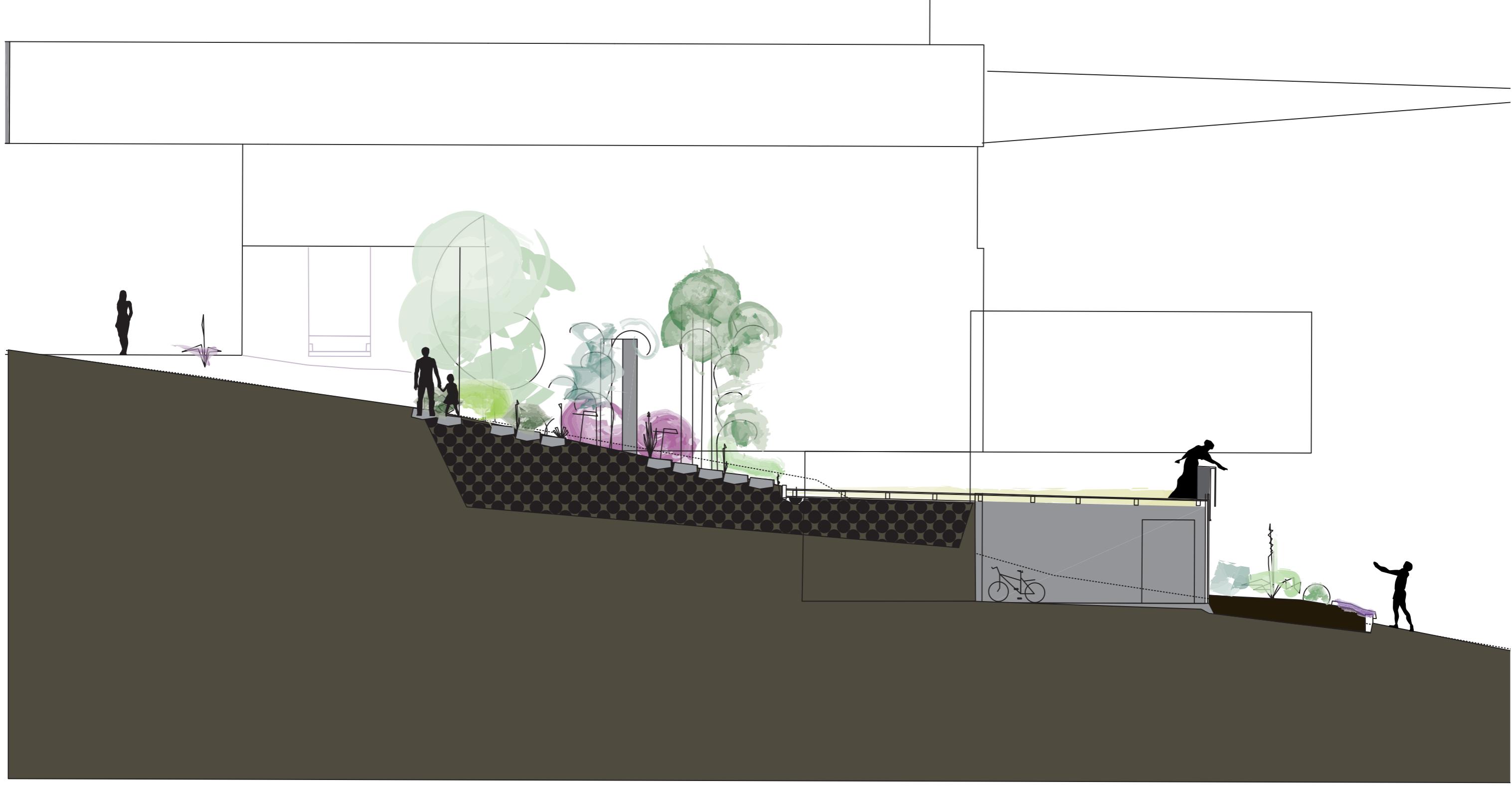
Section D - D' Winter snow situation

1:100



Section E- E' Summer situation

1:100



Section F- F' Summer situation

1:100



Perspective G:
Visualisation of the lower courtyard



Perspective H;
Access from Bjørnebekvegen to upper entrance zone, summer view



Perspective I:
Entrance to parking level, approximately 600 m² of car parking. Playnet, sunwall. Late April/ early May.



Perspective J:
Shadow vegetation, walking gravel, preserved heather and mosses.

Example plants

This selection of plants have great bounty qualities and is hardy for subarctic coastal climates. Some, like the meadow category do seed itself some. None of the plant groups are fully explored in such extensive plantings as illustrated in situations with heavy snow loads. Hands on experience of decades with gardens, and 10 years of professional maintenance and highly successive situations is the background for this selection. Every group could be expanded with experimental material, known good plants and near relatives or variants. Exceptions are the *a. aflatunense* whereas other monumental alliums die during the winters in Tromsø.

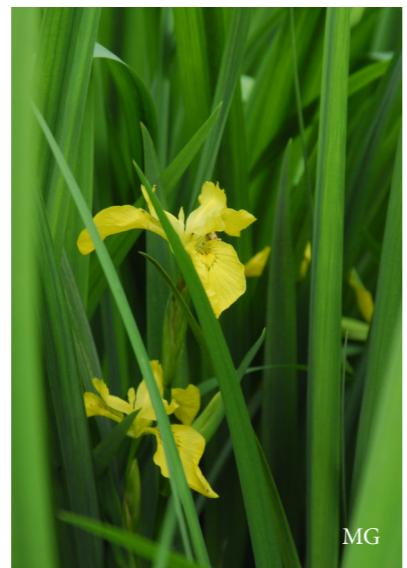
These plants do cope with snow, as most are perennials. We do have some ligneous, the climbing ones, the ground covering ones like *Thymus* and then *Ribes* and *Microbiota*, that simply don't get much height. *Spirea betulifolia* variants are masters of snow. It bends and bounces back: only old branches or bad variants will break under snow. Other bushes can be used; planting them horizontally can give an overall growth without height and snow breakage.

LEGEND

- Rock wall specialists
- Meadow
- Edible plants
- Plants for wet conitions
- High plants for sunny positions
- Low plants for sunny positions
- Shadow thriving plants



Trollius



Iris pseudacorus



Iris chrysographes



Eryngium alpinum



Ligularia
macrophylla



Primula florindae



Hosta



Dryopteris filix-mas



Astrantia major



Aconitum napellus



Tellima grandiflora



Veronica
gentianoides



Corydalis nobilis



Meconopsis grandis



Rodgersia podophylla



Lysimachia punctata

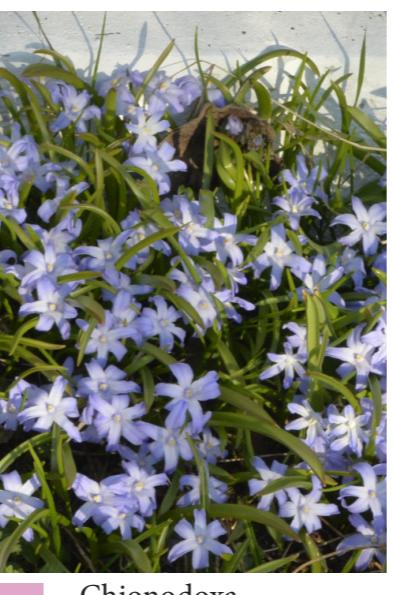


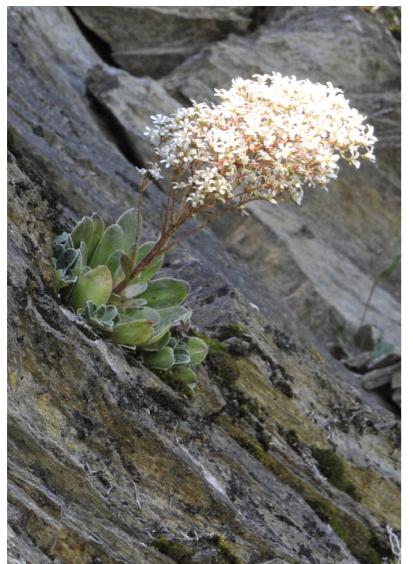
Spiraea betulifolia

Unmarked photos is by
Gunnar Graff



Rheum palmatum





Saxifraga



Phlox



Papaver nudicaule



Ref. 2 Laburnum, Tromsø
GG (Gunnar Graff)



Ref. 4 Rosa on wall, Strandvegen, Tromsø
MG



Chrysanthemum
leucanthemum



Allium sibiricum



Climbing plant/ ground cover
Hydrangea anomala



Climbing plant
Clematis alpina



Half climber, tying to wall
Rosa moyesii



Ref. 3 Ribes in freestanding wall,
Tromsø
GG



From approximately 10 000 square meters of the original plot, around 70 % is preserved.

3000 square meters of collective housing is possible, where maximum housing units is 42.

The work have been concentrated on climate adaption and has given a solution in steep terrain.

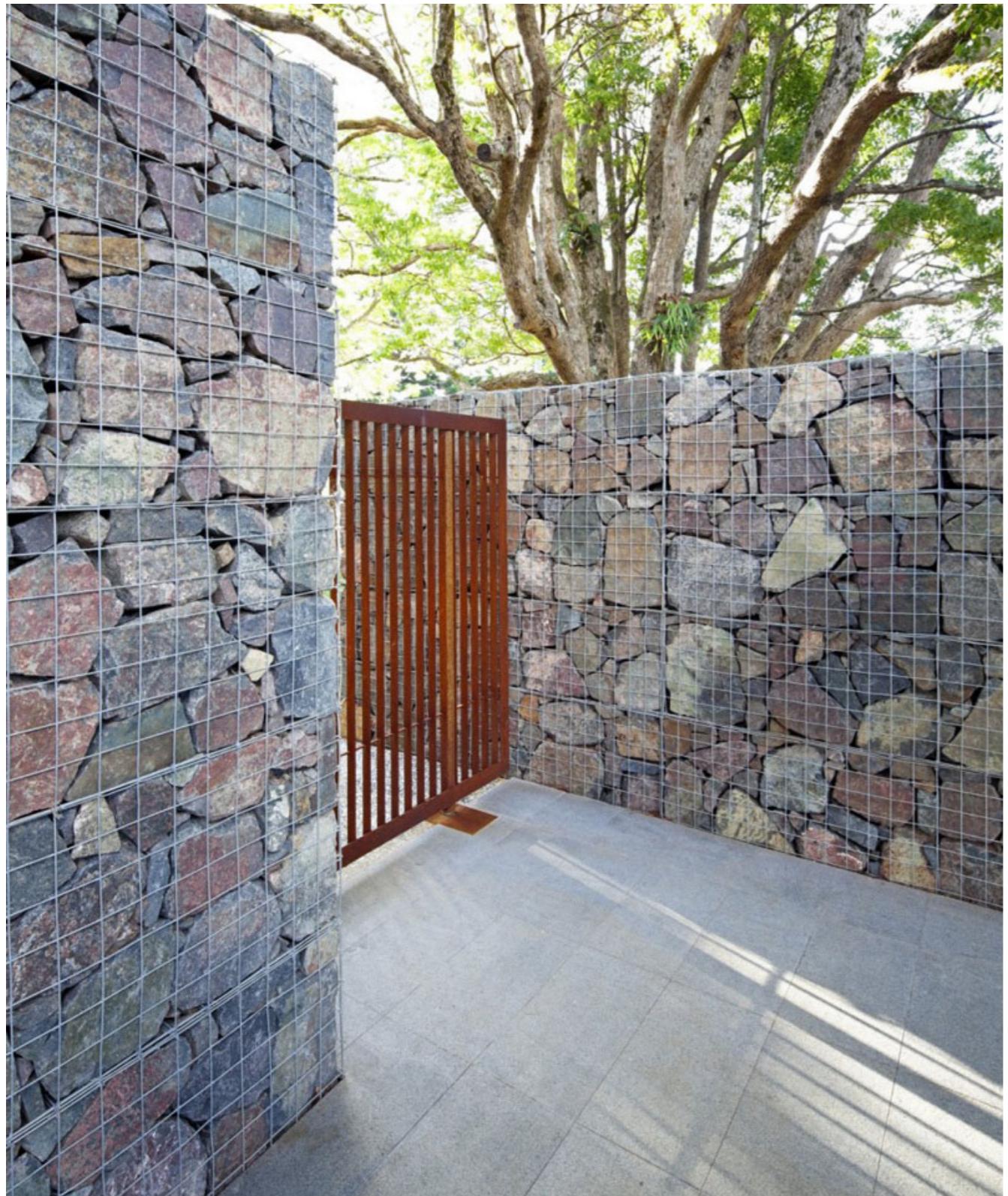
References on matereality and lighting



Ref. 1 Lighting along structures
Permission given of owner



Ref. 8
plexiglass and lights. 2 LIGHTING INSTALLATION
PUBLISHED JUNE 7, 2017 AT 768 × 708 IN SURPRISING
LIGHTING INSTALLATION



Ref. 5 Gabion wall

The Maleny House by Bark Design Architects. Landscape design by Pat Atkin, Landform. Photography by Christopher Frederick Jones.

<http://www.contemporist.com/what-are-gabions/>



Ref. 6 Local rock
MG



Ref. 7 Local rock
MG



Ref. 9 Pavilion

Wetland folly, by Herbst architects, photo by Jackie Meiring
<http://herbstarchitects.co.nz/projects/wetlands-folly>



Ref. 10
Raised trail. Naturepark, Berlin
MG



Ref. 11
Square Meal
Winnipeg, MB
<http://www.5468796.ca/#menu>



Ref. 12 Sunwall Hjalmar Johansen gt. 11; Tromsø
MG



Ref. 13 Housing example in steep terrain
Karekare house, Herbst architects
<http://herbstarchitects.co.nz>