

Me, the river

It's about the time I'm asked what I want

Vähäheikkilä – water positive and self-sufficiency driven pilot neighbourhood

Water centric design

Me, the river wants to honour the natural circulation of water in the Vähäheikkilä area and beyond. By its water positive urbanism it wants to liberate the water flow and enjoy the benefits to water dependant biotopes, non-human and human, in the new water positive Vähäheikkilä neighbourhood.

Momently, the natural circulation of water in the area is disturbed, like in so many other environments, by the human acts. The natural flow of the water is piped and large areas are coated with non-permeable surfaces. This causes the natural flow of water becoming a problem and a risk, more so in this water delicate environment of the base of a drainage area leading towards the sea.

Instead, we want to celebrate the charm of natural water flow and diverse flora and fauna it nourished. We want to balance the human living, fundamentally based and dependant of water, and pilot its role as humble part of the water circulation.

Diagram: Stormwater cycle

Celebrating stormwater: Stormwater brings life

Main principles for stormwater

1. Controlled change of the environment by letting the water flow its natural behaviour: The new neighbourhood provides space for water to expand: These expansion areas consist of flood ponds and riverbed with flood terraces for different flood levels, flood pockets and rain gardens, and meadowed flood plains, moist meadows and groves.
2. Sponge city: The permeable surfaces are dominant with surfaces of permeable asphalt and stonework with vegetation and include roads, parking plots, rooftops. Naturally, especially the lush vegetation and trees of the area enjoy, catch and retain the rains and stormwater.
3. Celebrating stormwater! This neighbourhood is turning the change to benefits, and harnessing the potentiality of stormwater. It's creating valuable biotopes, enhancing the biodiversity in the larger scale, and providing local water, food, and recreation to the human inhabitants. It's the identity of the area.

Diagram: Biotopes and green connections

Biodiversity positive neighbourhood

1. Vähäheikkilä is for all the biodiversity, it aims creating needed habitats for diverse flora and fauna and with biodiversity zooming leaves safe spaces for non-human use. In this, it aims to act as an example to other urban nature havens.
2. Adding to local and national biodiversity: The area hosts vulnerable biotopes and endangered species of the region and takes proud of its multiple delicate biotopes including flood and shore meadows, moist groves and underwater biotopes, along with traditionally sheep maintained meadow biotopes, creating homes to flora including flood and shore species, and diverse fauna from insects, frogs, lizards, birds to rodents.
3. The neighbourhood is acting as biodiversity route to adjacent areas, connecting the nature areas separated by roads. It utilises green link nature bridges and vegetation roads using trees and vegetation to enhance green connections and diminish the barrier effect. Roads partly covered in vegetation of diverse species and large trees act as stepping stones to multiple species in the larger reflection site.

Flow of movement

1. The flow of movement in the area is safe and fluent for all the habitats using diverse means of transport. The Vähäheikkiläntie boulevard and other permeable vegetation and tree rich roads add natural noise control layer together with roundabouts and lowered speed limit.
2. Cycling and pedestrian routes are safe and fluently connecting into larger networks, and providing diverse purpose for quick transport and nature recreation. Cycling is supported by city bike stations and self-service cycling fix point.
3. Bus route connects the micro-centres of the neighbourhood and possible future tramline touches the site in the west. The flow and safety of car traffic is secured by converting two most jammed and accident-prone junctions into roundabouts, providing based on research both safer ($\approx 75\%$) and quicker car flows to all travellers: drivers, cyclers and pedestrians.

I am the source of life

Water Positive architecture

The Vähäheikkilä area wants to become a pilot of a neighbourhood in balance with water. Presently, most of the water used by the human society is brought to the area, already naturally rich in water, while simultaneously, large quantities of stormwater and grey water are piped out of the area.

Closed loop: collection, use, purification

We want to rethink water re-sourcing. Vähäheikkilä is naturally abundant in water, the most important element for (human) life. New Vähäheikkilä aims to build a nearly closed loop of water cycle by the means of collecting rainwater, using the collected water, and purifying the grey waters by biological purification with the reed and willow grey water gardens. After which the water can be re-used or returned to the natural circulation. The roofs of the buildings are both collecting water with vegetation cover acting as water retaining area. Additionally, they act as natural diverse habitats with

local species, adding to the biodiversity. The buildings are also otherwise designed biodiversity friendly, with enchanting the current biodiversity of the site and prioritising vegetation surfaces with natural species in the grounds.

Clay and buildings as material sources

Along with water we want to rethink other re-sourcing. Vähäheikkilä has multiple aspects that can become source in long run and it can pilot as a recourse-wise neighbourhood. All structures in the area are respected as valuable material, and the maintaining and longevity of them is prioritised. If need be to dismantle, they are used elsewhere.

To rebuild the riverbed we need to dig out massive amount of earth and clay. This material can be used on the site. Vähäheikkilä will utilise the ancient lasting method of rammed earth building, along with using clay as indoor air-friendly and moisture balancing material in clay walls, clay floors, clay plaster and clay paint promoting healthy living.

Additionally, the new buildings will be built from recycled materials with the principles of circular economy: recycled wood, recycled concrete, recycled steel, to minimise the need of virgin materials. They will be built with dismantling as a principle, so the material can be easily used elsewhere, similarly the clay and rammed earth are easy to reuse. The buildings of Vähäheikkilä are acting as source and as a material bank for the future.

Functionality connected to water and self-sufficiency

Vähäheikkilä neighbourhood pilots a more circular way of living aiming for self-sufficiency and locality within the area. It benefits from the recourses available on the site, like water and clay, and will generate and utilise necessary resources like food, energy and heat.

Self-sufficient neighbourhood

The human buildings are collecting rainwater, and utilising it, similarly, grey water is biologically cleaned on the site. The urban farm and small-scale scattered cultivation on the site including beekeeping will provide local food and knowledge and involve the inhabitants from seniors to co-livers, kids and students.. Vähäheikkilä aims to be energy-wise: to start with, it minimises the need of energy for all the infrastructure and building by minimising new building and using recycled and local resources. Secondly, the neighbourhood generates energy by the means of a district windmill and solar power and stores it with a shallow underground ground battery for winter and peek need.

Additionally, area utilises energetic mapping to harvest already used energy again: Facilities needing cooling like supermarkets and ice rink generate heat, which is then used to warm the public buildings, sports hall, and swimming pool.

Functionality

The center of the neighbourhood is taken over by a large area for the water and biodiversity, The central biodiversity park. Here different delicate habitats connected to water e.g. changing flows of stormwater, like flood meadows, thrive. The biodiversity park stretches along the river through the whole neighbourhood, becoming its strong identity together with the all the time changing river or stream, the main route along with all the functions are located. Human recreation includes

biotope info path and bird watching, Waterside walking, running, cycling and skiing routes, ice swimming and small natural skating rink, as well as outside sport facilities like outside gym and picnic and resting areas along the beautiful natural route. The activity square hosts outside recreation and playground of water information, with water information (flow, rain, use, purification) of the area. Housing in the center-east is terraced, forming closed streetscape towards Vähäheikkiläntie, while sheltering gardens are opening to river. Here reedbeds and willow groves clean greywaters, while eatable garden and beekeeping provides food. The central Bridge library forms the roof connection for the humans and biodiversity to the east area.

The east of the neighbourhood centres around social gathering square, with the old bra factory turned into an open nurturing home with public functions: pool area connected to neighbouring sauna and a restaurant. Additionally, the home is collaborating with group-building communal senior home at the site, sharing cultivation and services, which are also benefiting the communal student housing nearby. The south of the neighbourhood aims to maintain the richness of function at the area, by combining small-businesses and housing in a unique way, providing local work and business spaces to residents. The area is built so, that it can fluently be densified and changed over time, incorporating added floors, extensions and additions to the existing building fabric. The stream of water acts as in this area much needed expansion space for stormwater enabling possible infill building in the villa area as well as natural barrier between the different typologies of mixed and small-scale housing. The nearby Urban farm will act as a heart of local cultivation and nutrition self-sufficiency: featuring knowledge sharing and education with courses, workshops and volunteering, and creating a connection nod for the habitats. The Urban farm also features a farmer shop and a local food restaurant, collaborating with the adjacent vocational school. In the grounds chicken, ducks and sheep can be seen.

The west of the area connects the Riverside biotope park to the hilly forested area and blends with ease to the small-scale of the neighbourhood, providing townhouse homes with community and ease of everyday from on-site workshop and equipment borrow space to summer kitchen and cultivation gardens.

I want to run free