

Skavsta Forest City

Analysis

Nyköping

Nyköping is a medium-sized Swedish city. It is the home of approximately 33,000 persons – with roughly 58,000 inhabitants in total within the municipal borders. Its geographic position south of Stockholm along the coast of the Baltic Sea has given it historic importance as well as future potential.

Apart from Nyköping's strong relation to Stockholm, several larger municipalities with a population of more than 100,000 persons can be reached within a driving range of 100 kilometers – including Norrköping, Södertälje, Eskilstuna and Linköping – further strengthening the city's strategic position.

The name Nyköping can be translated into "Newmarket" which tells about the importance of the city as a trading site. Historically the site was the home of a population living on fishing. Eventually a town was established and Nyköping gained a status as trading site. By the 12th century Nyköping was one of few sites in Sweden to have permanent trade with other countries.

Nature

The city lies in the province of Södermanland. Södermanland has a low topography with only a few areas above 100 meters above sea level. The landscape is characterized by small hills with numerous larger and smaller woodlands in between hollows that either are lakes, peat mosses or mud plains. Throughout the province a large network of hiking trails, known as Sörmlandsleden, passes. It consists of around 1000 kilometers of trails in total. The trail runs past several historic sites, points of attraction and viewing towers. The main route goes through Nyköping and one of the secondary routes leads out to Skavsta.

The Airport

In the municipality of Nyköping lies one of Sweden's most frequented airports, Stockholm Skavsta Airport. It is located 7 kilometers to the northwest of Nyköping city and can be reached within 25 minutes by bike. The airport was built and in use for military purposes between 1941-1980. In 1984 the airport was reopened for commercial use. It is today one of four airports in the Stockholm region and is owned to 90,1% by Arlandastad Group and to 9,9% by Nyköping Municipality.

The East-Link

The East Link, a 160-kilometer-long railway, is expected to be fully operational by 2035. It will connect Linköping with Järna, strengthening the transportation connection along the east coast and improving accessibility to Stockholm. The new railway will generally increase the capacity of the railway net and create new connections in Linköping, Norrköping, Skavsta, Nyköping, Vagnhärads and Järna. The project will shorten travel within the region as well enabling a sustainable rail-bound mode of communication to and from Skavsta Airport for the very first time.

Project Site

With the development of the new East Link the area around the airport will gain new potential. With the direct proximity to the airport, the railway, and the deep-water harbor, Skavsta will have a unique strategic position for new establishments. South and east of the airport area, the municipality together with the property owner of Skavsta Airport, Arlandastad Group, want to develop the area for future needs and purposes. The project site for the competition encompasses 28 hectares of this area and is bordered to the north by the future railway. The project site consists today mainly of planted forest land which has been felled at different stages.

In the northern part of the project site, next to the future railway and railway station, lies a gravel-yard long distance parking. At the center of the site a natural rocky hill breaks the flatness of the site. The flat gravel-yard is set to become a future public square and the rocky hill a preserved natural park. A new central boulevard is planned to connect the station and the square in the north, via the park in the middle, with a new roundabout and access road in the south. Along the western border of the project site a new road will lead to the airport area over the railway.

Concept

The proposal aims to create a living city with an integrated green and blue structure where workers, commuters, travelers, and visitors co-exist with nature. Considerable parts of the natural landscape will be preserved and developed. The new structure will be planned and designed, with nature as a key element, to obtain as high values as possible regarding ecological, social and economic sustainability.

Welcome to the forest!

More than roughly two thirds of Sweden consist of forest land. Sweden's identity is closely linked to the image of the forest. The forest is a unique environment that has been mystified through all times. It is a valuable natural resource that holds special qualities that this proposal aims to bring forward. The forest constitutes the main concept of the proposal and will play a crucial role in the planning of the area. For outside visitors as well as workers in the area the presence of the forest will contribute to make the area a destination and attractive place to work in.

Apart from constituting nature experiences with all that it entails for individuals' quality of life and for tourism, the ecosystem services provided by forests are numerous and important. Some of them include vital societal functions such as the production of wood raw materials for bioenergy, paper production, or construction. Others are related to the global climate, such as the climate regulation forests provide through temperature equalization and the storage of carbon in trees and soil. Forests also offer flood protection by absorbing water through the trees, the presence of an abundant litter layer on the forest floor, and water storage in swamps.

Forests also provide valuable food resources such as mushrooms, berries, and meat from wild animals. As self-sustaining ecosystems, forests have their own nutrient supply, and the recycling of necessary nutrients is made possible by fungi and microorganisms in the soil, eliminating the need for external input. Forests also play a role in pollination services through their diverse insect population, benefiting both their own species and distant crop cultivation. Additionally, pest control is achieved naturally through the presence of small and large predators and parasites within the forest, acting as natural enemies to species that can cause damage.

Living in the forest

Besides becoming an attraction for visitors from all over the world, the area will primarily become the future workplace for more than 10 000 persons. To ensure a living city in an area which cannot hold residential buildings (due to the proximity of the airport) the proposal builds on a strategy, disposition and architectural solutions for public and semi-public spaces, attractions and services that allow for and promote social interaction and life throughout the whole day.

These activities take place in the urban and social layer of the masterplan that overlaps and parallels the layer of the green strips. The urban layer is held together by the street structure which is planned and designed for a traffic order that prioritizes walking followed by biking, public transport and lastly car traffic. Within the urban layer a substantial part of the surface is covered with trees and plants – acting as a supplement to the primary green layer of the forest strips.

Wood

The building and property sector in Sweden responsible for more than a fifth of the total carbon dioxide emissions. An alarming fact that requires drastic changes within the industry. One way to reduce the emissions is to build in materials that have a low environmental impact.

Wood is a great material in that and many other senses. It has a negative CO₂-impact while acting as a carbon sink, is produced within the country and has several qualities concerning construction and impact on the health. Thus, a natural decision is to propose that all buildings will be built in wood. A policy based on premises related to sustainability but also existing qualities of the site and the future profile of the area.

Resilience

After the construction phase buildings continue to be major emitters of CO₂ related to their energy-need. The day-to-day running of building requires substantial amounts of energy for example for heating, cooling, and lighting. The proposal is to allow the new area to be resilient and partially self-sufficient in terms of energy.

Through extensive use of solar panels on the roofs, as well as in facades, the theoretical energy need for the area could be covered. The proposed block types of the future area thus include the integration of solar panels in their design.

Similarly, a strategy for storm-water management and use of rainwater is implemented in the proposal. The proposed system of greenery in the area, in the forest strips, parks, streets and within building blocks, all play a part in the handling of the stormwater.

The future potential of a growing number of travelers, visitors and more than 10,000 workers in the area will put a high demand on the services in the area. Not least the supply of food. A sustainable way to decrease the import of food is to produce it in the area. Refined technology regarding farming of vegetables has made it possible to have large-scale production in areas which traditionally have not been used for farming before – such as urban areas as this one.

The proposal includes strategies for vegetable farming within the building blocks. This includes pinpointing and creating spaces with suitable conditions for the cultivation of edible plants. Also, the airport and its restaurants and operating airlines can benefit from the locally produced food. The airlines could for example declare that their in-flight meals are organically produced in Skavsta.

Proposal

Skavsta Forest City is a multilayered city where nature and urbanity meet and merge into a vibrant and sustainable mix of wildlife, attractions, and business. The living city and intermodal node is thoughtfully designed to accommodate everyone, including workers, visitors, children, and animals.

Existing scenic areas of forest land found throughout the site are carefully preserved and extended to form an interconnected network of green spaces that provide a framework for the city's development as well as serving as attractions in themselves.

Interspersed and allocated between these forested parts is the built environment that is designed to have a positive impact with regard to ecology, social sustainability, energy and food production. The buildings made out of wood will provide workspace for 10,000 people.

The Forest

Large areas within and surrounding the site currently feature well-established cultivated forest land that has remained untouched for decades. These areas constitute a naturally beautiful and calm environment that greatly contribute with ecosystem services. This environment will be preserved and allowed to increase in size through reforestation.

Parts of recently felled areas and open land will add to the preserved forest land to form larger strips of continuous forest land. Thus, one of the main ideas of the structural plan is to preserve as much as possible of existing valuable elements of nature such as old trees and forest land and shape the future built and planted environment around them.

Initially the long-stretched forest lands will constitute natural borders between the many parts of the site that most likely will be built in stages. Hence, they will serve as buffer zones providing visual and aural protection during the construction and development of the area.

These wide green strips of forest land will, similar to vascular rays in plants that serve the plant with nutrient and fluids, radially stretch from the centre of the area and outwards to the periphery of the area. They will contain a system of swamps and trenches to handle the storm water and outflow from the area. In relation to the blue structure a network of paths, spans, boardwalks, bridges and viewing towers are proposed to allow for human accessibility and interaction with nature. The new system of trails will naturally become an addition to Sörmlandsleden and turn into a new attraction in the region.

Forest Park

The Forest Park is situated at the heart of Skavsta Forest City, serving as a central hub for the proposed green-blue structure. The park is designed around a pre-existing rocky hill, which is the highest natural point of the site, with an elevation approximately seven meters above the surrounding terrain. The park features elevated boardwalks, a wooden viewing tower and a pavilion that serves as a tourist information center.

Pine Tree Plaza

Pine Tree Plaza is the main public space in Skavsta Forest City, situated at the entrance of the area when arriving from the north, whether it be from the railway station or the airport. In its center the plaza features a grove with pine trees arranged within a sunken patch of forest-like land, surrounded by seating. The grove serves as a meeting place and playground for children, as well as a strong symbol for Skavsta Forest City. It is the first sight that visitors encounter when entering the area from the north.

The plaza is encompassed by buildings on all four sides that are more or less public - the railway station, the bus terminal, a cultural center, a hotel, offices blocks and a market hall. The ground floor facades of these buildings seamlessly integrate with the plaza through glazed facades and arcades, creating a fluid transition between the interior and exterior spaces. These buildings, with their public spaces, and open ground floors, collectively create a vibrant plaza that remains lively throughout the entire day.

Towards the northern side, there is a station-building designed in the shape of a stairway. The building frames the plaza while creating a visual backdrop that conceals the railway behind it. It also provides a space for relaxation and meetings while offering a good overview of the plaza.

Pine Tree Boulevard

The Forest Boulevard, spanning nearly 700 meters in length and 25 meters in width, stretches across the area from north to south. It is a hybrid between a street and a strip of forest, combining urbanity with nature. The gentle curve of the boulevard, coupled with the topographic rise in its central section adjacent to the Forest Park and its rocky hill, generates dynamic sightlines as one travels along it.

From side to side it is divided into five zones, each with a width of five meters and serving a specific purpose. At the center of the boulevard lies a sunken forest-like strip, forming a vibrant green spine that places nature at the heart of the experience for everyone to appreciate. This green zone is interwoven with wooden decks, providing pathways for people to navigate through or relax within the natural surroundings. On either side of the green strip are zones for pedestrians, bicyclists, self-driving pods, and social activities related to the neighboring buildings.

Similar to the rest of the central areas of Skavsta Forest City - within the ringway that links the roundabouts with the railway station - the boulevard will be designated as car-free. Instead, there will be multi-story mobility hubs located in the north and south regions of the central parts. These hubs will serve as parking facilities for workers and visitors arriving by car. To facilitate transportation within the central areas of the city, self-driving electric pods will operate from these mobility hubs, efficiently ferrying people and goods throughout the designated zones.

Block design

The design of the blocks in Skavsta Forest City follows certain key principles that go hand in hand with the overall concept. To reduce transport and minimize carbon emissions, all buildings are proposed to be built in wood. The buildings in the blocks are also arranged around a central and spacious courtyard filled with greenery that offer pleasant views, daylight, and recreational and ecological qualities. Multiple openings provide access to the courtyards from the outside, serving to both enhance accessibility within the block and reduce its scale. These openings also offer flexibility for construction in stages.

The roofs of the buildings are adorned with greenery, solar panels, and greenhouses, serving dual purposes for urban farming and recreational activities. The street-facing ground floor facades are mainly made of glass and have multiple entrances for shops, cafés, and restaurants. These facades are set back to create an arcade, offering both weather protection and a social space in front of the building.