SAFESCAPE

from past barriers to future magnets

A safe, inclusive backbone for living and ecology is the solution to the challenges of the growing northern Sweden community of Skellefteå.

Introduction

Rapid regional development is occurring in a country that is at the forefront of innovation. New and existing residents of the Skellefteå metro area, both local and global, human and nonhuman, require a solution which is mindful in design and promotes safety, equity, inclusion, livability, accessibility, and biodiversity. The subarctic climate, landscape, history, and context are opportunities to embrace with a both forward-thinking, and historically reflecting approach.

The Skellefteå region is in imminent need of accommodating their booming population as a result of rekindled industrial development and job creation. Growth is particularly accelerated due to the nearby, state-of-the-art, electric car battery factory under construction, which will be the largest of its kind in Europe.

The nearby town of Ursviken was once a booming factory and small port settlement, with boats coming in and out, lumber floating in the river, a rail spur diagonally crossing the site, and the landscape being constantly altered to meet the industrial needs. In present times, the mostly vacant land has frayed the Town's connection to the Skellefte River. This is problematic because the River is not only the Town's founding asset, but a continuing natural gift.

The small Town of currently about 3,900 residents is expected to double or triple in size in the next 20-25 years. Rising current and future demand for housing has the opportunity to attract a new diverse milieu of residents.

Ursviken has all of the potential to become a new local center, tying dispersed communities together. Local centers do not need to replace or compete with the nearby urban centers, but, rather, are necessary to support and to relieve them. This is a chance for the Town to make a comeback and transform into a gravitational intercommunity asset.

The local municipality has clearly emphasized their values by making improvements to the land in preparation for a new vision which honors the use of the River and the lifestyle of their present and future residents. The next step is to realize the dream into a flourishing and inclusive place!

Design Principles

1. Safe Residence
2. Historical Rejuvenation
3. Inclusive Ecology
4. Mobility

The paramount goal of this vision is to create a safe, inclusive and desirable place to live. Naturally, safety and public health are the basis of the hierarchy of needs. Transformative historical narratives are a unifying vine which continues to grow, bear fruit, and take on new meaning. Planning for blue, green, and white infrastructure will ensure that life-giving water is handled with care. The land shows its gratitude with lush vegetation and cozy conditions for people, animals, insects, and fungi.

Many species will call this place a safe home.

Coexisting diverse communities increase resilience with awareness and have binding overlaps. Social resources for multi-generational learning, playing, and health are woven into an ecological framework. Couples meet and fall in love. Families gravitate to quality of life. Beautiful views, amenities, and leisure spaces for the public are free of barriers.

The riverfront is a place for all.

Accessibility and mobility are enhanced by inviting pedestrian pathways, scenic cycling routes, convenient pubic transit, and a ride-sharing fleet reduce the need for personal cars and their related costs. Within 15 minutes walking from the existing village center, 15 minutes cycling from the harbor, and 15 minutes by bus to the nearby City center, the inhabitants will have their necessities in close proximity.

Seasonal accessibility remains important with alternative solutions for winter and summer conditions. The outdoorsy inhabitants use snow scooters and fat-tired bicycles along the frozen River, through terrestrial trail systems, and on existing roads in the winter. Buses pick up additional riders to help with their errands and commutes. Existing train tracks facilitate a future rail station, further expanding transit possibilities. Summer ferries transport site residents and visitors to and from the City Center of Skellefteå as well as the port settlement at Skelleftehamn. Reinforced multimodal infrastructure could not only reduce car dependency, but strengthen global, regional, and local connections.

Safe Residence

Above all, safety is envisioned to encompass the following meaning with respect to this project:

- Addressing contaminants and transforming the site into safe living beds
- Creating public safety in a place where women, children, and people of all ages, are drawn to and feel at ease
- Safe mobility with a car-free network throughout the site and designated car-use areas
- Seasonal liveliness in winter and summer, in the dark and in the light
- Interspecies safety with employed biodiversity and biophilia principles

Industrial operations left plumes of toxic chemicals such as dioxin and arsenic behind in the soil of the Scharins wood pulp factory site. The Town has addressed soil contamination, but in a way which requires a conscious approach due to instances of shallow-depth, capped, toxic material. Design strategies need to address soil conditions and clarify to future residents and visitors that:

The floor is not lava.

The design concept stems from the trace geometry left behind on the site by the Scharins factory and rail spur. What once was used to export goods, is now proposed to be an attractor and importer of leisure, residents, visitors, workers, indigenous peoples, and species. This new “safe-street” provides a pedestrian and cycling connection from the existing Town center to the waterfront along the historical story line. The old rail lines actually coincide with non-hazardous soils below the surface. These are transformed into a new network reaching a confluence at a main public square on access to the main road into the existing Town. Auxiliary neighborhood public spaces expand and contract along this line to allow for social programs, gardens, play grounds, and exercise facilities. A new shoot springs from the safe-street on the east side of the site towards the southeast corner which has two highly valuable waterfront edges, reserved for democratic use.

Examples of conscious living and land-use with polluted soil conditions are the Deventeer Raambuurt and the De Ceuvel projects in the Netherlands. Deventeer Raambuurt is a residential development built on a heavily polluted site which raised social awareness, held participatory meetings, and fostered conscious living by clarifying safety guidelines for planting and gardens. The De Ceuvel project demonstrates structures for flexible cultural use and short stay, allowing for natural remediation to run its course. A mix of capping and softscape, a raised wooden walkway, and a lively water’s edge are used to create a charming and popular place. These two cases inform the public of site conditions, while still attracting activity and interest.

Localized strategies for addressing the soil contaminants are included in the design with further investigation and case-to-case testing required. Generally, a plinth typology and the use of pile and raft foundation systems are proposed to construct buildings in a less intrusive manner over contaminated areas as well as addressing ground stability of the subsoils and bedrock depth. Examples of where similar systems are used elsewhere on brownfield sites include King’s Cross in London and Hafencity in Hamburg. Semi-private courtyards with private gardens are proposed to serve multi-family housing on top of the plinths. The use of isolated monolithic foundation types in combination with dynamic compaction and prefabricated vertical drains (PVD) could also be considered as an approach to ground stabilization and preparation.

Ground formations are proposed at the southeast riverfront which provides planting and leisure space in summer, and snow storage for a small sledding hill in the winter. Geotechnical layering, and other low-height raised ground formations are a light solution for a proposed riverfront beach area as well as for home gardens at the northern edge of the site abutting Mekanvägen.

Phytoremediation was investigated, but is ineffective due to the types of contaminants on the Scharins site. Rather, phytostabilization is used with careful selection of species. Native aspen trees, certain conifers, and plants with low-depth root systems can be planted at capped areas with shallow clean topsoil. Even local birch groves have a typical root depth of less than one meter, making them safe for use in many locations around the site. A water and soil quality lab for continued monitoring and public awareness is proposed on the riverfront as an interactive learning component. Awareness of other species living on the site can also be promoted by the proposed viewing deck and observation tower at an adjacent wetland preserve and nature sanctuary.

Resilience planning, food security, clear sight-lines, lighting, and preparations for unforeseen emergencies are considered. For instance, simply having well-lit public spaces will increase visibility and reduce concerns during the dark season. On site cultivation using greenhouses, roof gardens, raised beds, and safe-testing soil areas nourish and strengthen the community. Living surrounded by greenery brings peace of mind.

The design provides a framework which makes public safety, inclusivity, and biodiversity the top priorities.

Historical Rejuvenation

When the factory was shut down in the early 1990s, the Town's primary point of connection to the riverfront changed from transactional to a barrier, severed by the railway, car traffic, and industrial artifact. All structures related to the bygone pulp factory have been removed. All that is left are the traces in the ground. A gravel clearing is where the main factory building once stood. Over-grown footpaths and meandering, eroded, runoff swales are all that remain of the rail spur.

A new meaning is proposed for these historical traces. The old factory site transforms into a new public square with a contemporary wood-framed canopy, information point, and historical gallery. The rail spurs create two dynamic axes, reclaimed as undulating pedestrian and ecological esplanades.

Areas once thought of as contaminated by the wood industry, are revitalized by the same, still thriving industry. The historical background, local mills, and abundant forest resources makes a strong case for use of wood construction on the site.

Inclusive Ecology

Social and ecological systems facilitate community cohesion for both human and non-human actors.

Inspiration is drawn from the overarching indigenous features, systems, and peoples already at work. The subarctic riparian ecosystem requires land management of green, blue, and white infrastructure with attention to interspecies habitats. The forest is extending to meet the river like an old friend. Rewilding is proposed to provide homes for nesting birds, mammals, reptiles, amphibians and insects native to the region. Reduction of existing tree stock and vegetated areas is limited. Integration of stormwater treatment in the form of rain gardens and wetland habitats improve water quality before being reintroduced into the hydrologic cycle. Snow detention, melt, drainage, and treatment systems are proposed which create a network of care.

Given that the site is pre-disturbed, it is believed there is a strong exemption from the 100m riverfront buffer zone typically required. It is believed this buffer should be treated with reverence and only certain functions should be designated for construction closer to the water. It is proposed that recreational facilities such as a boathouse, saunas, a small short-stay inn with cabins, a sports hall, community kitchen(s), small cafes near the main square along the boardwalk, a lab building, and support buildings (such as restrooms, lockers/showers, and small maintenance sheds) are suitable uses to cross this threshold. Cultural recreational areas for boating, cycling, lounging, fishing, and saunas, as well as winter and summer aquatic activities are given a place in the design, with plenty of room for community input. Ideas such as an outdoor flexible amphitheater performance area and riverside summer pool and winter ice rink, a fire-pit, marina, saunas, and other activities are proposed along a riverside boardwalk inclusive for all site participants.

The boardwalk pathway is envisioned to continue far beyond the site in either direction along the river's edge as a bike and pedestrian artery heralding the beauty of the landscape.

Coexistence and equity between existing cultures, such as the indigenous Sami, those who were locally born and raised, arriving cultures, and existing ecologies, down to species, stones, soils, and water can be achieved. Local indigenous Sami, new site residents, and visitors from near and far are invited to gather and interact at a community outdoor hearth.

Proposed social infrastructure within the new framework includes childcare, youth, and adolescent programs, adult learning and training, language assistance, and spaces for aging populations to take part in a vibrant society. It is believed that the right amenities promote social, psychological, and physical health. A variety of resource centers such as classrooms, counseling, arts studios, culinary facilities, and indoor/outdoor event spaces are additional ideas of how to achieve this. Play structures, sports and health facilities such as exercise areas, group sports, and wellness facilities are also recommended. A new inclusive and participatory living model contributes to the diversity and well-being of the whole region.

Mobility

A robust pedestrian/cycling network, mobility hub with a bus stop and electric car sharing fleet, nearby future light rail station, and alternative transit modes reduce the need for cars and increase livability.

Parking remains a necessity and must be reasonably accommodated in order to balance desirability for residents, commuting workers, and commercial/recreational visitors. Approximately 0.75 spaces per housing unit is maintained with the majority of the spaces covered for winter convenience. Concentrated public parking structures near the two primary access points on Mekanvägen are proposed to encourage visitors to get out of their vehicles and walk. Resident and commuter parking areas are internalized at the plinth locations covering capped toxic soils, with activated edges containing flexible-use spaces (live-work, commercial and maker-space units). On-street parking provides localized access to blocks.

Pick-up and drop-off locations for social program buildings, commercial, and auxiliary uses are a way to decrease the overall parking demand on individual sites, with drivers routed to aggregated areas that balance day and evening utilization. Alternative transit parking, service and storage areas for vehicles such as snow scooters and boats are also recommended.

Economic mobility is fortified by these transit attractors and commercial opportunities in a thriving cultural center and society. Co-work spaces accommodate growing numbers of remote workers and start-ups. Office suites draw small to medium companies. Restaurants/cafes, salons, small shops for local business, a pharmacy, and grocery store will make strong contributions to vibrancy, walkability, and livability. Compact development with thoughtful street design, controlled car traffic, spectacular public spaces, and multi-modal transit options can provide a solid footing for a sustainable system.

Implementation

The first phase of development includes overall infrastructure and a germinated seed on the west side of the site. This is the best time to complete utilities groundwork (water, power, district heating, wastewater, drainage systems) which could leverage technologies such as directional drilling and isolated encapsulated utilidors to minimize excavation as needed. The roadway, safe-street, and lot substrates would be prepared throughout the site to generate excitement for realization. The mobility hub and main commercial street would be developed along with approximately 850 housing units. Social infrastructure would include the first portion of the safe street with child care, a kindergarten, and a community resource center. The installation of landscape features such as the boardwalk, docks, sports facilities, and amenities would be a magnet for further investment. Temporary programs can be considered on the riverfront while work is being performed.

A second phase begins by extending the safe street with another approximately 450 housing units and complimentary focused projects. Such projects include childcare, and a cultural resource center for community development. An additional district parking and commercial spaces would continue to fill in to accommodate growth and activities. The completion of the marina at the southeast corner and summer pool, winter ice rink along the boardwalk would coincide with phase 2 to keep the eager and ambitious vision alive over time leading into a final phase.

The third development phase includes completion of an additional approximately 1,000 housing units. Ongoing evolution of the social framework such as inclusivity resources, resilience/security, youth/ adolescent programs, and senior programs would be expanded to full maturity. Commercial uses such as maker spaces would continue to take shape as occupants settle in.

Closing Remarks

Not all projects fit perfectly within predictable phases in neat boxes. Smaller lots develop more organically. Public and private agreements take time to come to fruition. There are many mutual benefits possible. For instance, the municipality helps to lead efforts related to the landscape, recreation, social programs, and regulatory framework, guiding the vision with the design team for innovation and public good. Incentives for early actors encourage private investor and NGO participation. Developers assist with infrastructure and financing through systems development charges and/ or regulated self-performance, and have an attractive economic opportunity based on amenities and quality of life.

We propose a dynamic approach to compact development that maximizes equitable daylight passage, access, and water views. Our form is also derived from edge, adjacency, and contextual conditions. Building heights range from single story structures to five and a half stories. A single 12-story wood-framed tower as a focal point announces the new local center from afar and is a smaller sibling to the nearby Sara Kulturehus in Skellefteå.

The overall program and scale for the Scharins site is primarily driven by the demand for 1,000-3,000 housing units. We are proposing approximately 2,300 homes as a densified, yet balanced solution. Housing typologies range from duplexes to multi-family, with areas designated as rowhouses to create variety, comfort, and character. Housing and co-housing of various scales can provide an affordable option for transplants new to the area with the potential for alternative ownership models such as what was implemented at Hammarby Sjöstad in Stockholm.

Acceleration tactics are needed to meet the population growth demands. Prefabricated modular wood building components speed up construction, control costs, and make use of local resources. Additionally, this light-weight solution minimizes foundation sizes and soil disturbance.

A distributed social and ecological network ties together different uses. This site becomes a generator for the Town of Ursviken, and a convergence of regional recreation and culture. Local ecologies are fostered in ways which benefit the health of nonhuman actors, too.

Habitat conditions created here ripple beyond the site.