satamalahti supernode

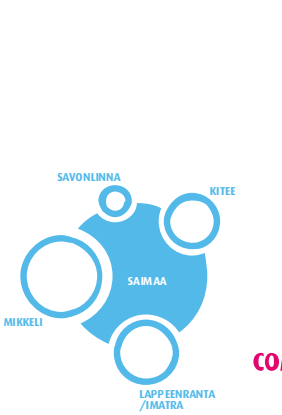
We see Satamalahti project as an ideal opportunity to reconnect Mikkeli with Saima lake. For doing so, it is crucial to recognize and analyze places and network of cities along shoreline of the Saima Lake, these having a potential to become strongholds for such a development.

satamalahti super**node** concept is based on development of a network of specific, well defined places/nodes at the shoreline and adaptable strategies for the zones/tissue inside the network. Project is fixed trough nodes and flexible trough tissue areas.

Tissue areas are directed by flexible parceling and infrastructure. In residential zones parceling suggests preserving visual contact with lake, high density, and variety of building and public space types.The overall intention is therefore to provide a longer term open framework for sustainable urban design.

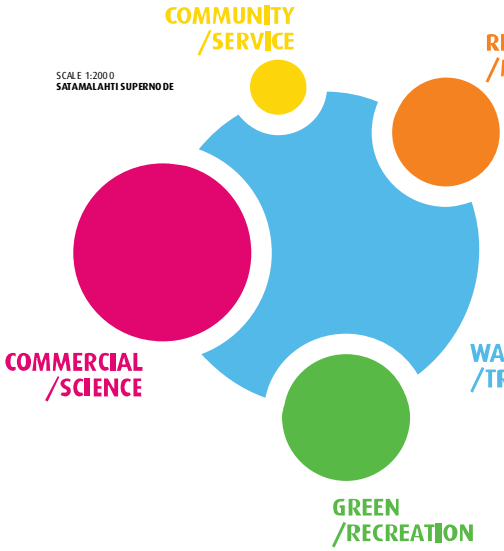
Each individual node is positioned on sites with specific character and capacity in terms of relation to the lake, proximity and connection to the existing city structure - thus enabling development of specific program. Each node has a dominant, specialized function that stimulates exchange and demand trough network, while remaining certain level of self-sufficiency trough some mix use program.

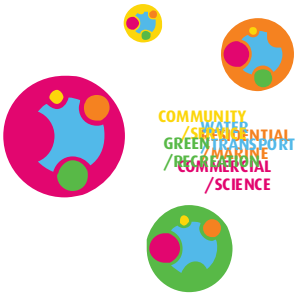
Together, dynamism of this node network creates concept of one **supernode**.



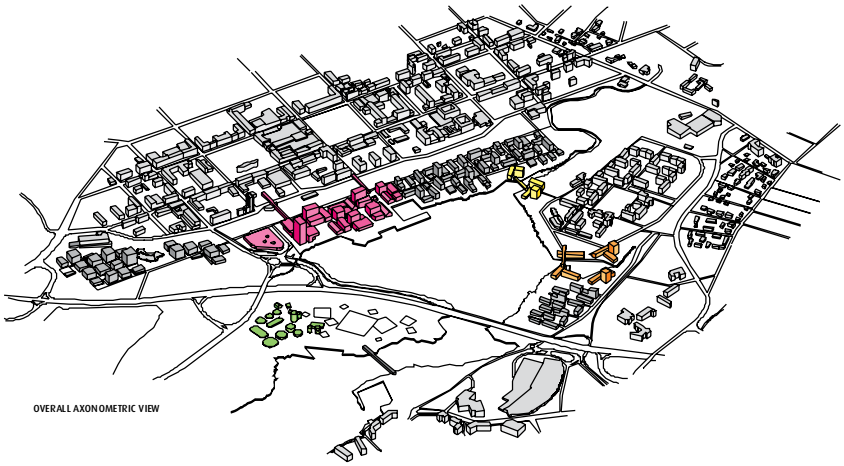
SCALE 1:500 00
SAIMAA REGION NODES

SCALE 1:2000
SATAMALAHTI SUPERNODE





SCALE 1: 500
LOCAL NODES CONTENT



OVERALL AXONOMETRIC VIEW

Arguably, the single biggest impact that urban form has upon the environment is in terms of its impact upon transportation patterns. Density is critical to this. Density also provides economic sustainability and urban quality.

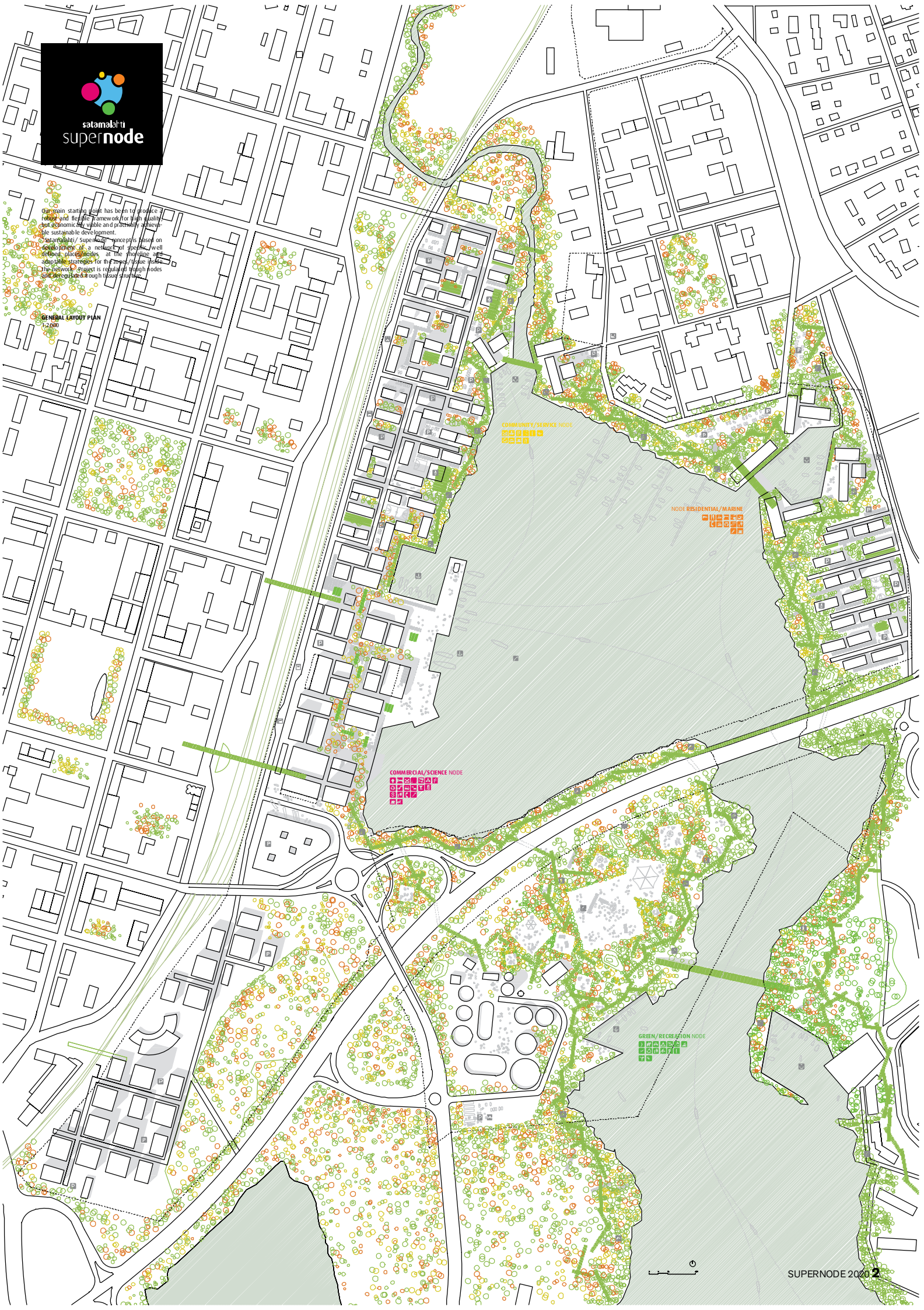
In terms of building and neighbourhood level strategies, bioclimatic design has been central to the design process. The starting point for the design process of the individual neighbourhood areas and specific proposals for urban form has been to carefully consider the summer and winter climate conditions, the solar exposure of the different sites and to integrate these considerations of programme and land use. The intention is to integrate urban form and environmental performance as appropriate to programmed land uses

The social and economic vitality of the new districts proposed is obviously fundamental to longer term environmental sustainability. Our project seeks to balance the needs for appropriate levels of integration of land use, but at the same time provides clearly identifiable integrated business, retail and leisure districts which promote viable economic sustainability.

satamalahti
supernode

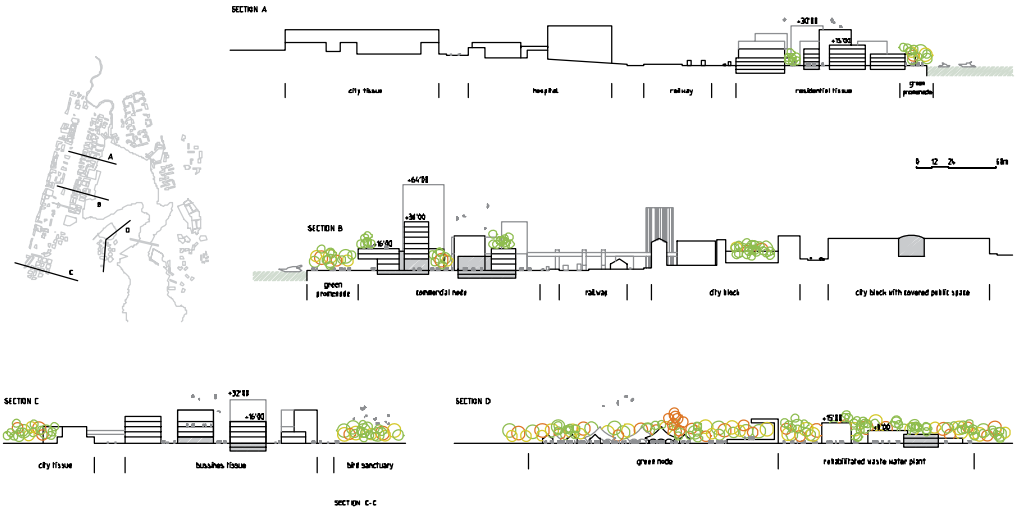
Our main starting point has been to produce a robust and flexible framework for high quality but economically viable and practically achievable sustainable development.
Satamalahti/ Supernode concept is based on development of a network of specific, well defined places/nodes at the shoreline and adaptable strategies for the areas/tissue inside. The network/ project is regulated through nodes and corridors as a rough master plan.

GENERAL LAYOUT PLAN
1:2 000



satamalahti supernode

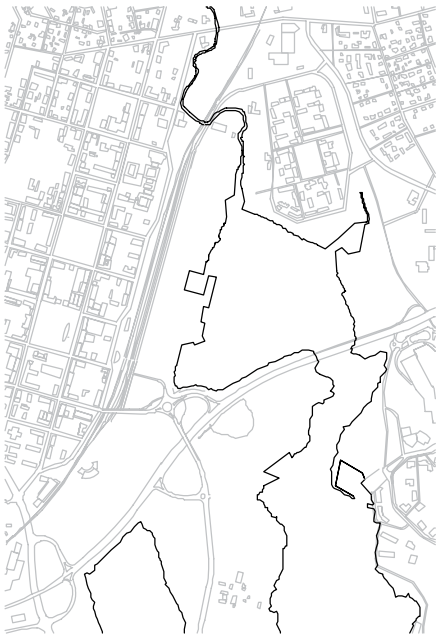
To connect Mikkeli with Saimaa Lake it is important to recognize and analyze places and network of cities along shoreline, these having a potential to become strongholds for such development.



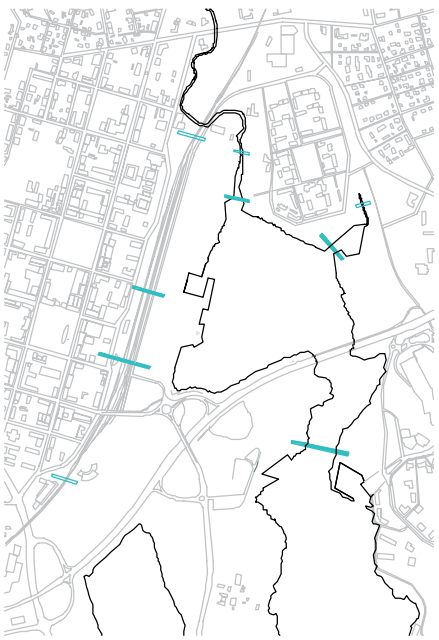
PROJECT LAYERS

Water
Lake Saima is dominant natural character that unifies and connects project areas.

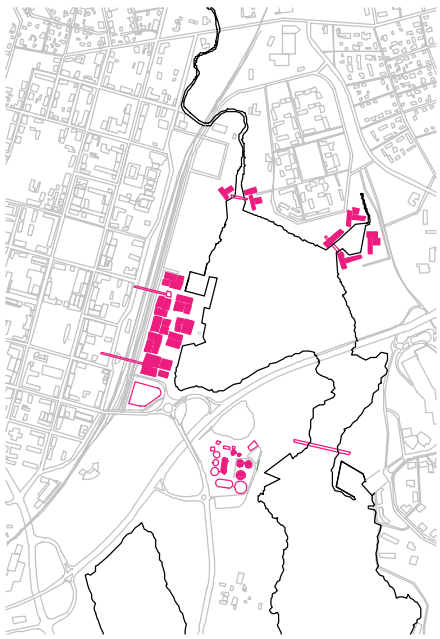
Green Promenade
Continuity of planned green promenade along lake shoreline.



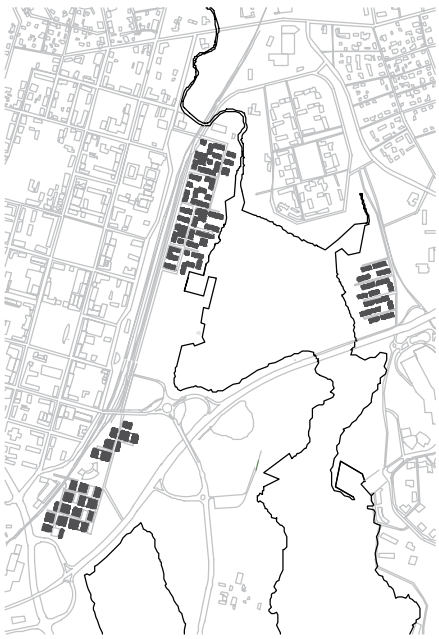
Coastline
Contact line between project areas and lake that suggests important and specific places.



Connections
Series of connecting structures that stitch project areas and existing city fabric.



Nodes
Developing recognizable character for specific places-nodes.

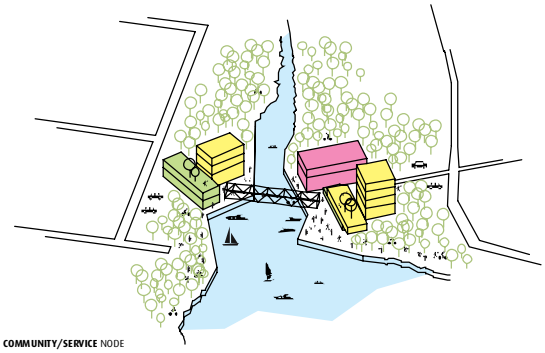


Tissue
Areas directed by flexible strategies for heterogonous development.

satamalahti
supernode

Each individual node is positioned on sites with specific character and capacity in terms of relation to the lake, proximity and connection to the existing city structure- thus enabling development of specific program. Each node has a dominant, specialized function that stimulates exchange and demand trough network, while remaining certain level of self-sufficiency trough some mix use program

Together, dynamism of this node network creates concept of one super**node**.

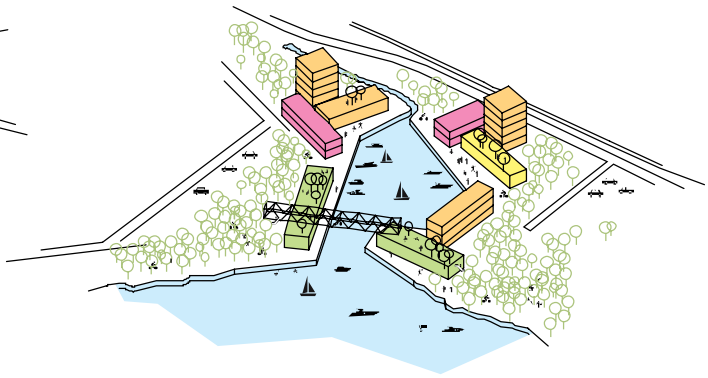


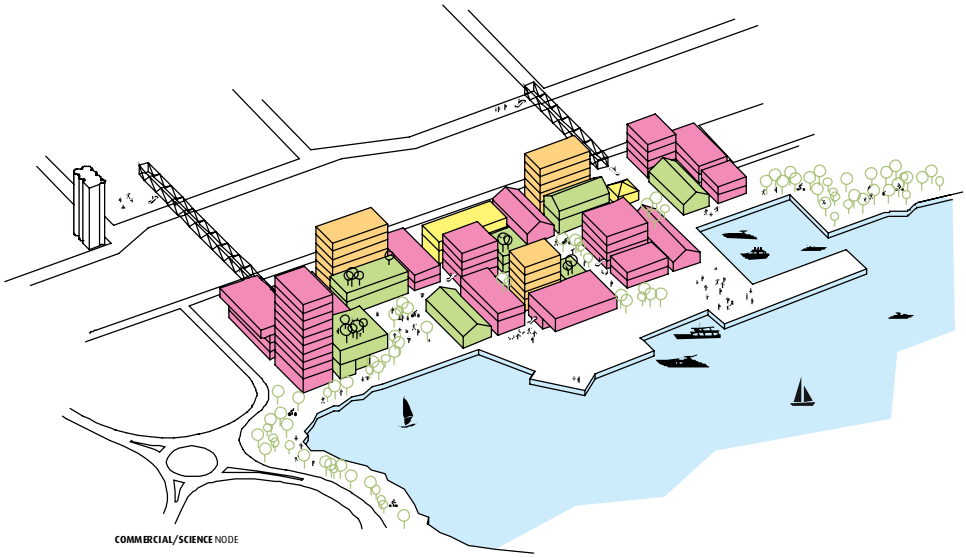
COMMUNITY/SERVICE NODE

At the place where river Roikkalanjoki meets bay of Savilahti we propose service node that has a role of local community center. This node connects two riversides and two different residential areas, existing Saksala area on north/east side of the bay and new residential area of Satamalahti. This node is also mixed program development with focus on local social and health services.

RESIDENTIAL/MARINE NODE

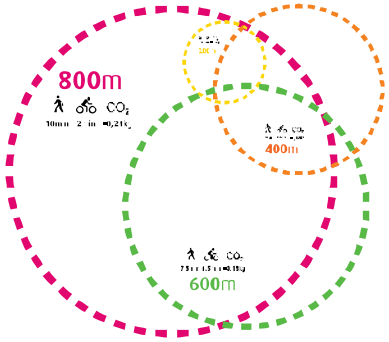
Close to the small boats marina in north, where Saksala area meets new residential area in east, residential and marine service node is positioned. Offering services and infrastructure related to an activity of the marina and special types of residence. Student housing being prefered type of housing since this node is neighbor of the Finnish Youth Institute. The same principals of mixed program are applied also here.





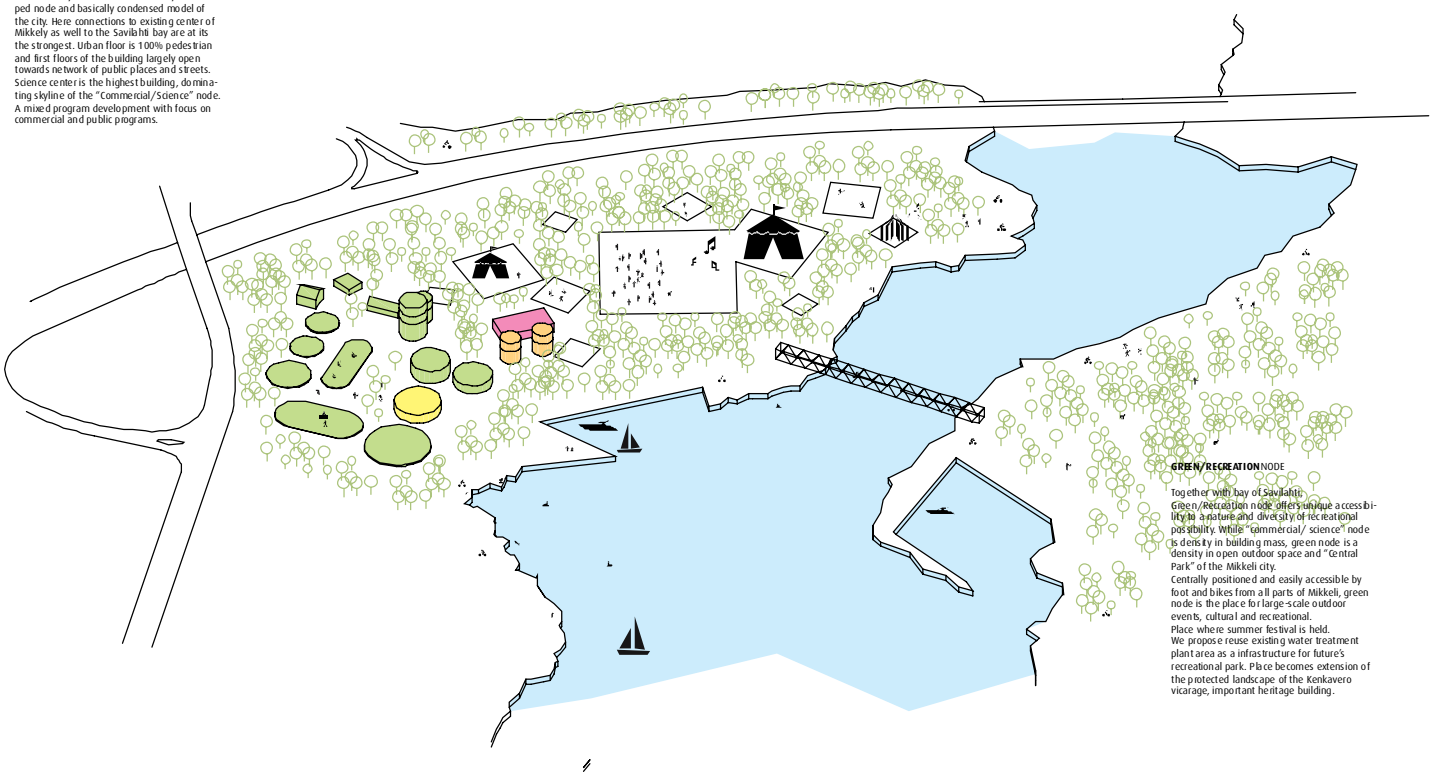
COMMERCIAL/SCIENCE NODE

Extended city center most intensively developed node and basically condensed model of the city. Here connections to existing center of Mikkeli as well to the Savilahti bay are at its the strongest. Urban floor is 100% pedestrian and first floors of the building largely open towards network of public places and streets. Science center is the highest building, dominating skyline of the "Commercial/Science" node. A mixed program development with focus on commercial and public programs.



DISTANCES

The 'city level' functions, leisure spaces, and the business district are within a 500m radius of the main bus station/transport hub and crossing point over the railway line. The local community nodes for the 2 residential neighbourhoods are within 1000m of this central communication point.
Within these 'neighbourhoods' all the key local facilities for each community (childcare, social meeting spaces, basic local shopping facilities) are also located within respective 500m radius that defines each neighbourhood and is the viable size of a sustainable walkable neighbourhood community.



GREEN/RECREATION NODE

Together with bay of Savilahti, Green/Recreation node offers unique accessibility in a nature and diversity of recreational possibility. While "commercial/ science" node is density in building mass, green node is a density in open outdoor space and "Central Park" of the Mikkeli city.
Centrally positioned and easily accessible by foot and bikes from all parts of Mikkeli, green node is the place for large-scale outdoor events, cultural and recreational.
Place where summer festival is held.
We propose reuse existing water treatment plant area as a infrastructure for future's recreational park. Place becomes extension of the protected landscape of the Kenkavero vicarage, important heritage building.

satamalahti supernode

Attractive compact urban form is central in terms of ensuring economic vitality and providing pedestrian friendly urban development. Our proposals seeks to balance the need for appropriate levels of integration of land use, but at the same time seek to provide clearly identifiable integrated business, retail and leisure districts which promote viable economic sustainability, and which will provide the key driving force for sustainable regeneration.

BIOCLIMATIC DESIGN

higher buildings spaced further apart and staggered to maximise winter solar gain

trees provide winter shelter belt and summer shading

urban form provides winter shelter

urban form provides summer shade

ZONE 1B

- higher density residential
- urban grain with emphasis on south facing orientation to maximise winter solar gain
- urban form provides winter shelter in external spaces
- higher buildings spaced further apart and staggered to maximise winter solar gain

ZONE 4B

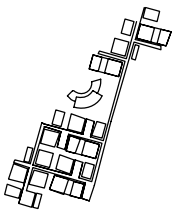
- medium density residential
- predominantly south facing orientation to maximise winter solar gain
- urban form provides winter shelter in external spaces
- higher buildings spaced further apart and staggered to maximise winter solar gain

ZONE 1A

- compact urban form reduces summer cooling loads
- higher buildings spaced further apart and staggered to maximise winter solar gain to allow inclusion of possible housing or hotel functions in dowtown area urban form provides mix of winter shelter and summer shade in external spaces

ZONES 1C AND 4A

- urban grain that is highly flexible in terms of possible orientations of buildings and external space according to programme and requirements for different seasonal microclimate conditions in terms of summer shade and winter sun for public spaces

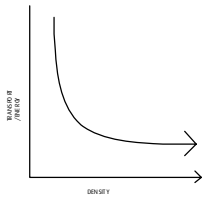


ZONE 2

- compact urban form reduces summer cooling loads
- compact building forms provide large efficient office floor plans with low surface to floor area ratios to minimse winter heat loss

satamalahti
supernode

Arguably, the single biggest impact that urban form has upon the environment is in terms of its impact upon transportation patterns. Density is critical to this.

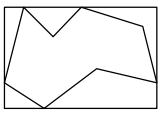


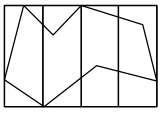
URBAN DENSITIY TRANSPORT
related energy consumption

(after Newman + Kenworthy)


RATIONAL PLAN FORM


EFFICIENT MODULES

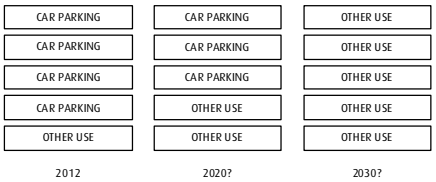

ABSTRACT PLAN FORM


INNEFFICIENT MATERIAL SUSE

MATERIALS + RESOURCE EFFICIENCY

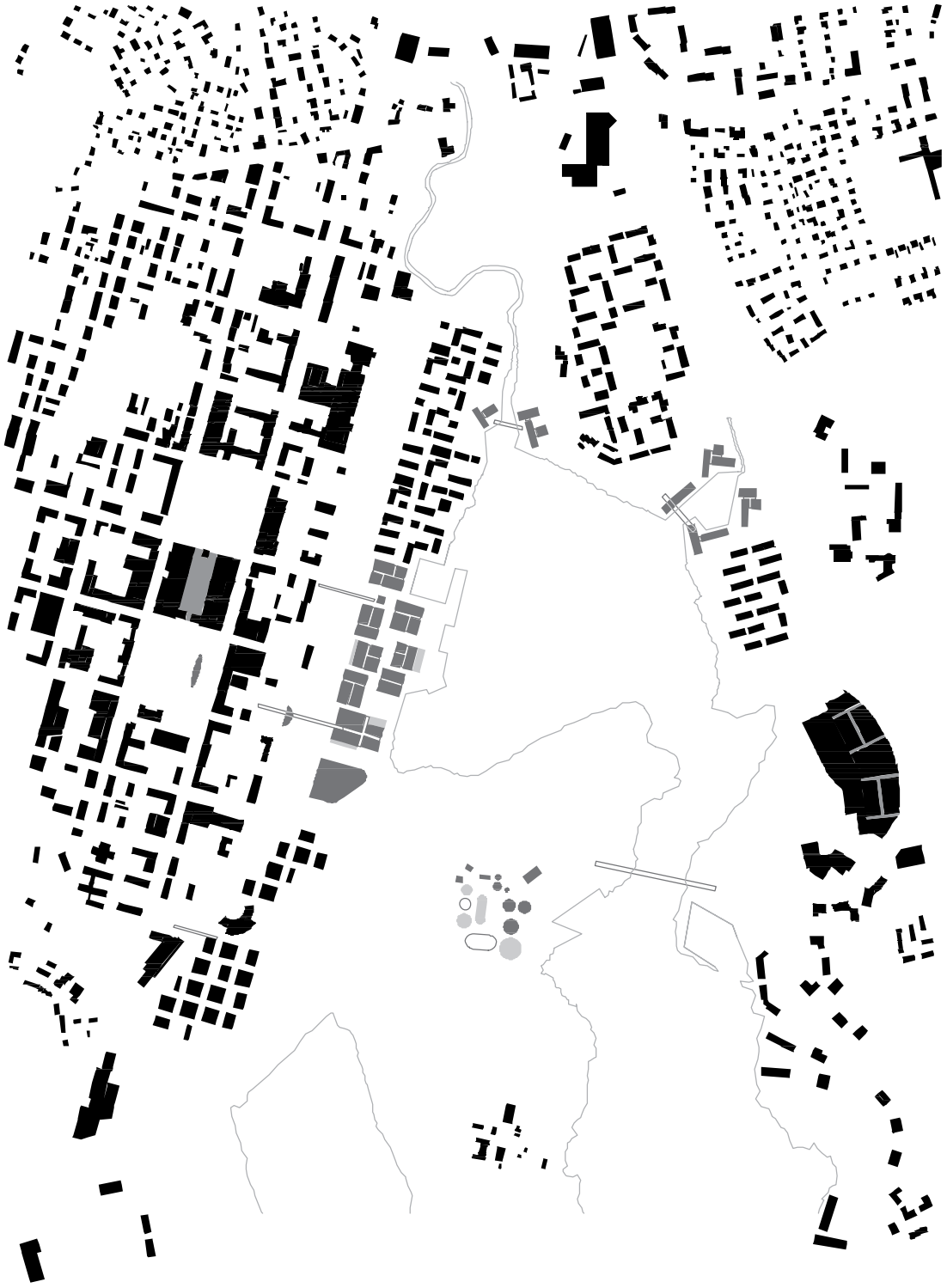
The urban form proposed is intentionally legible, but at the same time open and non-specific in terms of the architectural forms that can be accommodated. It does not force one view of how to interpret a modern timber based architecture.

Recyclable and re-usable steel screwpile foundations offer a means of reducing C02 footprint of built development. Although this technology is relatively new to Europe, it is used extensively in Canada and the US where it is well suited to cold weather conditions (there no requirement for curing as with concrete piles) and where it has been used in both multi-storey and shoreline developments.

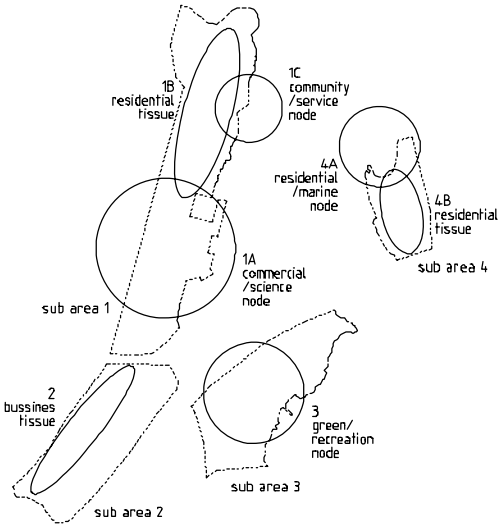


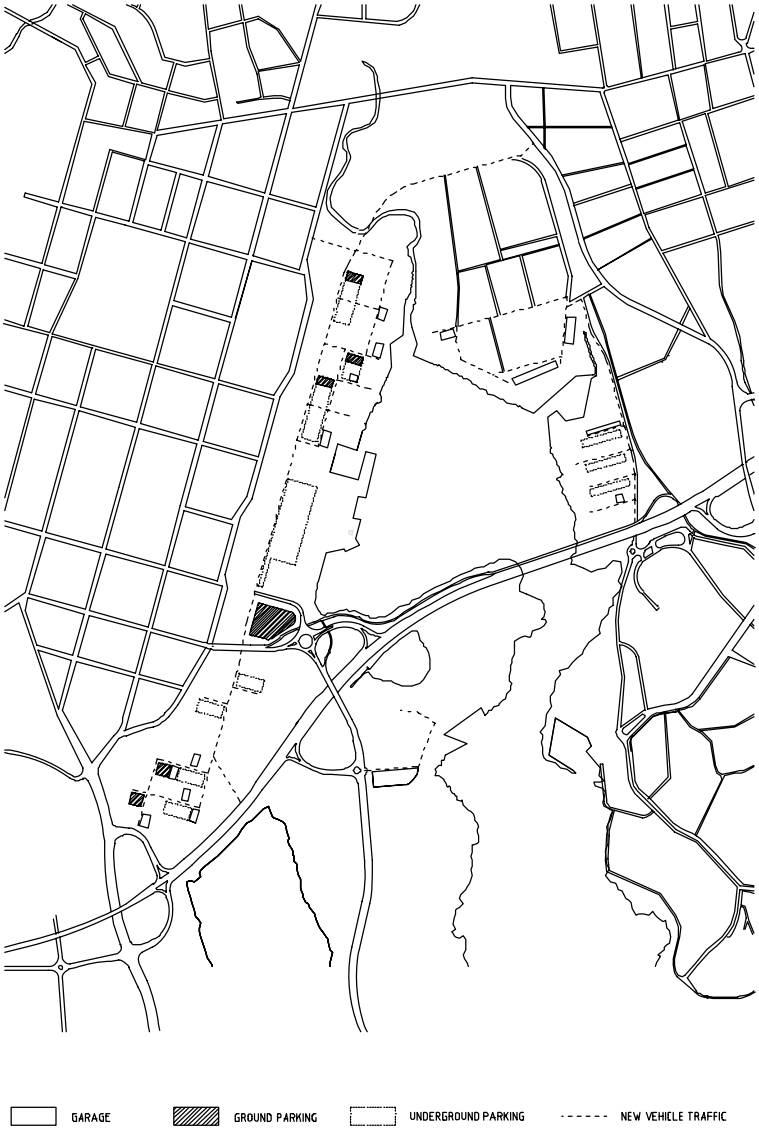
CAR PARKING

Car parking in parking houses can be converted to other uses as car ownership becomes less economically sustainable over time. Positioning other uses on the ground floor from the start also makes this potential clear, and provides an on site competing land use. This also reduces the risk of 'dead' street facades.



satamalahti supernode





	sub area 1			sub area 2	sub area 3	sub area 4	
	1A commercial /science node	1B residential tissue	1C community /service node	2 bussines tissue	3 green /recreation node	4A residential /marine node	4B residential tissue
building rights	79.930,00 m^2	72.060,00 m^2	8.800,00 m^2	63.190,00 m^2	8.130,00 m^2	18.020,00 m^2	25.200,00 m^2
building rights for areas	160.790,00 m^2			63.190,00 m^2	8.130,00 m^2	43.220,00 m^2	
total building rights	275.330,00 m^2						
parking - cellar	34.00,00 m^2 1130 cars	21.660,00 m^2 720 cars	0 m^2 0 cars	6.000,00 m^2 200 cars	0 m^2 0 cars	0 m^2 0 cars	8.400,00 m^2 280 cars
parking - street level	0 m^2 0 cars	1.500,00 m^2 50 cars	1.350,00 m^2 45 cars	3.000,00 m^2 100 cars	3.000,00 m^2 100 cars	2.750,00 m^2 90 cars	3.000,00 m^2 100 cars
parking - above street level	10.000,00 m^2 330 cars	1.890,00 m^2 63 cars	0 m^2 0 cars	2.940,00 m^2 98 cars	0 m^2 0 cars	0 m^2 0 cars	0 m^2 0 cars
green areas and parks	25.960,00 m^2			44.100,00 m^2	78.227,00 m^2	16.635,00 m^2	
area density	29,80 %			17,30 %	3,16 %	32,40 %	
block density	101,00 %			71,00 %	9,00 %	116,00 %	

Sustainability strategies:

In terms of a sustainability strategies, we see this project as not just being a question of the sustainable re-development of the City of Mikkeli and its shoreline, but also as a potential starting point and focus for the wider sustainable economic development of the Mikkeli bio-region.

As well as proposals for specific sites along the shoreline itself, our overall concept is to connect the area into its socio-economic and environmental hinterland in terms of materials, energy, forestry industries and natural wetland ecology. In this way, the new development areas will act as a symbolic focus of a more sustainable interconnection between the city and the surrounding region.

The science centre acts as the obvious symbolic epicentre for this environmental paradigm shift.
It offers the potential to act as an experimental public laboratory for this process, with the surrounding new civic developments offering the opportunity for the physical demonstration of innovation in practice, In doing so, this will provide the City of Mikkeli with healthy and economically attractive business, public and residential districts that look to the future with confidence.

" This is a new industrial revolution that will probably be more exciting than the steam engine or the motor car..." Nicholas Stern

1. STRATEGIC PLANNING

1.1 Integrated socio-economic functions : balanced neighbourhood identity / economic focus

The social and economic vitality of the new districts proposed is obviously fundamental to longer term environmental sustainability. Our project seeks to balance the needs for appropriate levels of integration of land use, but at the same time provides clearly identifiable integrated business, retail and leisure districts which promote viable economic sustainability

Providing large scale plots that are attractive to developers for retail and office use is also critical to environmental sustainability. These plots and their respective districts have to be economically viable in terms of the market conditions so as to ensure that such major functions locate to these central located locations with good public transport rather than suburban locations that increase dependency upon car usage.

1.2 Density + transport energy

Arguably, the single biggest impact that urban form has upon the environment is in terms of its impact upon transportation patterns. Density is critical to this. Density also provides economic sustainability and urban quality.

In addition to providing appropriate levels of density around the main public transport centres. A walkable city, legible structure to encourage pedestrian and cycle transport.
The 'city level' functions, leisure spaces, and the business district are within a 500m radius of the main bus station/transport hub and crossing point over the railway line.

The local community nodes for the 2 residential neighbourhoods are within 1000m of this central communication point.

Within these 'neighbourhoods' all the key local facilities for each community (childcare, social meeting spaces, basic local shopping facilities) are also located within respective 500m radius that defines each neighbourhood and is the viable size of a sustainable walkable neighbourhood community.

1.3 Energy standard and environmental framework for developers

avoiding moving goals:
It is recommended that clearly defined energy standards and specific environmental goals, as well as methodologies for confirming compliance, are established and communicated to potential developers as early as possible. This is essential to reduce risk and to provide certainty for developers, and therefore certainty in terms of overall social and economic sustainability for the masterplan area.

For commercial investors and tenants, international environmental certification systems such as BREEAM and LEED are increasingly becoming a requirement or condition for investment funding and for entering rental agreements. This is especially common with international investors and larger global companies who require internationally recognised standards.

In terms of transport, ecology and energy strategies, the masterplan proposals provide a clear framework for such certifications schemes, however even more ambitious targets could be set in addition to these basic certification standards.

2. URBAN SCALE

2.1 Climate context.

One of the starting points for the design process has been to carefully consider the summer and winter climate conditions, the solar exposure of the different sites and to integrate this considerations of programme and land use.

2.2 Density, orientation, microclimate + public space

Each specific zone/district is balanced in terms density and considerations of orientation and urban form with respect to winter heating requirements and summer cooling for each programme function.

zone A - higher density residential
urban grain with emphasis on south facing orientation to maximise winter solar gain
urban form provides winter shelter in external spaces
higher buildings spaced further apart and staggered to maximise winter solar gain

zone B - medium density residential
predominantly south facing orientation to maximise winter solar gain
urban form provides winter shelter in external spaces
higher buildings spaced further apart and staggered to maximise winter solar gain

zone C - downtown
compact urban form reduces summer cooling loads.
higher buildings spaced further apart and staggered to maximise winter solar gain to allow inclusion of possible housing or hotel functions in downtown area.
urban form provides mix of winter shelter and summer shade in external spaces

zone D - business district
compact urban form reduces summer cooling loads.
compact building forms provide large efficient office floor plans with low surface to floor area ratios to minimise winter heat loss.

Neighbourhood centres / nodes

Urban grain that is highly flexible in terms of possible orientations of both buildings and external space according to programme and requirements for different seasonal microclimate conditions in terms of summer shade and winter sun for public spaces.

2.4 Ecology + urban quality

The proposals aim to make as much use of existing trees and, for the most part, maintaining the shoreline edge as it is. As well as maintaining biodiversity, this approach maintains existing site qualities and a sense of place, essential for a longer term development project.

Trees also provide wind shelter in winter and areas of shading in summer so the intention is to retain as much of this benefit as is possible.

Positioning of neighbourhood facilities at the openings of existing streams and small creeks which are sites of potentially high biodiversity add to the quality of these areas and make them attractive to users. These sites also provide a ready-made natural sense of place for establishing these nodes..

3. SYSTEMS LEVEL

3.1 Timber + low embodied energy construction

The urban form proposed is intentionally legible, but at the same time open and non-specific in terms of the architectural forms that can be accommodated. It does not force one view of how to interpret a modern timber based architecture.

At the same time, the plot sizes and building footprints proposed are rational in nature to encourage rational and resource efficient construction typologies that minimise embodied energy.

Foundations:
In the competition programme, it is stated that due to the prevailing soil conditions, pile foundations are expected to be used.

Recyclable and re-usable steel screwpile foundations offer a means of reducing C02 footprint of built development. Although this technology is relatively new to Europe, it is used extensively in Canada and the US where it is well suited to cold weather conditions (there no requirement for curing as with concrete piles) and where it has been used in both multi-storey and shoreline developments.

This form of pile is also particularly well suited to sites where existing trees are to be protected as much as possible, as is the case in our proposal.

3.2 Car parking

A range of car parking strategies are outlined in the competition programme. Although our masterplan proposal can accommodate a range of different options, our preference is for parking houses above ground.
We propose to place parking into mixed use blocks that can be converted to other usages. Parking is therefore no longer defined as a 'protected' economic activity housed in spaces that can only ever be used for parking and very little else. Parking will therefore have to compete with other land uses over time on the open market rather being a specifically 'protected' economic land use.

Over time, as car ownership becomes both less attractive and less economically sustainable, other more economically sustainable city functions will then be able to out compete parking for land. Land uses that eventually out compete car parking will make more economically efficient use of these spaces and the resources used in their construction, as well as encouraging less car use in the process.

Positioning other uses on the ground floor of these parking houses from the start also makes this potential clear, and provides an on site competing land use from day one. This also reduces the risk of 'dead' street facades without human activity.

Parking houses themselves could also be made of timber, and there are several examples of multi storey timber car parking houses in Europe already.

3.3 Energy systems

Winter heating demand:
It is stated in the competition programme that heating energy for the area will be provided by the city district heating systems, and that this is operating with a very high degree of renewable fuel sources.

However it is still critical to reduce overall demand, both because the non-renewable load is still significant, and to minimise infrastructure requirements associated with the district heating system.
It is also important to reduce the absolute peak demand loads in winter cold spells. As well as focus at a masterplan level on orientation and winter solar gain, super-insulated buildings and energy standards for heating loads such as the passivhaus standard are the obivous starting points for this.

energy piles:
Depending on geological conditions, additional technologies in relation to foundation design that could be explored include energy piles in which cost and time savings are made by combing structural piles with heat pump technologies. These could be could be used as an economically and environmentally efficient means of providing additional peak load heating.

Although it is hoped that cooling loads will be kept to a minimum in commercial buildings through dense urban form and specific building design, such systems would have a good synergy effect in buildings where cooling loads might arise.

solar energy:
Reducing carbon emissions by reducing heating and cooling loads is the first priority.
Once this has fundamental been addressed, the second issue to address is the potential to reduce carbon emissions due to electrical consumption.

The masterplan proposals would obviously be developed over a long period of time. As the efficiency and cost of photovoltaic solar cells, and policies around feed-in tariffs, are in a state of constant change, rather than proposing an urban or built form that is fixed around today's specific solar technologies, our approach is to define the flat roofs as flexible areas for the accommodation of an range of different solar technologies, or indeed other environmental measures.

We propose to use the flat roofs as ecological 'roofscapes', that could be used for solar electrical generation, solar water heating, urban agriculture or community gardens. These could be divided up and modified over times, as appropriate to changing market conditions, technological developments and local community and business engagement.

The growing season is short in Finland, however the roofs of the buildings offer the best potential for urban agriculture as they are most open to the sun all day long, without shadow from neighbouring buildings and trees. Small lightweight rooftop greenhouses could also be incorporated.

3.4 Encouraging green lifestyles

If it be desired by the local community, the scale of the public and semi-public spaces within the residential areas lends itself to the promotion of community recreational gardens and shared activities.

As well as providing a cost effective method of maintaining external space, such facilities encourage social interaction, which may ultimately encourage more collaborative community engagement in issues of environmental sustainability.

satamalahti supernode

satamalahti supernode


satamalahti
supernode