



TAMPEREEN KAUPUNKI

HIEDANRANTA FUTURE CITY AS NBS PLATFORM

Transforming Cities, Enhancing Well Being: Innovating with Nature – Based Solutions, A Coruna



Hiedanranta

SMART AND SUSTAINABLE
CITY DISTRICT OF THE FUTURE





Hiedanranta
 –smart and sustainable city district of the future

Platform for NBS experiments



Platform for circular economy experiments

25 000
RESIDENTS

10 000
JOBS



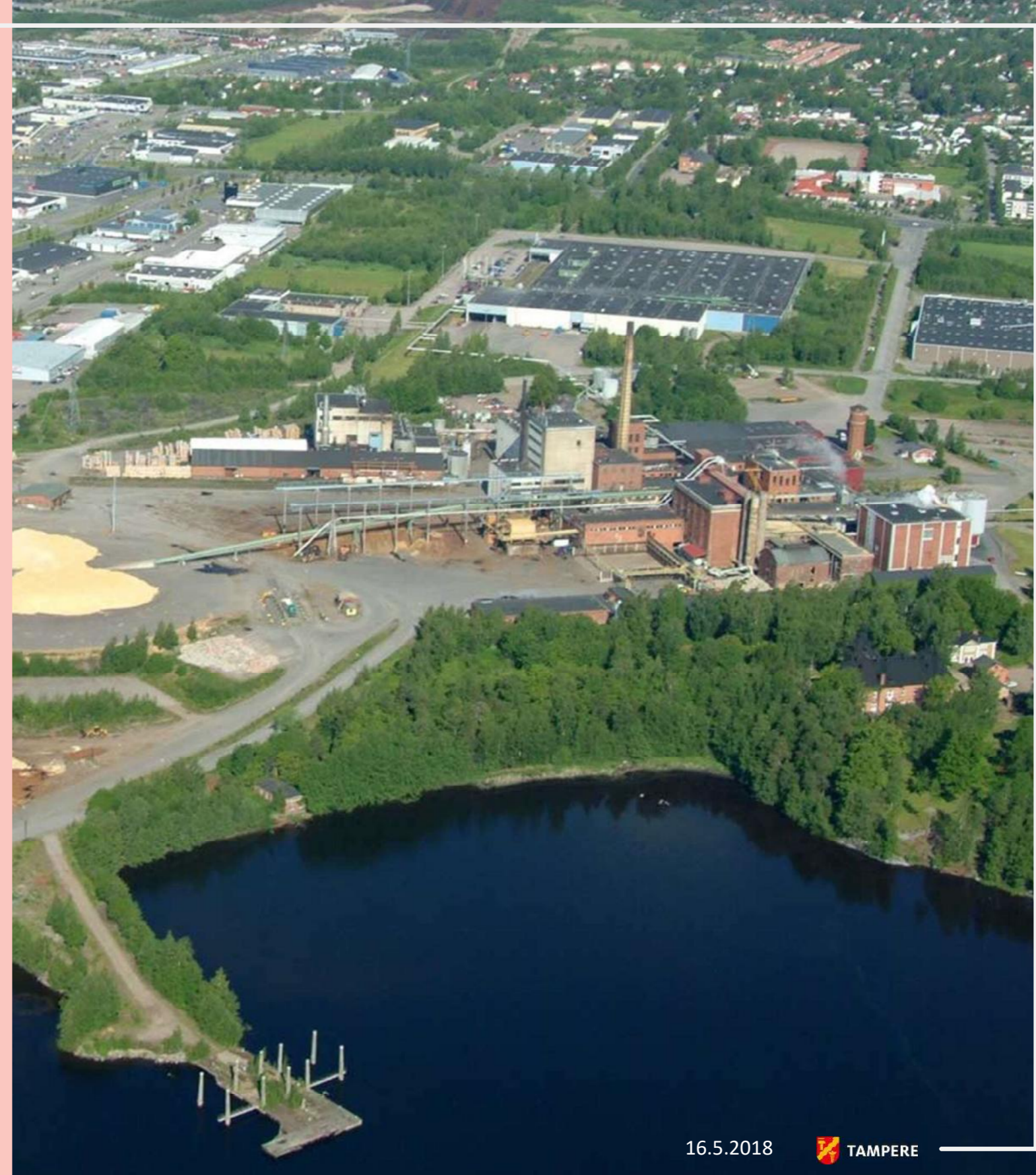
- Hiedanranta is the smart and sustainable centre of Western Tampere, where new ideas, pilots and urban culture flourish.
- The future city district will be located a convenient tramway ride away from the city center.
- Hiedanranta is one of the few city's development programmes which are based on the Tampere City Strategy. They are steered by the City Board.
- A revolutionary shift in urbanisation. Solutions that will carry into exports.



STARTING SITUATION IN THE PLANNING AREA

LAND AREA AND BUILDINGS

- Land area of 115 hectares
- 50 buildings on city-owned and 53 on privately owned land
- Historically valuable buildings, but also condemned, rundown industrial buildings
- Grocery and specialised trade premises, two operating industrial facilities
- Premises in the factory area currently in temporary use



STARTING SITUATION IN THE PLANNING AREA

TRACES OF INDUSTRIAL ACTIVITIES

- 1.5 million m³ of waste fibre in Lake Näsijärvi
- Contaminated soil in the land area: e.g. iron pyrite, metal-bearing soil
- Sunken logs at the bottom of Lake Näsijärvi
- A closed and partially landscaped landfill
- Not included in the municipal engineering system

GROUNDWATER

- Partially located within the Epilänharju-Villilä groundwater area

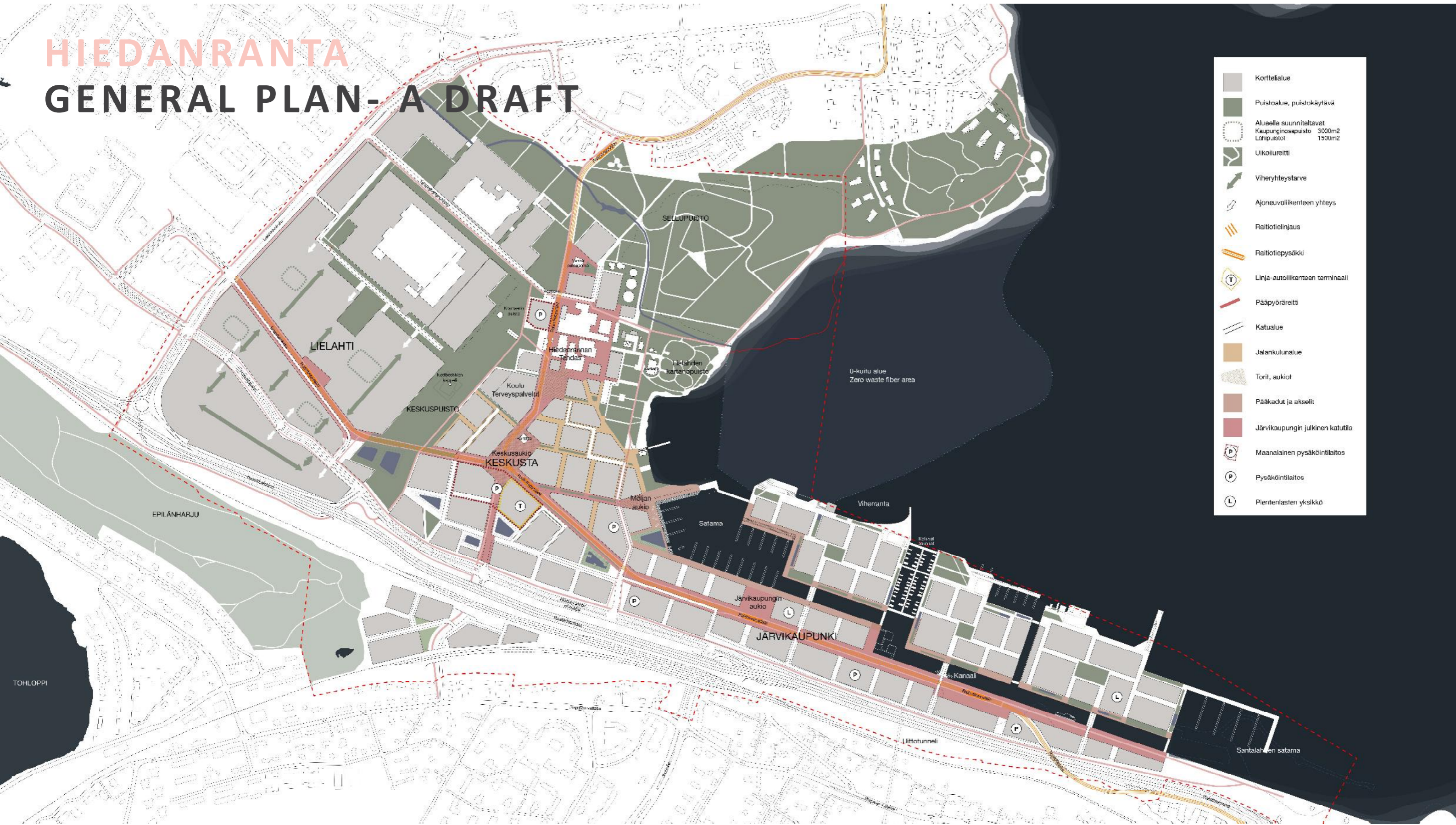


HIEDANRANTA CITY PLANNING OBJECTIVES

- General planning phase, based on international architectural ideas competition 2016
- Dense urban structure, also high rise buildings
- Sustainable new urban green and blue solutions



HIEDANRANTA GENERAL PLAN - A DRAFT



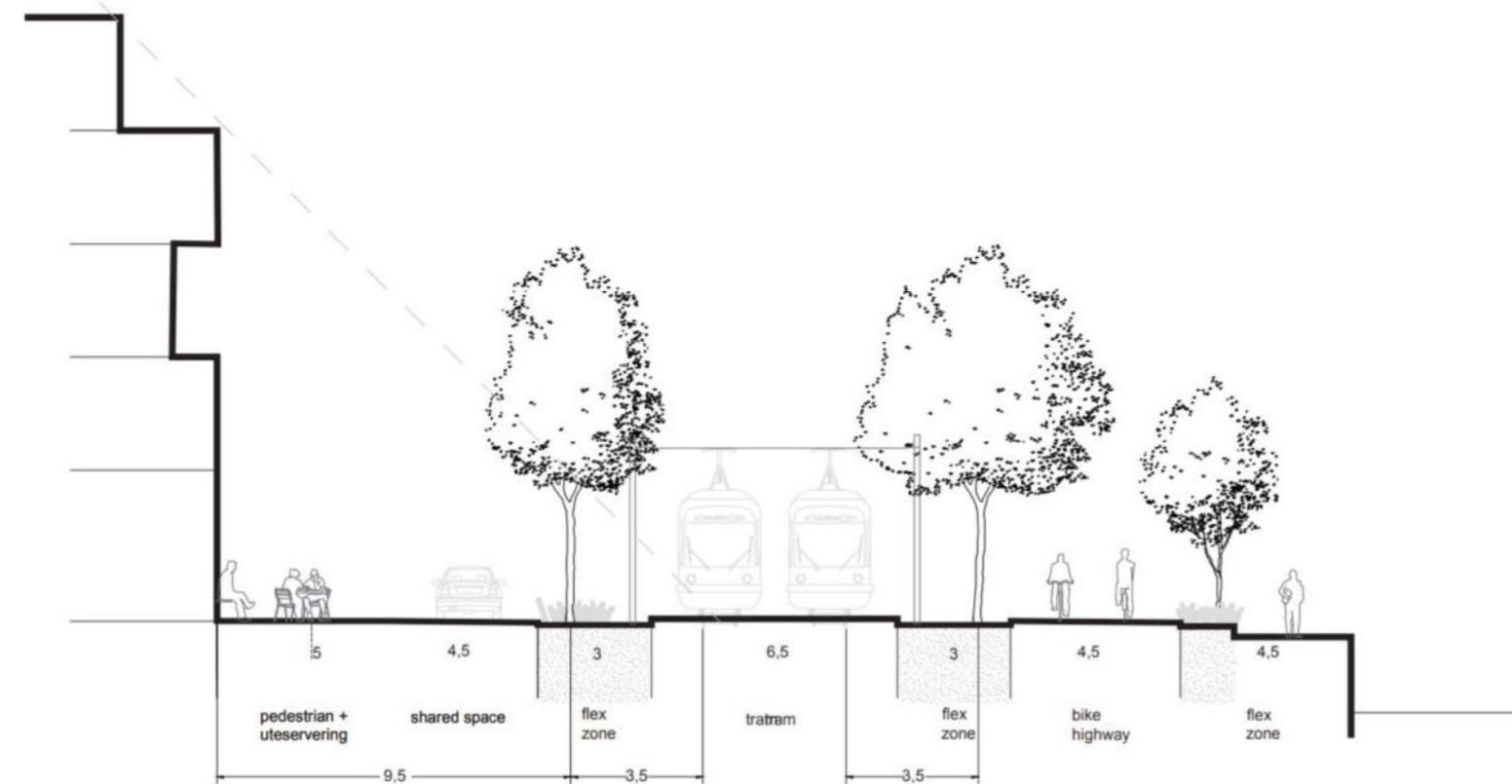
HIEDANRANTA GENERAL PLAN- A DRAFT



HIEDANRANTA GENERAL PLAN NBS

- Storm water quality control on the post industrial open waste water pools
- Green storm water quality control solutions on the streets and green areas
- Diverse vegetation layers on the streets
- Green factor strategy for private plots to e.g. to create more biodiversity and to have enough of permeable surfaces, green roofs and rain gardens for storm water management. The tool will be used in the detail planning phase.

Hiedanranta



NATURE-BASED SOLUTION EXPERIMENTS/PILOTS

- UNaLab case area
 - Micro algae system
 - Biofiltration for landfill leakage waters
 - Green roof/wall
- Co-operation with Universities
 - 0-fiber, paper mill sludge
 - Edible garden



MICRO-ALGAE SYSTEM IN HIEDANRANTA



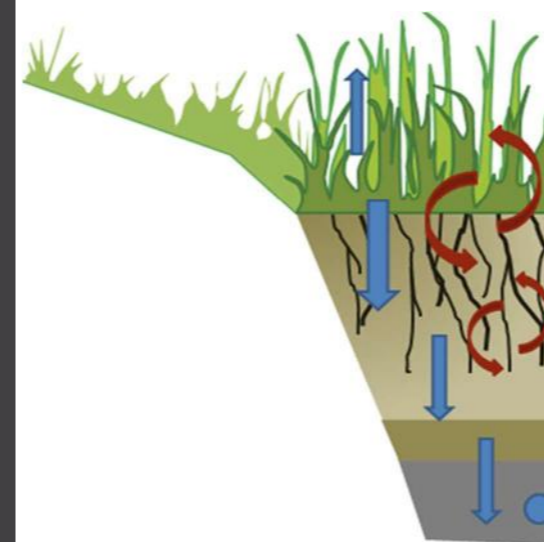
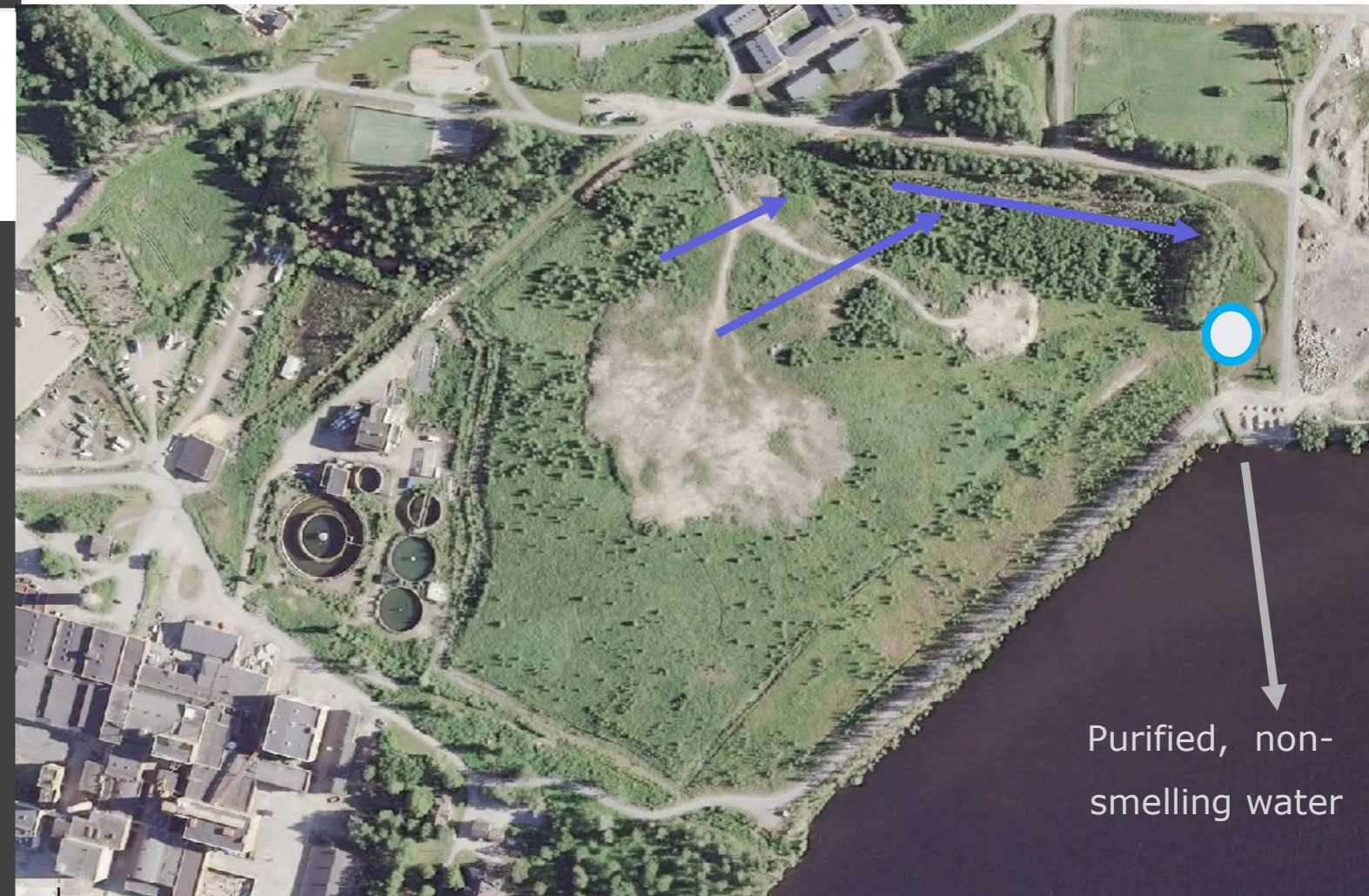
- Implementation by Tampere University of Technology in summer 2017
- A freshwater green microalga, *Scenedesmus acuminatus*, was grown in source separated human urine (15–20 times dilutions)
- Two raceway ponds 400 and 2000 L
- Promising approach for recovering nutrients from real waste streams and for producing biomass with cheap nutrient supply
- Enhanced biomass concentrations are required to improve the nutrient recovery from source separated human urine.



PILOT SCALE NBS TO MANAGE LEAKAGE WATERS FROM CONTAMINATED SITE IN **HIEDANRANTA**



- Filtration waters contain nutrients and pollutants
- Natural biological, chemical and physical processes used to purify water
- Substances and water recycled
- Ecosystem services and recreational services on the area
- Co-operation with local universities and SME producing biochar – new biofilter solutions
- Progress: plans 2018, implementation 2019



Local vegetation

Purifying and pH-raising soil layers including biochar and microbes/algae



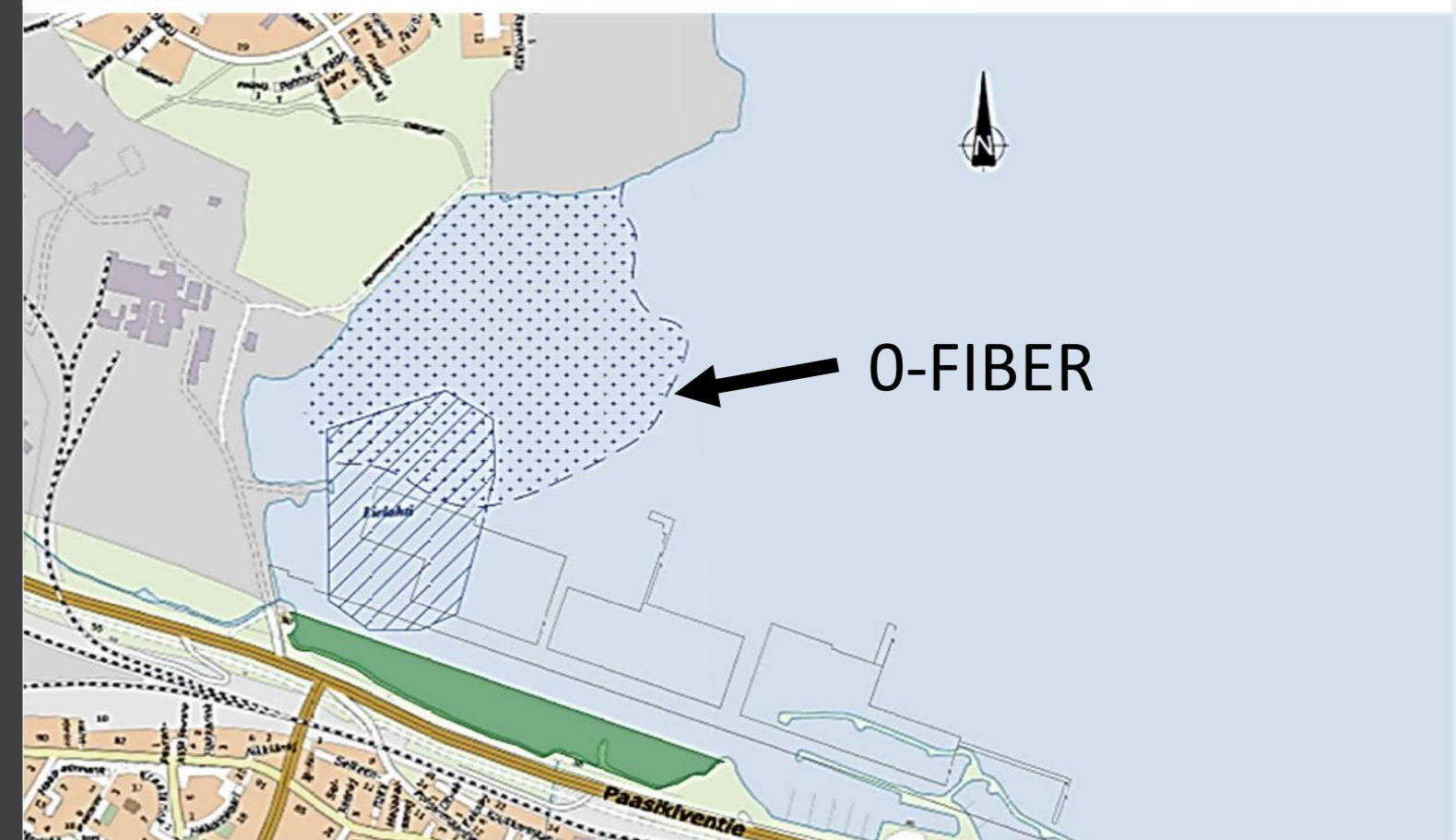
PILOT FOR GREEN ROOF/WALLS

- Green roof for the renovated old wastewater treatment plant building
- Storm water management, biodiversity, new solutions with biochar
- Nutrients and water recycled in the edible garden next to
- Possible Co-operation with local universities and construction companies and biochar producers
- Progress: plans 2018, implementation 2019



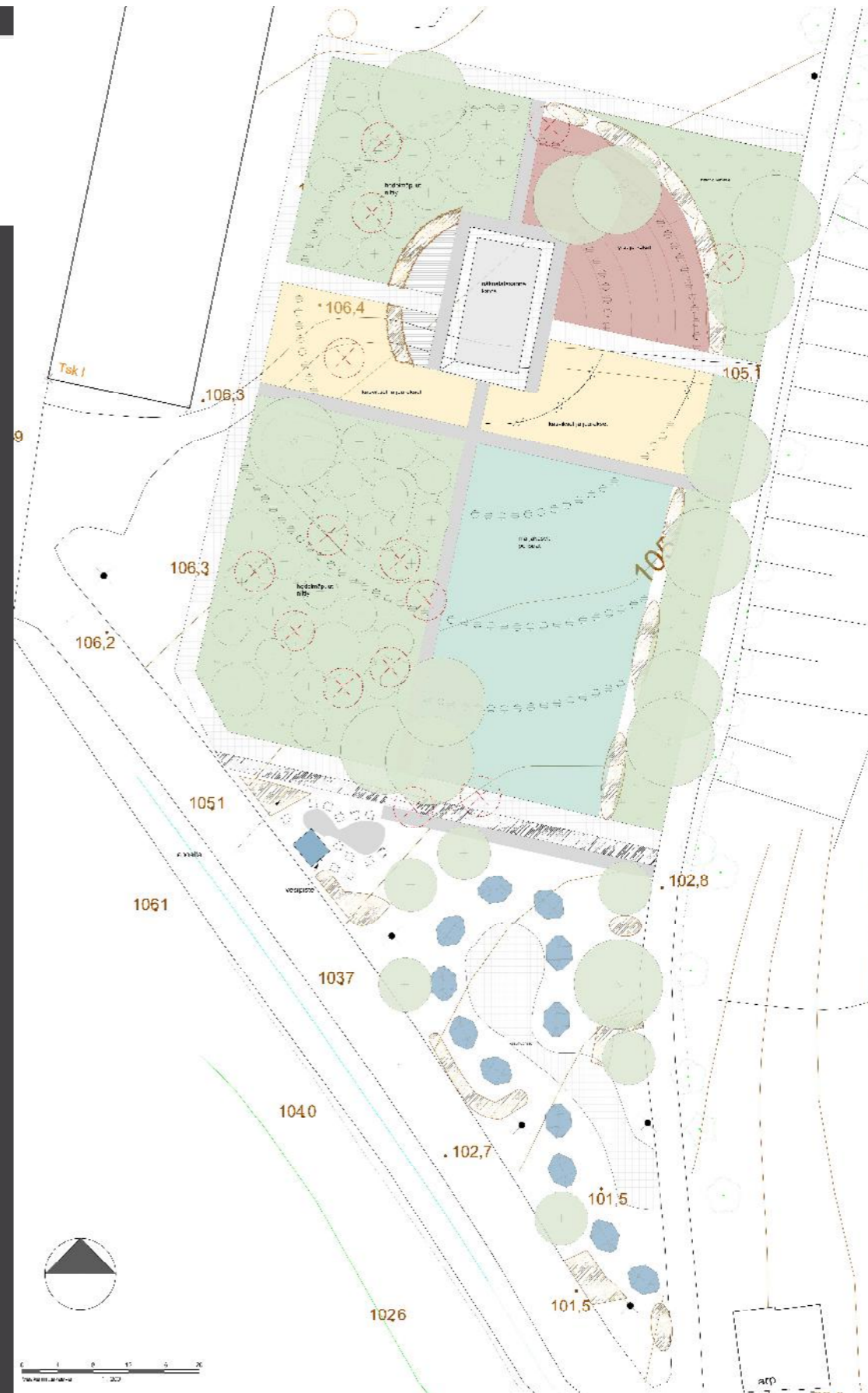
PAPER MILL SLUDGE MASS – 0-FIBER

- Large area on the lake, partly 10 m deep mass, 1,5 milj. m³
- 90 % of water, like a sponge
- Creates methane gas in the long run
- Two different solutions considered
 - stabilisation pilot with wood ash, extended park and recreation possibilities
 - Reclaiming bioenergy, used as fertilisers and biochemicals



TEMPORARY EDIBLE GARDEN

- Edible Garden to the old mansion park garden site, temporary for now
- Open for public, voluntary work and harvest for everyone interested
- Designed to be built from recycled materials, water for the garden pumped from the lake, removed vegetation and trees to rotten on the site, nutrients collected from the green roof waterflow, Green houses from recycled materials.
- Together with Tampere University of Applied Sciences, as part of the KIVIREKI-urban farming project and with ARC-project – Active Refugees in the Community – project



THANK YOU FOR YOUR INTREST!

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