Passive house neighbourhood development in Naantali

development model for production and use

Right of Occupancy Housing of Southwest Finland Ltd (Vaso)

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Right-of-occupancy dwelling in Finland?

- 85% of funding available as a loan subsidised by the Housing Finance and Development Centre of Finland (ARA) and a state guarantee,
- The resident will pay a right-of-occupancy charge amounting to 15% of the value of the residence as self-financing
- The right-of-occupancy charge is tied to the building cost index, and if the resident leaves, the charge will be refunded adjusted by the index adjustment,
- No income limits, no limitations as to the dwelling size,
- Wealth restriction: persons whose personal wealth exceeds 50% of the contract price of a similar owner-occupied flat are not eligible
- No wealth restrictions apply to persons aged 55 or over
- A monthly maintenance charge will be payable to cover
  - ❖ the interest and mortgage repayments (approx. 57% of the charge)
  - ❖ building maintenance costs
  - ❖ administrative costs of the housing company and a reserve for repairs
  - ❖ additionally, charges for the following items may be invoiced separately: water rates, car parking spaces, energy costs etc.

Right of Occupancy Housing of Southwest Finland Ltd (Vaso)

- Established in 1990
- Owned by the City of Turku and other municipalities in the Turku region

•Dwellings	2.392
•Buildings	99
•Number constructed each year	approx. 2 buildings, approx. 60 dwellings
•Dwelling average floor area	70,4 m^2

- Blocks of flats, terraced housing, semi-detached and single-family dwellings
- In urban centres and housing estates
- Number of residents approx. 5,000 – great age distribution and variations in household size

•Turnover	€17.1 million, balance sheet €171 million
•Staff	10 people

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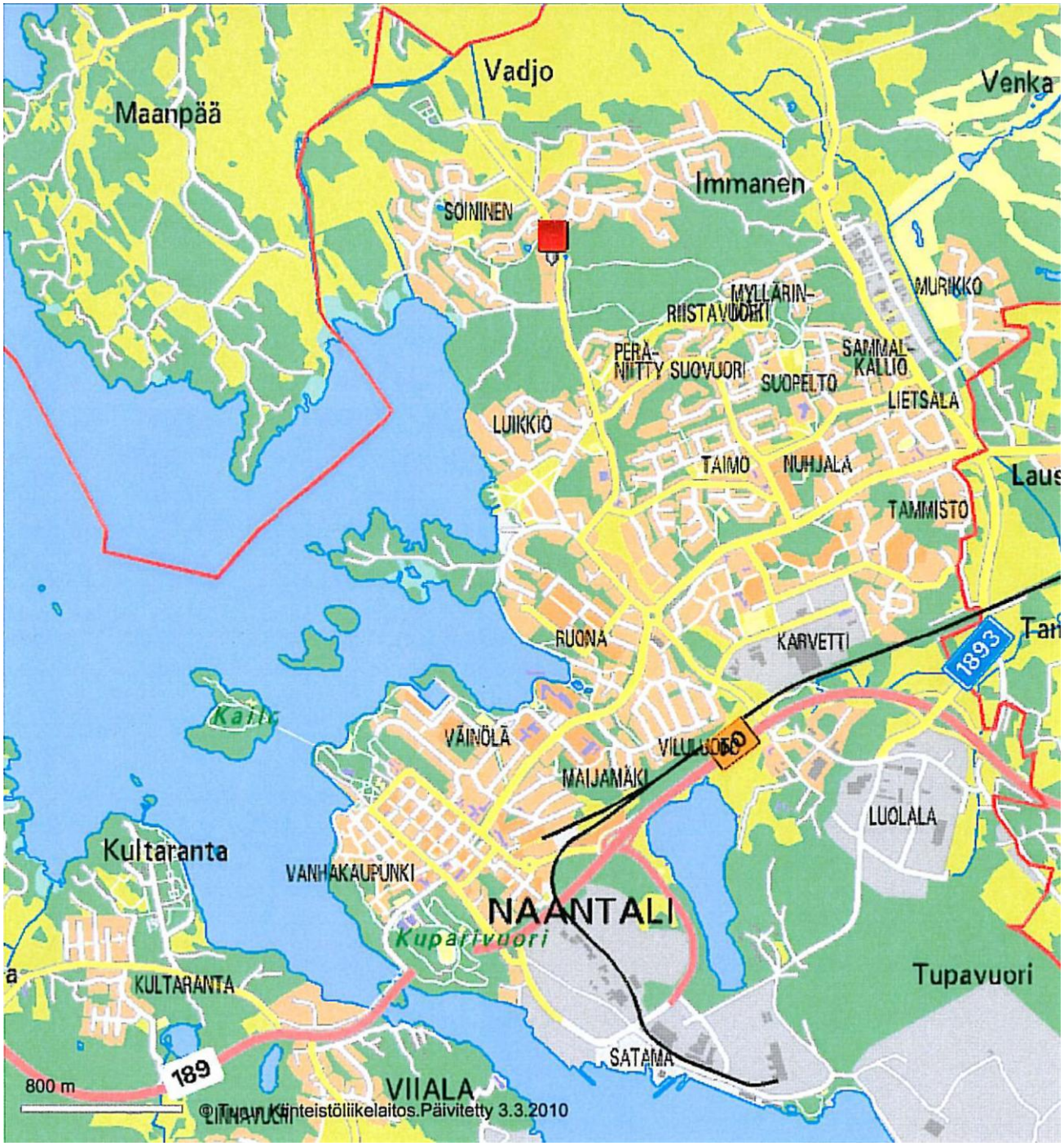
- a building constructed in the passive house class, ensuring that environmental impacts over the entire life span of the building are taken into account in the design phase
- Finnish definition for a passive house:

  for the gross heated area in Naantali
  - ❖ heating energy requirement ≤ 20 kWh/m²/v
  - ❖ total primary energy requirement ≤ 130 kWh/m²/v
  - ❖ air leakage rate n50 ≤ 0.6 1/h
- a joint development project with the Housing Finance and Development Centre of Finland (ARA), Rakli Association, the City of Naantali and the Finnish Funding Agency for Technology and Innovation Tekes
- Tekes Sustainable Community 2007 – 2012 programme, links with Tekes Innovative Public Procurement programme.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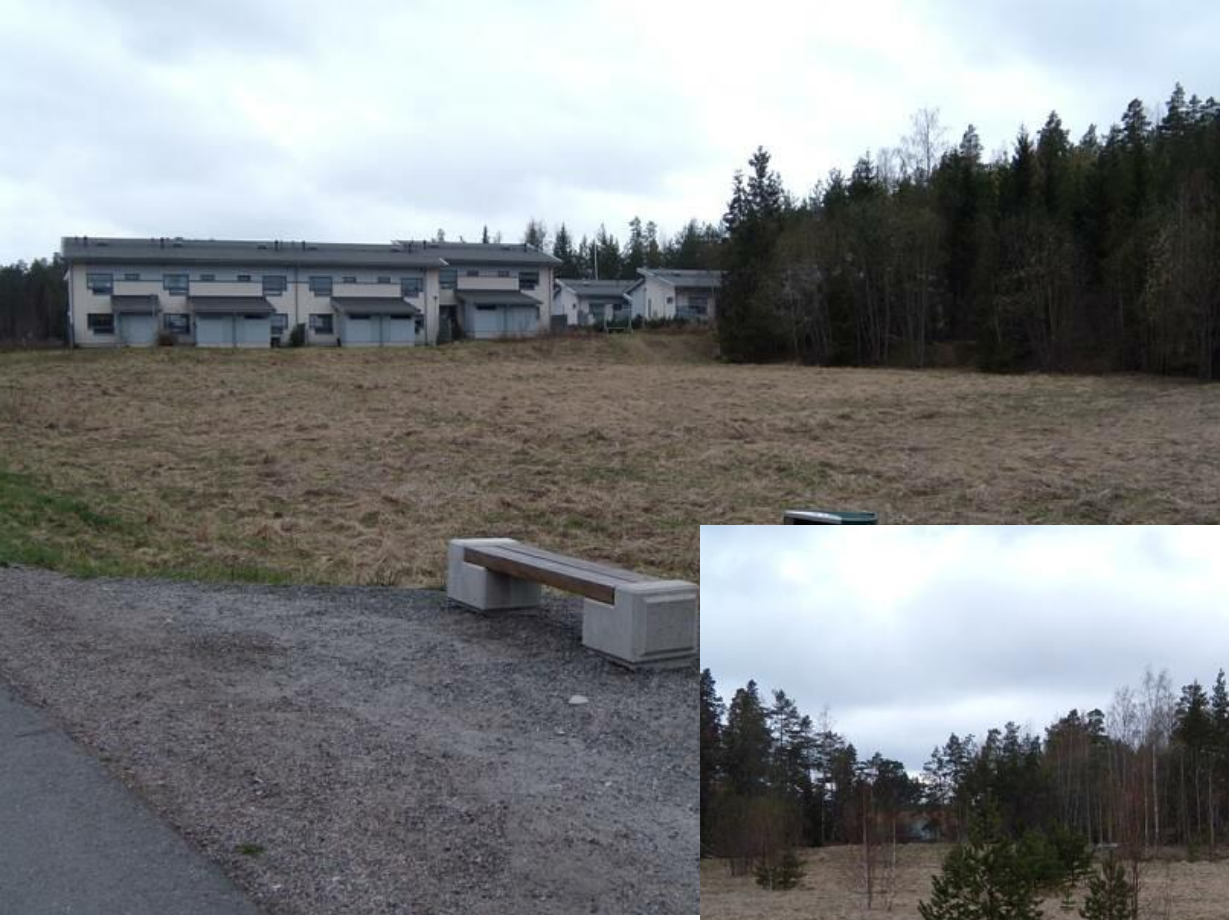

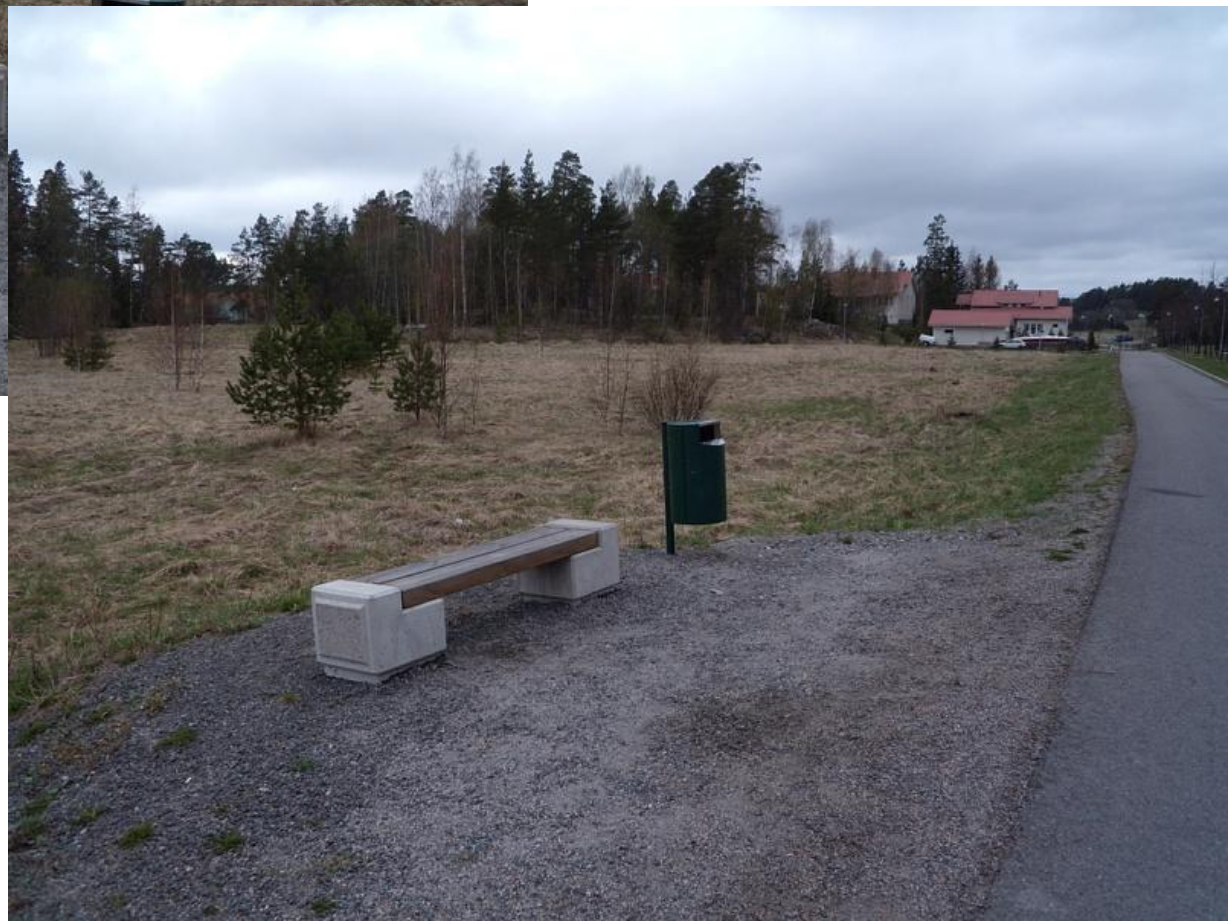

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Tekes + ARA – project aims include

- **implementing a development model:** a construction process for ARA production, in which energy use is as efficient as possible in all stages of the building's life span, and emissions over its life span are minimised
  - ❖As a central part of the conceptual model for ARA production, the procurement clinic of Rakli Association to be used
- **maximising energy efficiency:** the above-listed goals are taken into account in the best possible way from the planning phase on
- **producing housing for ordinary people:** the development group for Vaso housing, which represents the customers' views, is involved in the design phase, and the future residents will receive guidance in the energy-efficient use of their house
  - ❖ARA priced, reasonable housing costs
- **monitoring success:** producing a monitoring system that compares the building's energy efficiency and environmental emissions while in use with those of a reference building, and collecting the residents' experiences of living in the house.

Expert partners

The following were selected as the expert partners for the project in January 2010 as a public contract based on a bidding competition:

- energy experts (6 tenders) Insinööritoimisto Olof Granlund Oy
- main designer (10 tenders) Arkkitehtuuritoimisto Kimmo Lylykangas
- construction consultant (9 tenders) Pöyry CM Oy

The skills of the expert partners should ensure that the project will achieve its goals.

Rakli Association:
Implementation of a procurement clinic - case Vaso/Soininen

- The clinic was organised as an open and interactive workshop that met 8 times
- The clinic produced a problem analysis and recommended solution for the problem
- The results will be public; they will be documented and made freely available for actors in the field – www.rakli.fi
- The clinic will be implemented as a competitive advisory procedure and part of the actual procurement process

Rakli Association:

Stages of the procurement clinic

Design clinic	Implementation workshop	Tenders and contract
❑ Developing an energy-efficient city plan	❑Incorporating the implementing parties' views in the city plan	❑Commercial tenders after the workshop phase
❑ Establishing the design principles for buildings ►reference plans	❑Building design solutions and technology choices	❑Evaluation and ranking of tenders
❑ Resident co-operation in the design phase	❑Decisions on the contract form and terms ►competitive advisory procedure	❑Original value and operating cost comparisons, processed in ARA
❑ Establishing the procurement process and contract form of the implementation	❑Criteria for comparing tenders	❑Choice of implementer ►contract
	❑Planning resident co-operation and energy monitoring during use	

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Progress up to date, schedule

Year 2010

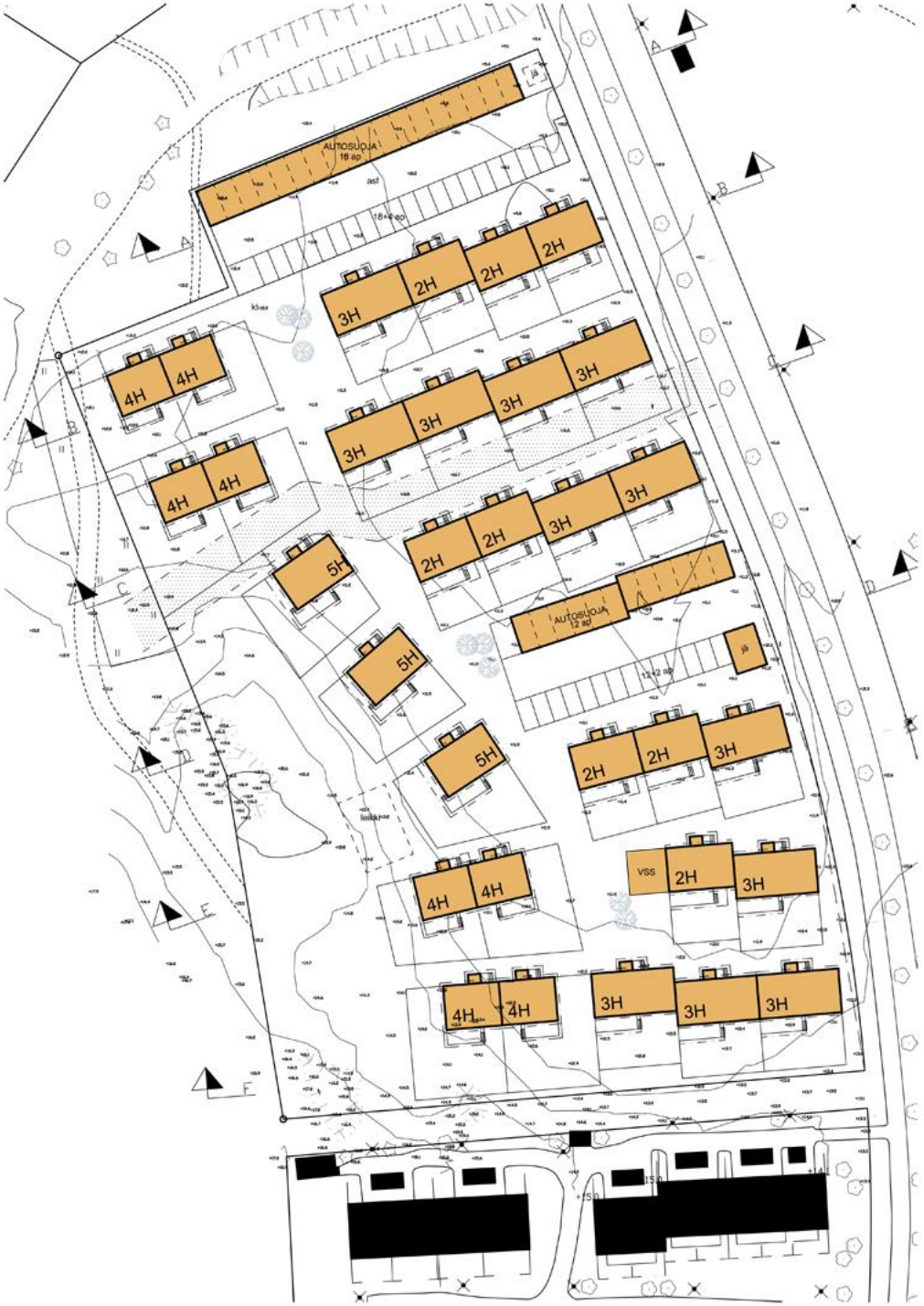
- Expert partners selected
- Procurement clinic phases: March - June
  - ❖Defining detailed goals and marginal conditions
  - ❖Developing the city plan
  - ❖Examining energy and other solution alternatives
  - ❖Developing a procurement model
  - ❖Making sure that ARA pricing will not be exceeded
- Detailed design, competitive bidding, funding, contracts: August-December

Year 2011

- Building, selection of a reference building, marketing of dwellings, user guidance for residents

Year 2012

- Residents move in, resident democracy is set up, monitoring of goal achievement is launched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Situation of the project and architectural design in September 2010

Dwelling distribution:	a total of 31 dwellings	2,383 m^2 floor area
•2 rooms+kitchen+sauna	8	57 m^2
•3 rooms+kitchen+sauna	12	75 m^2
•4 rooms+kitchen+utility r.+sauna	8	89 m^2
•5 rooms+kitchen+utility r.+sauna	3	105 m^2

•Each house will have a south-facing private yard and carport
•Space use on the site will be compact
•Square, compact buildings
•Architectural look created by a class porch, a terrace, roof overhang, façade details and colours
•Minimum of leadthroughs in the dense structure
•South-facing windows
•Roof overhang and porch roof will prevent overheating in the warm season
•Construction on the site will be difficult: both soggy clay soils and sloping rock
•Energy efficiency calculations indicate that the least expensive form of heating will be wood fuels (chips and pellets)
•However, the most likely form will be geothermic heat
•As selection criteria will be used the Calculation of life span costs of energy production alternatives and CO2 emissions produced by Insinööritoimisto Olof Granlund Oy
•In the next phase, negotiations following the competitive dialogue procedure will be initiated with builders and others having registered their interest in the contract award procedure.