

## Procuring passive housing in Finland

### VASO SOCIAL HOUSING, FINLAND

#### Procurement objectives

VASO is a non-profit company procuring social housing on behalf of a number of municipalities in southwest Finland. In January 2010 an expert team was appointed for the design of 31 houses in Naantali, to be built to [passive house standard](#). A tender has now been launched for the construction of the houses, which is expected to start in 2011.

#### Background

VASO was formed in 1990 and is owned by the City of Turku and other municipalities in the Turku region. It is responsible for 2,392 dwellings in 99 buildings in the region. The Finnish Funding Agency for Technology and Innovation ([Tekes](#)) contributed to the funding of the planning phase of the procurement through its Sustainable Communities and Innovative Public Procurement programmes.



#### Criteria used

A design clinic was held with the participation of the expert team and residents, followed by an implementation clinic which incorporated the parties' views into the city plan, specification, criteria for comparing tenders and contract terms. A competitive dialogue procedure was chosen to appoint the main contractor. The main contractor will be required to tender for civil engineering works, energy solutions and HVAC systems.

**Subject matter of the contract:** Building construction and supply of related systems and energy solutions

**Statement of requirements:** Total of 31 dwellings ranging from 2-5 rooms (57 -105 m<sup>2</sup>)

For the gross heated area:

- Heating energy requirement  $\leq 20 \text{ kWh/m}^2/\text{v}$
- Total primary energy requirement  $\leq 130 \text{ kWh/m}^2/\text{v}$
- Air leakage rate  $n_{50} \leq 0.6 \text{ 1/h}$

**Criteria for reduction of number of participants:** Calculation of life-cycle costs and CO<sub>2</sub> emissions for proposed energy production method (e.g. geothermal, wood chips/pellets).

**Contract performance clauses:** A reference building will be nominated for the purpose of monitoring energy efficiency and CO<sub>2</sub> emissions.

#### Results

Cost and user involvement are key considerations for implementation of the project, in addition to meeting the passive house standard. The results to date have suggested that while applying the passive house standard will lead to greatly reduced maintenance costs, there are a limited number of suppliers on the market who can build to this standard. For the appointment of the expert team, a total of 25 tenders were received for the three categories of consultants being appointed (energy expert, main designer and construction consultant). The procurement procedure chosen – involving suppliers throughout the process, has aimed to stimulate the market and thus ensure that a range of contractors are able to put forward innovative solutions for the construction of the houses.

#### Environmental impacts

In Finland, the total energy requirements for new houses which just meet the minimum standards under the building code of 2008 can be in the order of  $\leq 180\text{-}260 \text{ kWh/m}^2/\text{v}$ . The passive house standard applied in Finland reflects the climate but still represents a significant reduction from these levels of energy consumption – and a corresponding reduction in CO<sub>2</sub> emissions. The use of renewable energy sources allows for further reduction in the carbon footprint of housing. Additional environmental impacts to be taken into account in the construction process include waste generation and the sourcing and transportation of materials to the building site.

#### Lessons learned

The monitoring system which will be put in place addresses not only the energy efficiency and emissions of the houses, but also the residents' experiences of living there. It is hoped that this information, together with the design and engineering manuals developed as part of the procurement process, will be of use to other housing authorities aiming to implement similar standards in their construction projects. The collaboration between the different stakeholders as part of the procurement process has been documented and is being made fully available to the public via the [project website](#).

For more information, please see European GPP criteria for [construction](#) and various [building materials](#).