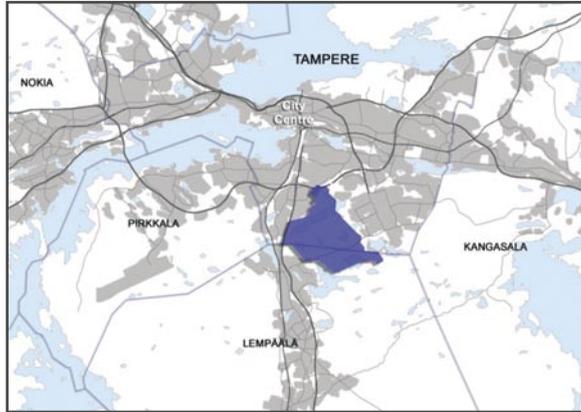


## 4.4 ECOCITY Tampere - Vuores

### 4.4.1 General information

Figure 4.4.1  
Location of the  
Vuores area



The Vuores case area is a typical 'greenfield' development in a woodland area to the south of the city of Tampere. Vuores is separated from Tampere by a lake and borders onto the district of Hervanta to the east. Altogether, the planning area comprises 472.6 hectares. It is planned to have 13,400 inhabitants and workplaces for 3,500 people (see Figure 4.1.1).

### 4.4.2 Project description

At the beginning of the project very generic concepts were developed for the Vuores area.

These were derived from the criteria and indicators developed for the ECOCITY project. However, they were developed still further. Interlinked concepts were devised for six topics with the following goals:

- *Urban planning*: optimising the urban structure, its buildings, public spaces and traffic system; taking into account the microclimatic conditions in the area; preventing traffic noise and other harmful emissions
- *Transport*: optimising the street network; minimising car traffic; optimising public transport; providing space for walking and cycling; providing flexible parking systems; optimising mobility management
- *Energy*: optimising energy conservation and energy system performance; minimising heat loss; increasing awareness of energy use; reducing electricity use
- *Information technology*: provision of possibilities for various tele-activities
- *Conservation of the natural environment*: taking local landscape structure into account in land-use planning; maintaining biodiversity; control and ecological management of storm waters
- *Social issues*: taking social sustainability into account; organising citizen participation

The concepts were produced as cards. Each card contains an illustration of the concept, the measures to be taken according to it, objectives to be fulfilled by it and criteria and indicators with which it should comply.

#### Urban structure

In relation to its urban structure, the main principle for the area is a *close relationship with nature*. There are short distances to the green areas from every dwelling. The built structure is arranged on both sides along the main collector street, leaving the connection from the blocks of buildings to the surrounding green spaces basically free, without interference from traffic. The building density is also very low, especially on the fringes of the structure.

In developing a masterplan (see Figure 4.4.2) for Vuores the *distinctive natural environment* was appreciated from the very beginning. The features considered were the varied topography and shapes of the terrain, the valuable natural elements in the area, the water system (ridge as a watershed), the possibilities for recreational use of the forest and the existing holiday cottages. Consequently, the basic themes of the planning process were to preserve the natural environment and the character of the area as well as to take into account its microclimate.

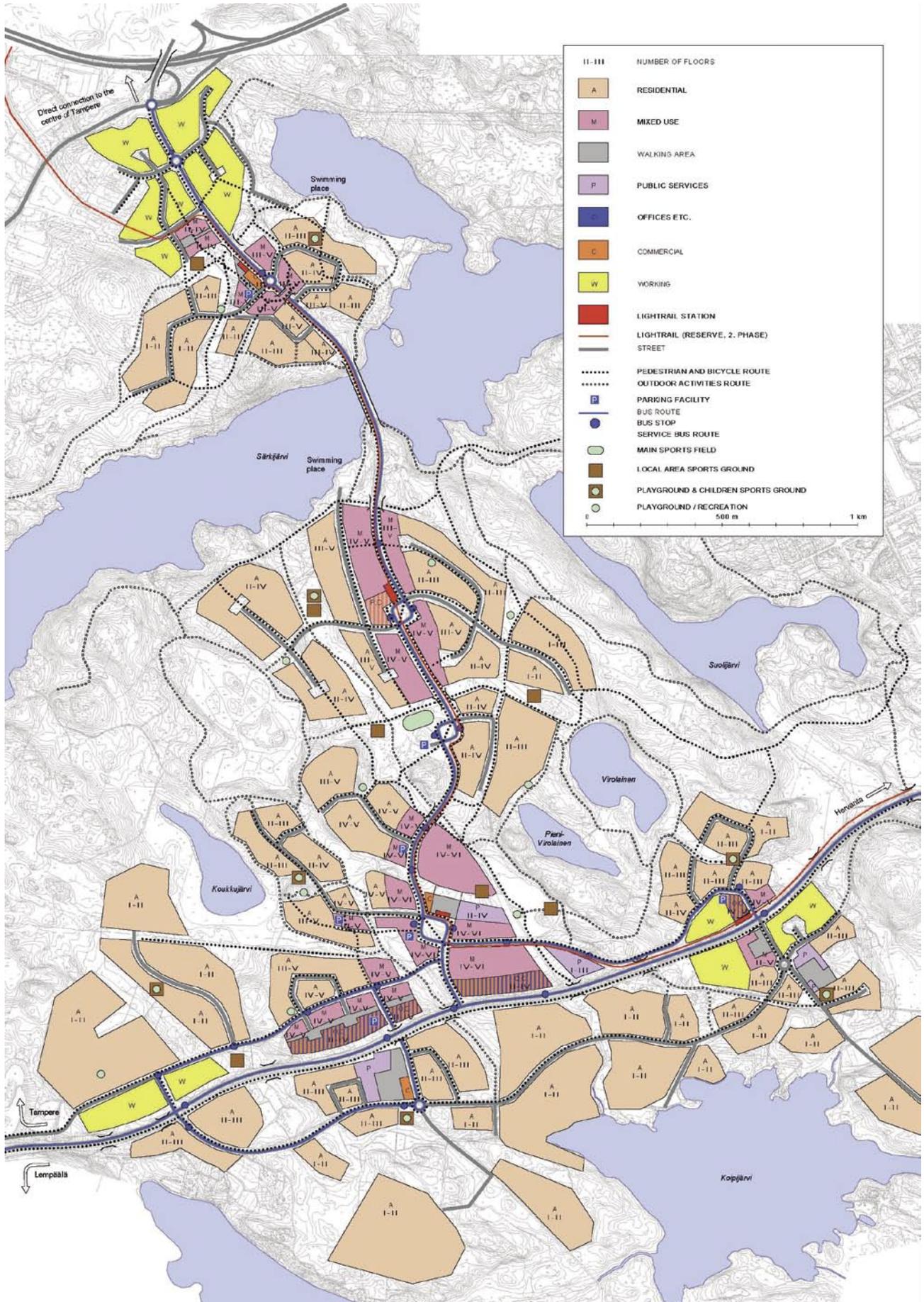


Figure 4.4.2:  
Masterplan Vuores

Considering the necessary service structure for the population of the area, a *high mixture of uses* is planned, especially for the central parts. In this way the area is given a chance to develop its own independence, rather than becoming a dormitory suburb. The structure is also concentrated towards the main collector street to provide short walking and cycling distances for most people to everyday basic services and public transport.

The area has one *main centre* and *four sub-centres*. The basic services are concentrated in these centres. The centres are well served by public transport routes and contain workplaces as well. In addition, the main centre includes less frequently used but nevertheless important community services. A two-phase *architectural competition* for the main centre of the area was launched in autumn 2003 and came to an end in December 2004. The ECOCITY principles were one part of the competition guidelines. These principles will be applied more closely in the town planning and implementation phases. Urban public spaces have been mainly concentrated around the five centres and are also connected to the public transport network. Pedestrian and cycling routes link them to the nearby residential and mixed-use blocks as well as to the surrounding green spaces. There is a central sports area with various sports facilities and outdoor playing fields.

Because it was considered important to take the sensitive natural environment into account, the area has a rather scattered built structure. For the same reason its mean density (gross floor area ratio) has become very low, only 0.17 for the whole area. However, in the central zone the density is 0.35. A scattered structure with low density tends to create long walking and cycling distances and also makes it difficult to arrange economic and effective public transport systems which serve the whole area equally. There is also the danger that the street structure will lead to car-oriented transport. These drawbacks can be resisted in part by concentrating the building around the five centres and using traffic calming on the collector road for cars.

### **Transport**

As a greenfield area Vuores does not yet have its own transport network. The only existing road is the Ruskontie road running along the southern boundary of the area. Besides this there are only a few forest tracks and paths. The traffic solution for Vuores is based on the new main route, Vuoreksen puistokatu street, which transverses the area from south to north and crosses over Lake Särkijärvi. In addition, there are perpendicular parallel routes on both sides of the Ruskontie road. Access roads are perpendicularly linked to these roads and designed as low-speed, dead-end streets with pedestrian priority. However, in order to ensure easy and fluid service traffic, the pedestrian routes connecting the street ends are also open to service vehicles.

The guidelines for traffic and road planning are focused on promoting walking, cycling and public transport. The walking and cycling routes are planned as separate from the car traffic and are to be executed in good quality. Public transport services are also planned to be of high quality, including having frequent services and fast routes especially to Tampere city centre, to maximise their use (see Figure 4.4.3).

The accessibility considerations in the Vuores area have led to the central role played by public transport in the transport system. It is intended to be based on a light rail system, which will run along Vuoreksen puistokatu street, directly to the centre of Tampere via the proposed bridge over Lake Särkijärvi. Before the realisation of this service, public transport will be bus-based. All the basic services will be situated within reasonable walking distance from the public transport stops.

A high-quality and comprehensive pedestrian and cycling network will be provided for Vuores. It is planned to be as safe as possible by using traffic calming and by crossing car lanes as little as possible. The pedestrian environment should be usable by all and the basic services in particular should be

easily accessible. The solutions will also be favourable to car-free families. Furthermore, an ample and comprehensive route network serving recreational activities will be provided. Special attention will be paid to cycle parking, especially in the central areas. Through traffic by cars is allowed on the collector road, but it will be restrained by traffic calming and speed limits. The aim is thus to reduce the attractiveness of the area to through traffic. Cars using the access roads are required to respect the pedestrian priority regulations. Residential parking will be concentrated in facilities some way away from the dwellings, especially in the areas of blocks of flats. The aim of this is to promote the use of public transport. Car-free areas are not proposed in Vuores.

All streets are also designed for the use of necessary emergency and service transport. Products ordered from certain mail order or e-trading companies are planned to be distributed through a kiosk chain with long opening hours during evenings and weekends.

The problem of traffic noise is considered to be mostly solved by sufficient distances, the relative location of buildings, courtyards and gardens and suitable traffic and parking arrangements. Nevertheless, some physical noise abatement measures will have to be taken.

### Energy and material flows

For the energy supply, a regional district heating network fed by a combined heat and power (CHP) plant is used for heating the surrounding more densely built areas. The possibilities of utilising renewable energies in the area are rather limited and not profitable. Thus, considering the sustainability issues, extending and using the existing district heating network as the main heating energy supply system is the most reasonable alternative for Vuores. However, the plan is for it to be supplemented by ground-source heating systems and active solar systems to increase the amount of renewable energy used in the energy supply. Detached houses and farmhouses will partly also use biomass and electricity for their heating on an individual basis. Passive solar heating will also be utilised to some extent for heating. The appropriate combination and extent of different heating and heating supply systems will be determined on the basis of the results of ongoing research. A district ground-source cooling network is also being researched. The orientation of individual buildings for passive solar energy use must be decided. The Tampere City electricity works also utilises wind energy and is a shareholder in a wind farm. The increase of wind energy production directly in the Vuores area or nearby, though, is not economically feasible, due to poor wind conditions.

Energy saving is important, irrespective of the energy source of the building. The building stock will include both low-energy buildings and buildings which comply with the Finnish Building Code 2003. The energy conservation strategy is based on the reduction of heat loss through improved insulation levels, low-energy windows, air tightness, heat recovery and temperature control. Low temperature heating systems and heat recovery from ventilation are recommended. User-friendly temperature control strategies and visible energy consumption by metering are also aspects of the building design.

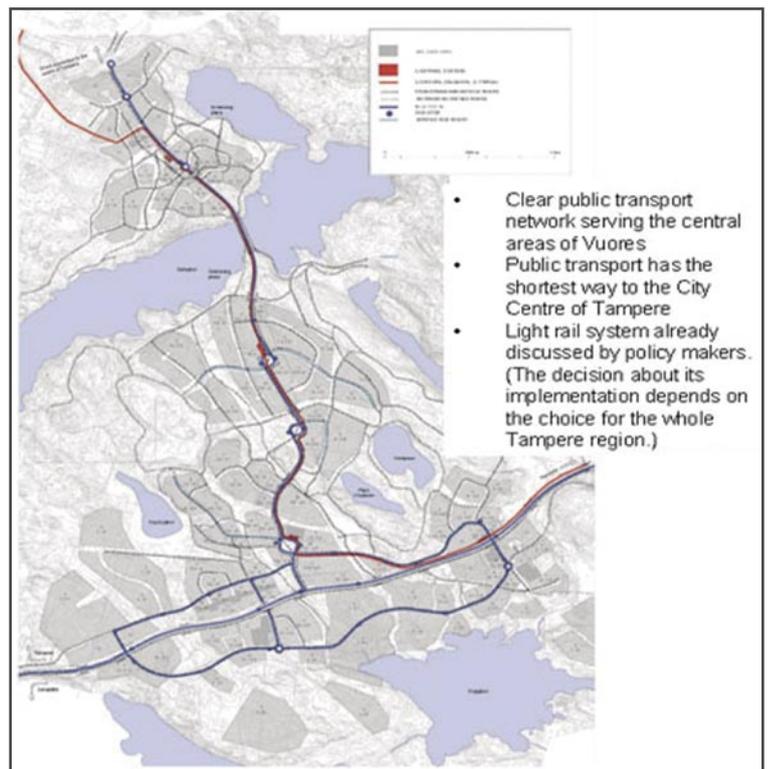


Figure 4.4.3  
Public transport

No demand for cooling is expected for the housing and offices and other buildings will only have a low cooling demand. Intelligent cooling systems are under investigation for these purposes.

The cost-effectiveness of improved thermal insulation, advanced windows and ventilation heat recovery is very high. The resulting increase in investment costs has been less than 3% compared to conventional building practice. Heating energy consumption can be reduced by 50-60% in a cost-effective way simply by reducing heat loss from the buildings. If solar technologies are introduced, heating energy consumption can be reduced by 70-80% compared to a typical Finnish detached house.

#### *Building materials and soil movement*

Opportunities for the sustainable use of building materials will be investigated but it is already clear that the use of wood in construction will be substantial. Because of the richly undulating and fragile terrain, much effort has been and will be made in designing the streets and siting the buildings so that soil movement is minimised. This objective, however, has led to rather winding road patterns in the area.

#### *Water and waste management*

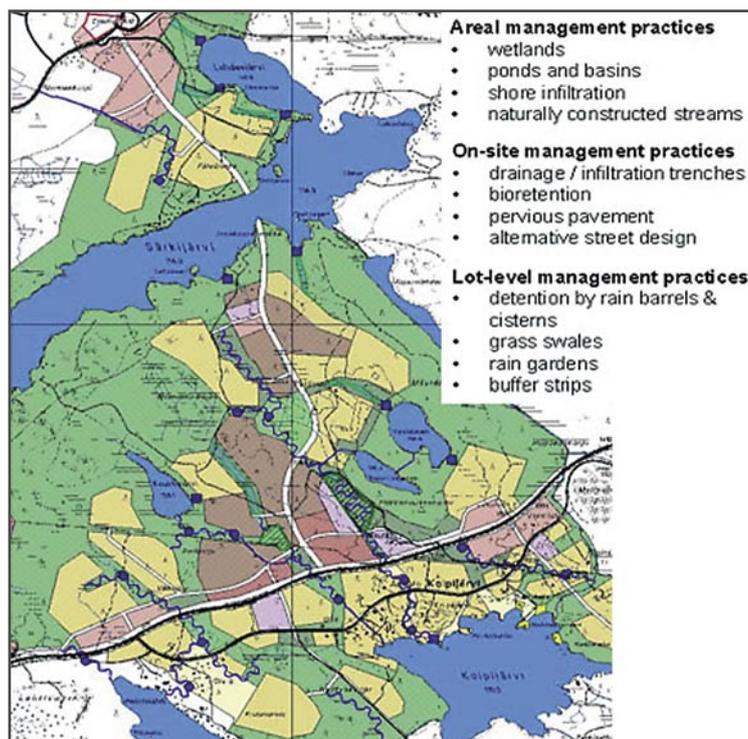
The Vuores water management system will be a traditional one. Wastewater will be collected mainly by gravitational sewers and treated in a large sewage treatment plant near the centre of Tampere. The development of grey water systems has not so far been raised as a possibility in Vuores.

Because of concerns about the possible negative effects of storm water, its natural treatment and control has become an important issue in the planning of Vuores.

Conventional storm water sewers are avoided and storm water is controlled and treated by detention, infiltration and wetland systems. The objective is to maintain the present hydrology of the area (see Figure 4.4.4).

Waste will be collected and effectively separated in order to minimise costs and emissions, to maximise recycling potential and to treat hazardous waste. Besides the sorting and collection of waste at the individual property level, there will be at least five drop-off collection points and one 'eco-centre' with waste sorting. Biogas from compostable waste will be utilised as an energy source.

Figure 4.4.4  
Stormwater  
management



### **Socio-economy**

Participation has been based on the collaborative working group for Vuores, public meetings, interviews, inquiries and public surveys. In addition, the ECOCITY community committee was established in autumn 2001. Workshops for the inhabitants of Tampere have also been organised. Furthermore, the City of Tampere has organised several events with the investors and business sectors involved in the realisation of Vuores.

The essential aspect in the planning of Vuores has been the creation of the Vuores vision, describing the desired development of the area. The vision contains the 'Vuores Ideas' collected through several questionnaires, the results of workshops with local people and civil servants and material from the ECOCITY project. A framework for future participation in the Vuores development is under preparation. The city will also create new opportunities for participation via the internet.

The existing socio-economic structure of the area will be completely changed through its development. The aim is to establish plenty of high-quality public services and several private and commercial services. The central zone is intended to be the main shopping and service area of Vuores, but there will be public and private services in the sub-centres as well. There will also be several recreational and sports facilities. Public facilities will be planned for a variety of uses. An efficient ICT infrastructure will allow the use of electronic services and e-democracy as well as tele-working.

One of the aims in Vuores is to have a high social mix. Therefore housing in Vuores will be diverse in terms of ownership and types of dwellings, in order to offer different kinds of housing options. In addition, the different residential areas in Vuores will be developed to be as characteristic and distinctive from each other as possible.

Most of the ECOCITY concepts can be implemented by integrating them at the planning stage. However, the development of an effective public transportation system and the storm water management will probably need some special financing.

Most of the workplaces will be located in the service facilities and residential buildings in the five centres to promote mixed use. One work zone will be part of a larger business and industrial estate to the north of Vuores. The aim is to create jobs in a variety of sectors. There will even be possibilities for small-scale agricultural production and manufacturing businesses near to the residential areas. The possibilities of a link with existing research establishments and high technology enterprises in Hervanta will also be explored and there are also plans to create ecological workplaces. The aim is that many of those living in Vuores will also work there. The workplaces in Hervanta are also nearby and Vuores could perhaps offer jobs to the inhabitants of Hervanta and people in other neighbouring areas.

### 4.4.3 Project outcomes – key elements

Key elements of the Vuores ECOCITY area

Key element 1	Key element 2	Key element 3
Close contact with nature	Public transport	Community structure
<p>One essential objective for planning in this area was the sensitive incorporation of the fragile natural environment.</p> <p>The basic elements considered were the varied topography and shape of the terrain, the valuable natural features of the area, its biodiversity, its microclimatic conditions and its existing water system.</p> <p>Consequently, the natural environment is omnipresent in the area. All the dwellings are within a short distance of the green areas. The natural environment penetrates the built structure with 'green fingers' and via a green belt which transects the area. One important issue is the protection of the area's natural water system</p>	<p>Public transport has a central role in the transport system. It will be based on an effective light rail system running through the whole area along its spinal road and serving all its functional centres. Before the realisation of the light rail, however, the public transport of the area will be based on buses using the same routes.</p> <p>A high-quality and comprehensive footpath and cycle network, with short distances to the stops, will support the use of public transport. Also all the everyday basic services will be close to the stops.</p>	<p>The built structure is concentrated around one main centre and four subcentres. These are situated within short walking distances from most of the dwellings. The centres contain a public square, everyday basic services and a large number of workplaces. In addition, the main centre includes less frequently used community services. Thus, there will be a rich mix of uses in these centres and good provision of public and commercial services, within reach of an efficient public transport service. The public squares in the centres are expected to foster a vibrant community life.</p>