SUMMARY

The Marja line will connect the Martinlaakso line with the main line

The Marja urban line will provide a possibility to concentrate housing and jobs in an area where efficient public transport is available. Within a radius of one kilometre from the stations, the line will serve some 200,000 inhabitants and an equal amount of commuters. Thanks to its airport connection, the line will be important, not only regionally but also nationally and internationally. As one of its advantages, the Marja line will improve the cross traffic connections of the Helsinki metropolitan area.

Ministry of Transport and Communication Finland, the Helsinki metropolitan area municipalities and Helsinki Metropolitan Area Council (YTV) have in their letter of intent of 26 August 2003 stated that the obstacles still preventing the Marja line project from being launched, for reasons such as land-use and planning, are actively being removed in order to promote public transport's role in the Helsinki metropolitan area traffic systems. The city of Vantaa has proposed the year 2007 as the target year for starting of the project.

The Marja line will be a 2-track, electrified, commuter-traffic passenger line provided with passage control. The length of the new line will be 18 km, 8 km of which will run in a double tunnel going under the Helsinki-Vantaa airport area. The line is planned to have the level stations of Vantaankoski, Vehkala, Petas, Kivistö and Asola, as well as the tunnel stations of Aviapolis, Air terminal and Ruskeasanta. There is a station reservation for Viinikkala, and it is technically feasible to build a station also in Lapinkylä.

The Marja line will be connected to the urban rail network of the main line. The Kerava and Leppävaara urban lines, Martinlaakso line and Marja line will compose an integrated urban railway loop, enabling more efficient use of trains in commuter transport.

The Marja line will be socio-economically profitable

Along with the start of the Marja line, some of the bus traffic volume will be replaced by railway traffic. The bus traffic volume will decrease particularly in the Helsinki nuclear centre and on radial main roads leading to the nuclear centre. The decrease of the bus traffic routed to the nuclear centre and airport will reduce the demand for bus terminal facilities.

The Marja line will cut down bus and passenger car traffic, thereby reducing the number of traffic accidents and harmful effects on the environment.

The profitability calculation for the Marja line was updated in connection with the Marja line traffic report in December 2003. The profitability calculation assumes that the Vantaankoski-Kivistö section will be taken into use in 2010 and the whole line will be completed in 2012.

The project benefit-cost ratio is 1.5 calculated with these default values, taking into account the urban structural effects caused by traffic and modes of travel. In accordance with the sensitivity analyses, the benefit-cost ratio varies between 1.4 and 1.6, depending on factors such as the year of taking over the project and development of traffic costs.

Environmental impacts have been noted

The research carried out showed that the project will not have any notable impact on the Ruskeasanta and Pakkala groundwater catchment areas. In the groundwater catchment areas, the tunnel facilities will be sealed so that there will be no deteriorating effect on the yield or quality of the water pumping plant. Monitoring of the groundwaters in the area affected by the railway has been started.

In the intersection area of the Päijänne tunnel, precautions will be taken to prevent the risks that may appear during excavation and operation by pre-grouting, additional reinforcement and careful excavation. Shooting and blasting in the vicinity of the Päijänne tunnel will be arranged so that vibration will not cause any harm to the use and stability of the Päijänne tunnel.

The next engineering phase will include a more detailed risk analysis where the risks during the railway construction and operation will be taken into account. When the work has progressed further, the potential effects and risks related to the Päijänne tunnel and Ruskeasanta groundwater catchment area will be known more comprehensively. In connection with building engineering, a detailed risk analysis of the excavation of the neighbouring areas of the tunnel as well as inspections of the buildings and structures will be carried out, and the excavation and building methods will be defined based on this.

In the environmental study made in summer 2003 regarding the railway environment, some hints could be seen of possible habitats of the Russian flying squirrel in the western section of the line. A more thorough research concerning widths of the areas and vitality of their species will be started in the late winter of 2004.

More accurate forecasts available for railway traffic and feeder lines

Trains will run on the Marja line at 10-minute intervals during peak periods, stopping at all stations. The shortest transport time from Helsinki to the airport will be about 30 minutes.

The volume of passengers on the Marja line is forecast to vary from 16,900 to 24,400 in a weekday in 2025, depending on what section between the stations is in question. The highest numbers of passengers will be at the Kivistö station, with 14,300 passengers/weekday, and at Air terminal, with 13,600 passengers/weekday. From the Air terminal passengers, some 9,500 will be air passengers.

There will be more feeder bus lines ending at the Kivistö station than specified in the development plan. This will make the Kivistö station more important as a feeder station. The lines serving northern Vantaa will go through Kivistö.

Well-functioning arrangements for the stations and feeder traffic

The end terminals of the bus lines have been planned to be located at Vantaankoski, Petas, Kivistö, Aviapolis and Ruskeasanta. Altogether 1550 parking places for cars and 950 places for bicycles have been reserved for passengers using feeder connections.

At ground-level stations, accesses to the platforms will be provided with covered stairs and lifts. There will be at least 100 m long roofs at the platforms. The length of a platform will be 220 m. This length allows maximum train lengths of four units. Social, commercial and technical facilities have been reserved in connection with the stations.

The platform halls of the tunnel stations at Air terminal and Aviapolis will have one vault. At Ruskeasanta, the platform hall will have two vaults. All stations have been planned to be clearly defined and open in order to create surroundings that the users can perceive without any difficulty, where they can pass safely, and which are provided with good orientation and easy guidance. Access to the ground level has been arranged with escalators and lifts. Emergency exit and fire safety arrangements have been inspected in negotiations with the authorities. In addition to stair halls with fire compartments, also work and service tunnels will be used as emergency exit routes from the platform level.

More detailed calculations made on the alignment of the line and station locations

The most significant alterations in the railway alignment and station locations have been made at Petas and Kivistö. Between Vantaankoski and Petas, the line alignment has been transferred to the east by some 70 metres maximum from the line alignment given in the preliminary general plan. Any disturbances the line and the adjacent street might cause to the Russian flying squirrel territory at the northern side of Vehkala have been minimised with this transfer.

The location of the Kivistö station has been shifted some 250 metres to the west. The reason was the plan to transfer the Kivistö commercial centre bet-

ween the Hämeenlinnanväylä and Vanha Hämeenlinnantie roads.

Street and road arrangements

To the north of the Vantaankoski station, the railway will cross over the planned Sanomatie road and Kehä III along a long bridge. The current assumption is that the straightening of Kehä III and multi-level junction of Sanomatie will be built prior to the Marja line.

In order to realise the proposals concerning the land use and station arrangements at Kivistö, it will be necessary to develop the intersections of the Hämeenlinnanväylä road by adding a parallel junction routed from the north to the Kivistö centre as well as to the Petas area

Riipiläntie road will cross over the Marja line at its present location. The road will be raised by a maximum of about 4 m. The Katriinantie road will be raised over a distance of 700 m by a maximum of over 5 m. The junction of the existing Tikkurilantie to Kaarinantie will be shifted about 130 m to the south.

At the Tuusulanväylä multi-level junction in Ruskeasanta, both of the ramps at the eastern side will be straightened, and the bus ramp at the eastern side will be realigned in order to develop further the station arrangements and land use of the station environment.

Marja line will run under the airport area through a more than 8 km long tunnel

The line will run in a double tunnel between Viinikkala and Ruskeasanta. The total length of the tunnel will be 8,160 m, including the Viinikkala station reservation and the stations of Aviapolis, Air terminal and Ruskeasanta. The technical and safety facilities will be located at stations and in connecting tunnels.

In both railway tunnels, there will be 7.2 m wide cross-sectional cutting in the rock. The distance between the tracks in the railway tunnels has been specified according to the tunnel stations to be from 22.6 to 32.6 m, which makes it possible to excavate all access tunnels between the railway tunnels.

The connecting tunnels will be excavated at about 200 m intervals in the rock pillar continuing between the railway tunnels. In accident situations, it will be possible to exit along the connecting tunnels through the smoke trap into the adjacent tunnel. A vertical shaft to the ground level will be excavated from about every third connecting tunnel where a flight of exit stairs will be built provided with smoke protection. If smoke exceptionally accumulates in the tunnel, it is extracted with separate smoke exhaust fans.

The railway tunnel will be equipped with a fire hydrant network. Firefighting water stations for the needs of a rescue crew will be provided at the tunnel openings and top parts of the vertical shafts. Emergency phones and fire alarm buttons will be installed at 200 m intervals in the connecting passages and technical facilities.

Construction costs

The construction costs of the Marja line are estimated to be some 297 million euros. The costs per sections are as follows:

Vantaankoski – Kivistö	65 million euros
Kivistö – Aviapolis	63 million euros
Aviapolis – main line	169 million euros

The costs have been calculated at the cost level of October 2003 without value added tax.

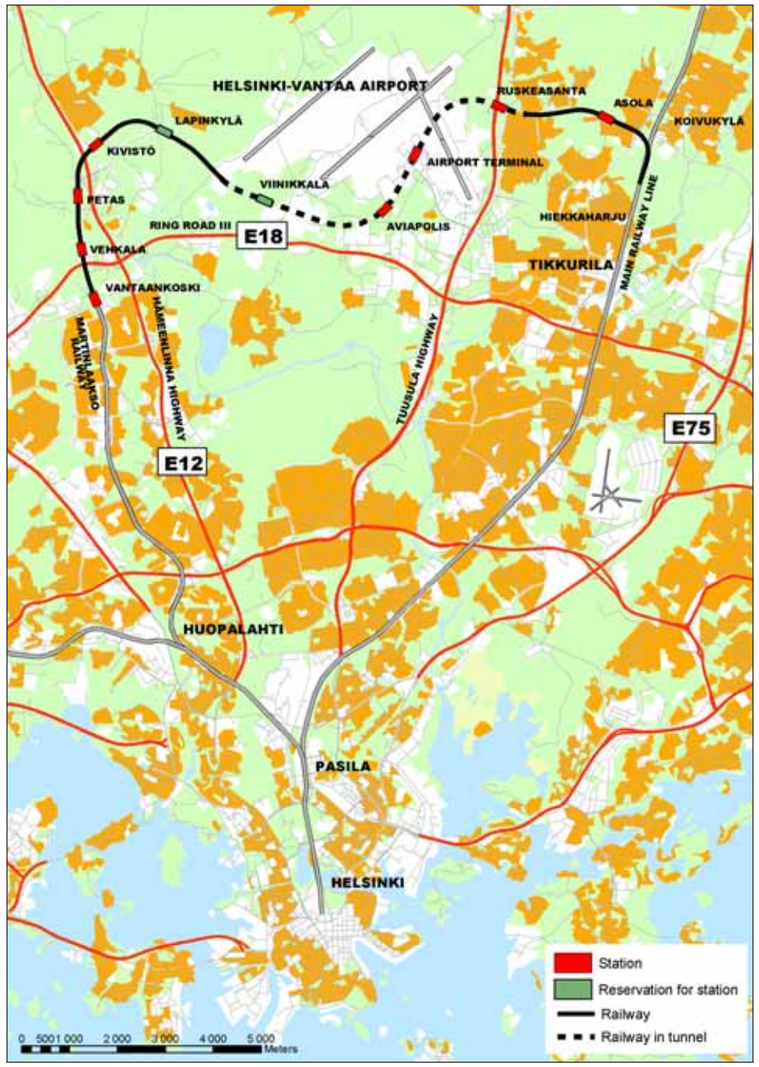
Next steps in project preparation

Municipalities, other authorities and interest groups will be asked to give statements on the Marja line master plan. The plan will also be displayed for public inspection, and opinions on it are invited. On the basis of the opinions and feedback received, the need for additional reports and more detailed assessments of the master plan will be evaluated.

Preparation for construction and starting of detailed engineering will be decided when sharing of the costs has been agreed upon, and when the government and the city of Vantaa have made their decisions on implementation of the project.

Marja line briefly:

- 2-track, passenger line
- Maximum speed of trains 120 km/h
- Length of railway line 18 km, of which 8.1 km in tunnel
- 7 new stations and 2 station reservations
- 33 bridges, of which 12 railway bridges
- 9 km of street and road arrangements
- Feeder parking facilities for 1,550 cars and 950 bicycles
- Removal of 1.6 million m³ of soil and rock masses, of which rock blasted from tunnels accounts for 0.9 million m³
- Construction costs 297 million euros



The Marja line will run via the airport and connect the Martinlaakso line with the main line