

City of Helsinki
City Planning Department

Light rail

A stylized, high-contrast blue illustration of a light rail train, shown from a side profile. The train has a modern, aerodynamic design with large windows and a flat roof. It is positioned horizontally across the middle of the frame. The background is a solid light blue, and the train itself is a darker shade of blue.

**Public transport for
the future Helsinki**

www.hel.fi/ksv/en

Helsinki and the entire Helsinki metropolitan area are growing rapidly. The estimated population growth in Helsinki by 2050 may amount to even a quarter of a million inhabitants. Helsinki is turning into a city of 860,000 inhabitants, and the population of the entire region will increase to approximately two million. This also leads to increased travel. Helsinki's response to this challenge is to primarily encourage sustainable modes of transport, i.e., walking, cycling and public transport. Light rail will be one of the most important forms of public transport in the future.



Light rail is efficient, comfortable and safe

Light rail system is a modern, efficient evolution of a tram system. Unlike traditional trams, it usually has its own lane. This allows for faster transport without disturbances.

Light rail is well suited for trunk lines of public transport as it provides a much larger passenger capacity than buses. A typical city bus holds 75 passengers. The light rail tram planned for Helsinki is 45 metres long and it transports 225 passengers at time. Modern light rail systems typically use low-floor articulated trams. They obtain electrical current from an overhead line. This also allows building the rail line in street spaces. Light rail systems often utilise vehicles that can be driven in both directions, which eliminates the need for turning loops.

Comfortable travel is a special focus area in light rail design. Modern light rail can be implemented in such a way that the trams are

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185



225



remarkably quiet and cause no noise disturbance to the surrounding environment. The electrical motor of the trams is quiet, and the wheels generate little noise as well. It can be stated that replacing buses with light rail trams will reduce traffic noise.

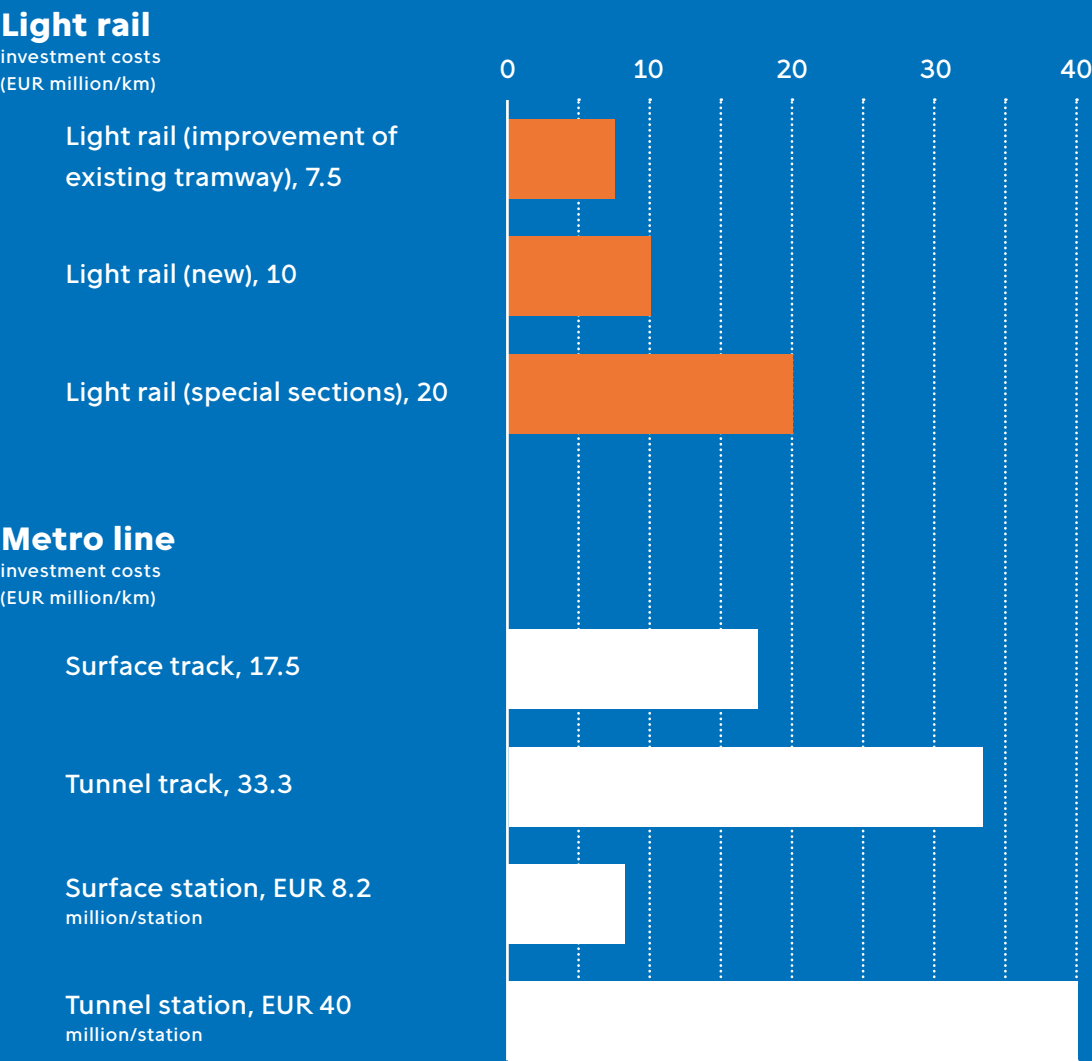
Light rail is faster than traditional trams. Light rail typically has sections where the running speed is 70–80 kph. In addition, there are sections where the speed on street equals the speed of car traffic, and even sections where safe pedestrian walking speeds are used. The average speed is more important than the maximum speed, however. The average speed of light rail lines is more than 20 kph, which is substantially higher than for Helsinki's existing

tram lines, which have an average speed of only approximately 14 kph. Also well-functioning traffic signal priorities have a significant effect on the speed of light rail.

Special attention is paid to safety in the planning of light rail lines. They are planned to be safe for pedestrians and other traffic. The running speed is lower in sections where the line shares car traffic lanes than in sections which are separated from other modes of traffic. Helsinki's current trams are very safe, safer than buses and cars, for example.

Investment costs of light rail

The construction of light rail is clearly less expensive than the construction of a metro line. The rail network study prepared for the Helsinki city plan project gives the following estimate of investment costs.



Light rail is an opportunity to intensify the city structure

Light rail is a transport system which offers an opportunity to densify and solidify the city structure. Light rail does not need as extensive protective zones or as large radii of curvature as heavy rail traffic. Light rail therefore allows constructing housing even close to the rail line.

Raide-Jokeri is a good example of this in Helsinki. Dense housing construction is planned alongside the line in Myllypuro, Roihupelto, Viikki, Oulunkylä, Maunula, Haaga and Pitäjänmäki, for example. The aim is to make the surroundings of stops in particular places which attract workplaces and services in addition to housing.

The light rail only needs a track area approximately 7–8 metres wide, which can be grass-covered, if desired. This allows constructing light rail lines even in quite densely built areas in such a way that they don't damage the urban environment. Light rails have often improved the image of their surroundings, making them more attractive for both housing and business developments. There are numerous examples globally of how property values near light rail lines have increased because the line increases the attractiveness of the area. The light rail is also attractive from the perspective of businesses as it improves accessibility for both customers and employees.

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Light rail is an environmentally friendly solution

Building housing and services along light rail lines can be considered sustainable in many ways. Infill development along light rail lines is sensible as the existing street network and public utility services in the area can be utilised. Infill development also supports or even increases the provision of services in the area. Citizens' need to use their own cars is reduced thanks to the good rail connection.

Light rail is also a good option from the perspective of traffic emissions. Traffic accounts for approximately one quarter of greenhouse gas emissions in the HSL region. Public transport is responsible for approxi-

mately 10 per cent of total traffic emissions in the Helsinki metropolitan area. Cars generate approximately 60 per cent of the carbon dioxide emissions caused by traffic. The climate efficiency of different public transport modes varies depending on the fuel and electricity production method used.

According to HSL's environmental report, the electricity used in commuter trains, metro and trams is produced by means of water power, and wind power will be used in the future where possible. A rail trip therefore generates no carbon dioxide emissions at all, and exhaust gases do not impact local air quality.

Raide-Jokeri and Kruunusillat first in line for planning



The first light rail line for which planning has been started in the Helsinki metropolitan area is the Jokeri line, which is planned to run between Helsinki's Itäkeskus and Espoo's Keilaniemi. The line length is approximately 25 km, 16 km of which is located in Helsinki and 9 km in Espoo. The Jokeri line will re-place the current trunk bus line 550, the most actively used bus line in the Helsinki region.

The need for the Jokeri line has become apparent as the transport capacity of the bus line is not adequate to accommodate the increasing number of passengers. The annual number of users of line 550 has increased rapidly. In 2006, the line had some 3.4 million passengers, whereas in 2014, the number of passengers was already 11.5 million. This means that there

are approximately 39,000 passengers on an average weekday. The punctuality of the line has been compromised, especially at the end of the line, and the short headway causes bus bunching as later departures catch up with earlier ones. It has been estimated that in 2040, Raide-Jokeri will have approximately 140,000 users per day on weekdays. The annual number of passengers will be more than 40 million.

Another planning project related to light rail currently in progress is the planning of the Kruunusillat bridge connection from Helsinki city centre to Laajasalo. The aim of this project is to implement a fluent and competitive public transport connection for the growing Laajasalo district in the form of a light rail line.



Raide-Jokeri at
Käskynhaltijantie street
in Oulunkylä.



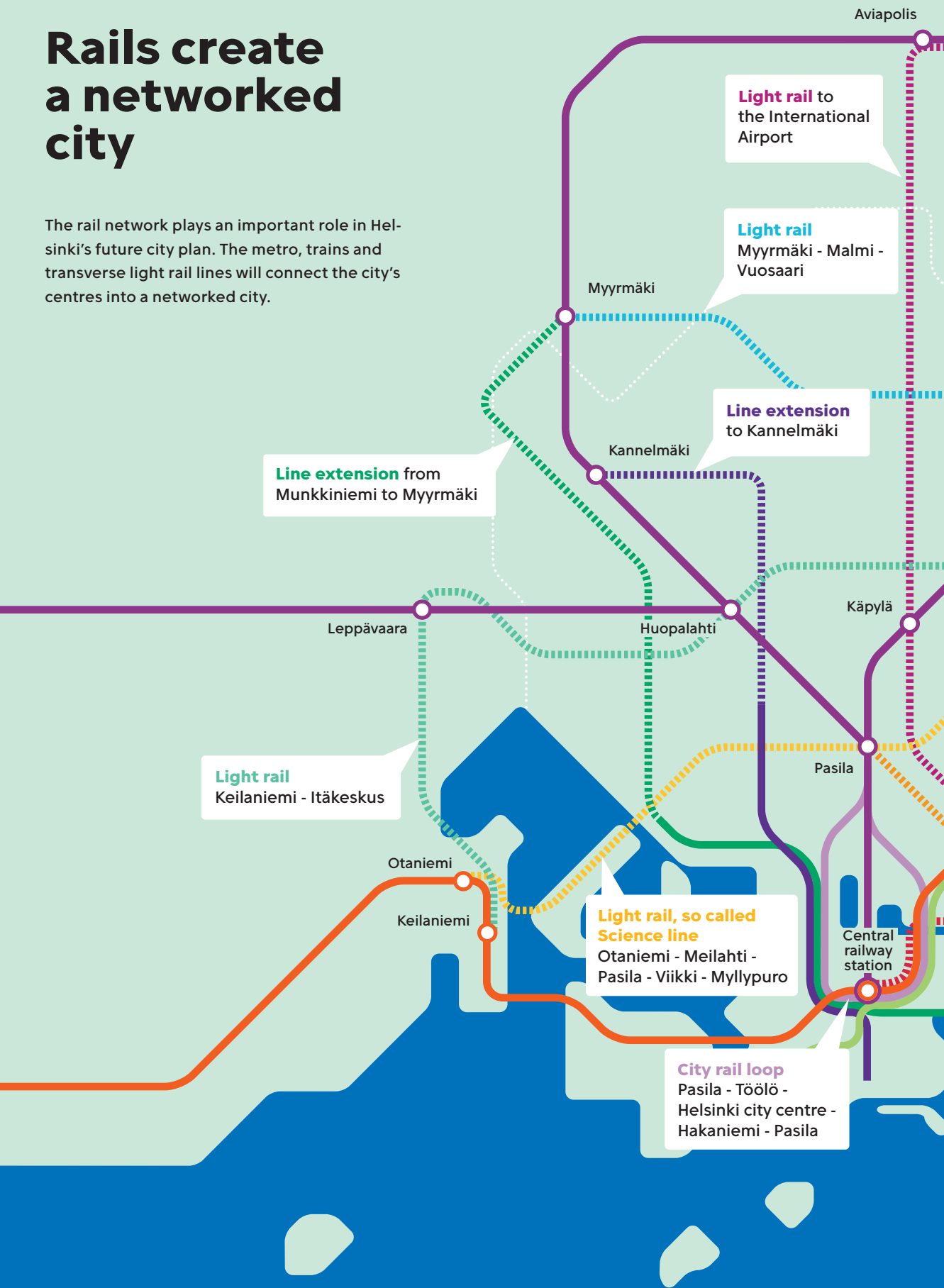


The Kruunusillat
bridges will connect
Laajasalo with Helsinki
city centre.



Rails create a networked city

The rail network plays an important role in Helsinki's future city plan. The metro, trains and transverse light rail lines will connect the city's centres into a networked city.





Key figures of Helsinki's light rail

Carbon dioxide
emissions

0

g/km

Distance between stops
approximately

800 m

Maximum speed
approximately

70

kph

Average speed

25

kph

Gauge

1000

mm

Number of
passengers in a tram

225

Why is light rail faster than a traditional tram?

Light rail



Traditional tram



Route is segregated from other traffic (does not share lanes with cars)



It has fewer stops than the city centre trams



The lines are more direct than in the city centre



The driver does not sell tickets; they have to be bought in advance

Light rail gaining popularity globally

In the past decades, significant investments have been made in light rail in many cities around the globe. Light rail lines have been opened in dozens of cities. Examples include Stockholm, Grenoble, Paris, Strasbourg, Reims, Dublin, Porto, Manchester and Portland, Oregon. Experiences with light rail lines have often been very positive in different parts of the world. As a general rule, they have increased the use of public transport substantially.



Stockholm

Stockholm's orbital light rail line, Tvärbanan, started operating in 2000. The line has been extended in various phases and it now measures approximately 18 kilometres in length and has 25 stops. Tvärbanan mainly runs in its own route separately from other traffic. Several stops also have good connections to the Stockholm metro or local trains. The light rail constructed as a ring thereby supplements Stockholm's radial rail traffic network. The normal frequency for Tvärbanan is 10 minutes, and during rush hours, it's 7.5 minutes. Approximately 60,000 passengers use the line every day.



Strasbourg

The first modern tram line was opened in Strasbourg in 1994. The city now operates a six-line system with a total length of 40.7 kilometres. The system contains 72 stops with an average distance of 543 metres between stops. In Strasbourg trams have their own, usually grass-covered, routes designed for fast running. In Strasbourg the number of passengers has more than doubled in ten years.

Tampere and Turku also considering light rail

In Finland, also Tampere and Turku are seriously considering investing in light rail. In Tampere, the City Council has approved the general plan for the light rail system and decided to proceed to detailed planning. No decision has yet been made on the construction. The general plan for the Tampere light rail system includes two lines, i.e., Lääkärinkatu–Pyynikintori and Hervanta–Lentävänniemi, with a combined route length of 23.5 kilometres. The planned system has 33 stops, and the estimated daily number of passengers is 48,000.

In Turku, the first phase of general planning of the light rail system is ongoing. After a comparison of the possible lines, the City Board decided that in the first phase, the rail lines would run on a three-branch track network from Kauppatori to Runosmäki, Skanssi and Varissuo. The total length of the routes would be approximately 19 kilometres, there would be 33 stops and the estimated daily number of passengers in 2035 would be approximately 22,000.



Visualisation of the Tampere light rail on Itsenäisyydenkatu.

Additional information

Laituri is the Helsinki City Planning Department's information and exhibition space on Narinkka Square. It provides you information about how Helsinki will develop. The location in the very heart of Helsinki near Lasi-palatsi Square and Kamppi centre is superb; Laituri is easily accessible from all directions.

Laituri is open 6 days a week - on Weekdays from 10 am till 7 pm and on Saturdays from noon till 4 pm.

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