

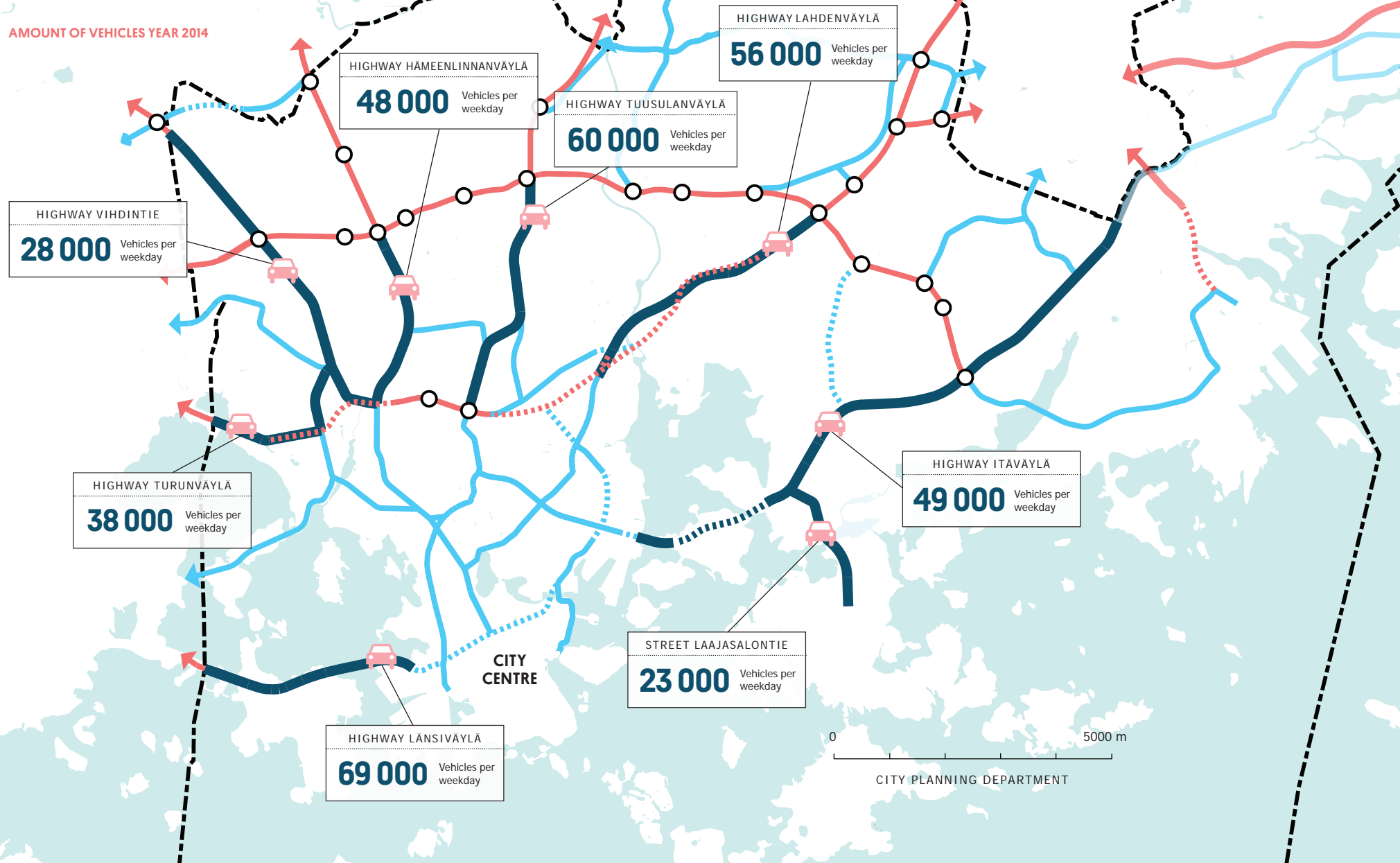
# City boulevards in Helsinki



**City of Helsinki**  
City Planning Department

# Motorway-like entry routes in Helsinki

AMOUNT OF VEHICLES YEAR 2014



## Motorway-like entry routes in Helsinki



### Nationally or regionally important road or street

Road or street serving traffic over longer distances and is a nationally or regionally important route.

### City boulevard

A traffic route developed as a part of a high-quality urban environment in the intensifying city structure. The city boulevard serves drivers, public transport, pedestrians and cyclists. The length and junction solutions are decided during detailed planning.

### Main street

A main city street connecting the local traffic network to the regional or national network.



### Tunnel or covered section of road or street

The location and length of tunnel are indicative. Junction solutions are decided during detailed planning.



### Multi-level junction

A junction which may include multi-level arrangements. Junction solutions are decided during detailed planning, the junction may also be implemented as a one-level solution.

# City boulevards in Helsinki

Helsinki is currently preparing a new City Plan for 2050. The Plan allows for the growth of Helsinki from the current city of 625,000 inhabitants to one with some 860,000 inhabitants by 2050. Also, the Helsinki region is growing as the number of people in the region is expected to grow substantially from 1.3 million to two million. The key strategy is to urbanise the city, which includes extending the inner city northwards, densifying new developments to emphasise a more urban structure, creating a 'network city' of public rail transport and the gradual transformation of motorway-like entry routes in the outer suburbs into 'city boulevards', thereby reducing traffic on the main streets.

The change towards city boulevards will not be easy. In order to work, the boulevardisation requires development of the traffic system. The City Plan highlights the need to extend the rail public transport network, especially the development of new cross-town light-rail trams from east to west. This will clarify the prioritisation between different modes of transport and give greater priority to public transport. Helsinki aims primarily to encourage sustainable modes of transport, such as walking, cycling, and using the metro, trams and commuter trains, and of course, buses and ferries.

This brochure illustrates these changes and provides a comprehensive idea of why the planning of city boulevards is considered essential to the overall objectives of the Plan and what opportunities it offers for Helsinki and what challenges still remain ahead.

# Versatile City — replacing the motorways

**The desire to support** the role of Helsinki's urbanisation and the extension of its city centre is the underlying idea behind the concept of city boulevards. The preparation of Helsinki's City Plan 2050 explains the importance of the city centre to reinforce competitiveness and achieve greater agglomeration benefits. These economic benefits help maintain Helsinki's attractiveness within the context of globalisation. This is achieved in places where enough people carry out dif-

ferent economic growth. Interesting cities attract a creative and skilled workforce which is necessary for a city to succeed in the international competition between cities.

**In Helsinki**, the most natural way to create versatile urban space is to urbanise its city structure and expand the city centre. The Old harbour areas downtown, such as Jätkäsaari and Kalasatama, are currently being redeveloped for new housing and workplaces. Sim-

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## BUSINESS OPERATIONS IN WITHIN THE CITY-CENTRE AREA OF HELSINKI IN 2013

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**44 574**

number of businesses

**249 200**

number of company employees

**79,3 mrd €**

turnover of companies

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ferent sorts of activities in a varied urban environment. The fact that three quarters of the employees of companies in the Helsinki region are located in areas totalling approximately one per cent of the area of the region is an example of agglomeration.

**A versatile urban** city is a combination of innovative housing, diversity in workplaces, high-quality services and a varied street network. According to research, varied city space is what is found interesting and what creates innovation, well-being and

ilarily, the surplus to requirements train depot in Central Pasila, some 3 kilometres to the north of the downtown, will be rebuilt. These changes will bring nearly 50,000 more people into the centre and some 30,000 new workplaces will be created. In the future, the most obvious opportunities for expanding the city centre are alongside the motorway-like routes in the outer suburbs. New housing, business premises, parks, trams and other services for citizens will be built along them transforming the routes into new boulevards and urban streets.



CONGESTION WILL REMAIN MORE OR LESS THE SAME AS NOW

# Effects of city boulevards on traffic in Helsinki



**LESS CAR TRAFFIC**  
into the city centre



**MORE TRANSVERSAL TRAFFIC**  
east to west

1990

**30 000**

people entered the city centre with car in the morning. Helsinki had 490,000 inhabitants.

2014

**24 000**

people entered the city centre with car in the morning. Helsinki had 612,000 inhabitants.

**Car traffic into** Helsinki's city centre during the morning rush hours from 6 a.m. to 9 p.m. has decreased clearly from the record year, 1990. Transverse traffic, on the other hand, has increased markedly. In particular, traffic on the bypass Ring Road I has increased substantially.

**RING ROAD I**  
Traffic has increased by more than

**60%**

since 1993



## MANY MOTORWAYS DON'T FULFIL THEIR ORIGINAL PURPOSE.

**Helsinki Transport** Development Programme prioritises different modes of transport. The needs of pedestrians are given first priority. Thereafter cyclists, public transport, goods transport and delivery as well as cars are considered, in this order. Transformation into city boulevards is therefore not possible unless the conditions for walking, cycling and public transport are improved simultaneously. The creation / implementation of a comprehensive light rail network is equally important.

**The motorways** within the city structure were planned at a time when the city was much smaller than it is now. Nonetheless, the motorways were never extended into the city centre itself. Many of them don't even fulfil their original purpose as quick connections. So, as the city grows, the typical development path is to reduce the significance of these city highways further away from the central areas with the clear aim to reduce car usage. The expansion of the city centre into these former motorway-like areas offers the opportunity to urbanise the city structure. With the exception of the highway Itäväylä in the East, all the other highways planned to become city boulevards have one thing in common: looking from the centre, the highest traffic volumes are on the north side of the bypass circular road Ring I, which acts as the boundary for the planned transformations up to 2050. Traffic will then decrease gradually as you approach the city centre.

**The effects** of boulevardisation have been assessed in various surveys during the planning process. The Target Impact Assessment (TIA) of city boulevards (2014) used the actual 'visualised' strategic goal as the starting point, casting back to the current situation. It determined the actions and changes in planning policies required in order to achieve the target. The Assessment of Regional Effects of City Boulevards studied the effects on regional traffic patterns but also on the city structure and the economy. The overall transformation was studied in more detail in the Traffic Survey of the Highway Hämeenlinnanväylä Boulevard.

**According to** the assessments made, the effect of boulevards on traffic is moderate. Depending on the approach, travel times increase by a couple of minutes. As the entry routes are already quite congested, the effect on travel times is quite minor during rush hours as the congestion will remain more or less the same as now. During daytime, however, lower speed limits and traffic lights will slow down boulevard traffic compared to the current situation. All entry routes already differ in their character. The future boulevards will be planned accordingly. For instance, the driving times can be affected by the different planning solutions, such as the number of junctions and lanes.

# Expansion of the city centre and the Regional Effects



**Transformation into** city boulevards has significant positive financial effects for the entire Helsinki region and even at the national level. The share of the present city centre's gross national product of the entire Helsinki region is approximately 45 per cent, corresponding to EUR 30 billion annually. The city boulevards would expand this area of top productivity markedly.

**The expansion** of the city centre and densification of the city structure provides

## BENEFITS OF URBANISATION

- › Large local market
- › Large labour market
- › Versatility of business operations
- › Good accessibility
- › Better income level
- › Versatile cultural and shopping opportunities
- › Innovative and versatile housing options



opportunities for the creation of workplaces utilising the agglomeration benefits of a dense city, such as knowledge-intensive business services, information services and culture, entertainment and event services. Such jobs are not created in a dispersed, sprawled urban structure. From the perspective of the entire region, the urbanisation of the city structure and the expansion of the city centre is more beneficial for the urban economy than constructing the corresponding volume at the edges of the city-region.

**Transformation into** boulevards is not possible, however, without simultaneous actions to reduce car traffic and usage. Such

SASCHA KOHLMANN / FLICKR



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## COMPREHENSIVE RAIL NETWORK IS NEEDED.



JUSSI HELSTEN

actions include, for example, implementing a pricing structure for car traffic and increasing the price of parking. Transformation into boulevards also needs a comprehensive rail traffic network and well-functioning park and ride arrangements. Thanks to these actions, public transport as well as walking and cycling will become competitive alternatives to cars. After these traffic policy actions have been implemented, transformation into boulevards will not lead to significant congestion.



# Streets, housing and business premises just like in the city centre

**Could the existing** highway Tuusulanväylä (northern approach to the International Airport) resemble, for example, a street like Mäkelänkatu (an urban thoroughfare bounded by apartment blocks) in the future, with trees and street-level shops? And does highway Hämeenlinnanväylä (motorway link to the city of Tampere) turn into a vibrant city street like Mannerheimintie that runs through the heart of the city centre? Mäkelänkatu, Mannerheimintie, or the busy urban street Hämeentie are all good examples of existing, vibrant city boulevard-like main streets in Helsinki, which have been constructed over several decades.

**Now is the time** to think about what the future city boulevards could be like. The aim is to create vibrant, cosy, densely built

streets with new neighbourhoods alongside them. There would be housing, lots of business premises, shops, restaurants, cafes, small and medium sized companies alongside the city boulevards. Especially walking, cycling and trams would become more attractive modes of transport.

**Is this a realistic goal?** Along the existing entry routes into the city there are already a variety of commercial operators. It is noticeable that their business sector structure differs from the one in the city centre. Along the city streets, more than half of the vendors, shops and businesses offer various services, and one third is trade. According to calculations, 100 metres of high street-like boulevards generate approximately four million euros worth of sales annually, half of which comes from trade and the other half from services. The structure of some of the main inner city-wide streets can be considered as the minimum goal for the new city boulevards.

## BENEFITS OF A VARIED URBAN CITY

- › Good accessibility
- › Feeling of safety – a mixed city never sleeps
- › Visually interesting
- › Offers many living and working options and services
- › Street Life where people encounter one another

**The expansion** of the city centre is a great opportunity for Helsinki. It is important to succeed in creating genuinely interesting, urban and varied boulevards with neighbourhoods full of character. The streets must be interesting also to pedestrians, the architecture of the buildings must be of high quality and public space needs to be pleasant and attractive.

# Boulevard city space has to be planned carefully

**The challenge** in the construction of boulevards is how to create a healthy, safe and pleasant street space. The street level is a challenging place to live both alongside the boulevards as well as in the side street, but living quarters are desired in order to create a vivid street space.

**With the current** traffic emissions, all the planned city boulevards are at risk of exceeding the annual threshold value for nitrogen dioxide. Also, the daily threshold value for airborne and fine particulates may be exceeded if continuous attention to the prevention of street dust is neglected. Dense street canyons reduce ventilation and as traffic volumes increase, street dust plumes increase likewise.

**The annual average** limit for nitrogen dioxide, i.e., 40 micrograms per cubic metre, is currently exceeded in Helsinki in shaft-like environments. If the share of heavy traffic

is high, the threshold value is likely to exceed already with low traffic volumes. It is challenging to determine accurate limit values to meet the air quality criteria for city boulevards.

**Apartment block** structures for new housing on the boulevards and the placement and height of buildings have a significant effect on air quality. Planning well-ventilated block structures which do not prevent mixing of air flows is recommended. In addition to apartment blocks, the traffic volume, notably the volume of heavy traffic, affects the air quality. The traffic volumes need to be kept as low as possible in order to be able to fulfil the air quality criteria.

**The intake of fresh air** supply for buildings has to be located as high and far away from the emission source as possible as the concentrations caused by motor traffic become reduced at higher elevations.

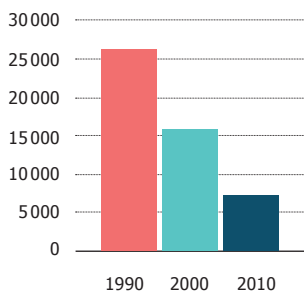
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**DEVELOPMENT OF LOW-EMISSION TRAFFIC  
MUST BE PROMOTED.**

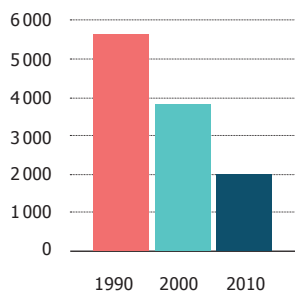
## ROAD TRAFFIC EMISSIONS IN HELSINKI 1990–2010

Source: "Helsingin ympäristötietästo" / Helsinki environment -database

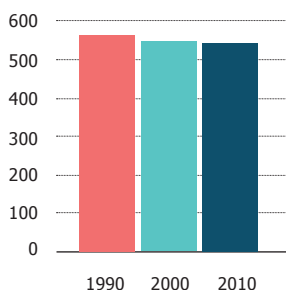
CARBON MONOXIDE (t/year)



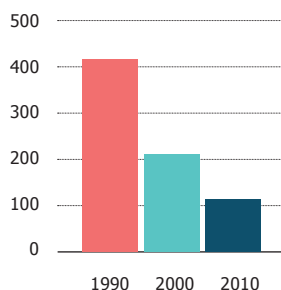
NITROUS OXIDES (t/year)



CARBON DIOXIDE (1000 t/year)



PARTICLES (t/year)



Business premises could be located on the ground and at first floor levels instead of apartments so as to minimize the emission nuisance to inhabitants. Fresh air filtering solutions can be used to improve the air quality indoors.

**The measures to** tackle the health impacts of poor air quality must also be influenced by dealing with the reasons for poor air

quality, i.e., traffic emissions in particular. Pricing of vehicle traffic and parking, as well as the favouring of public transport rail traffic, are all important conditions from this perspective. In addition, the development of low-emission motor traffic must be promoted. Euro-directives for heavy traffic will reduce the emission level considerably already in the near future. Also electric and hybrid cars are expected to become more common.



# Driving speeds must be kept moderate

**In the city boulevard** visions, it is proposed that considerable volumes of new, dense construction are placed alongside the main streets. This has to be taken into consideration from the perspective of road safety as well. The boulevard plans must also aim to acknowledge functions that naturally attract pedestrians and cyclists such as schools, day-care centres and nearby services. The best practice is that users should not need to cross the main street.

**Also, providing** alternative through-drive passages for the users of the main streets requires to be avoided when planning the

street network. Helsinki's city centre provides several good examples of areas where through-traffic is prevented, such as in the city centre districts of Töölö and Kallio.

**Where city centre-like** operations are planned alongside city boulevards, structural means should be used to decrease driving speeds to make the routes suitable for pedestrian and bicycle traffic. A lower speed limit alone is not adequate. The boulevards should create a traffic environment which supports the observation of the speed limit.



SERUM ARKITEHDIT

# A comprehensive light rail network is being planned

**A rail traffic network** survey has been implemented within the preparation of the City Plan 2050. This is a strategic traffic system-level survey evaluating the direction into which the public transport system should be developed. The implementation of city boulevards requires a functional and efficient public transport system.

**The most favourable** option as the basis of the public traffic trunk network and the further planning of the City Plan has been determined on the basis of the assessment of effects. In terms of cost-efficiency, the option based on the development of an over-



**SPACE  
IS RESERVED FOR  
LIGHT-RAIL.**

ground rail network seems to be clearly the best option studied.

**Based on the observations**, it seems that the area inside the bypass Ring Road I would be the sensible area to implement in the first stage, i.e., the same area as would be allocated for the city boulevards. In addition, it seems justified to connect the current transversal bus line 560 (which goes from Vuosaari in the eastern periphery of the city to the western neighbour, Espoo) eastbound of the area of Malmi (in the northern part of the city) to the light rail network.

**The light rail network** is not implemented by merely extending the current rail lines. Adequate space is reserved for new light-rail constructed in the expanding city centre and a traffic signal priority system is implemented to ensure the speed and thereby the competitiveness of the light rail network. The rail carriage sizes and schedules will be studied in more detail.

## **WHY IS A LIGHT-RAIL FASTER THAN A TRADITIONAL TRAM?**

- › It has its own route (not the same one as for cars)
- › It has fewer stops than the city centre tram
- › The driver does not sell tickets; they have to be bought in advance
- › The lines are straighter than in the city centre
- › Light rail traffic has traffic signal priority

# A growing international phenomenon

**Helsinki is not the only** city in the world which is seriously considering the future of motorway-like highways in the urban environment. There are global examples of implemented or ongoing projects in which motorway-like environments have been transformed into more urban and pleasant areas. The trigger for change has normally been the poor condition of the routes and

the approaching need for expensive renovations. In Helsinki, however, the matter has been approached from a more strategic and comprehensive angle than in most of the other cities.

**Below, a couple of similar** projects elsewhere in the world are presented briefly.

STEPHEN REES / FLICKR



## Embarcadero Highway

SAN FRANCISCO, UNITED STATES



A massive earthquake hit San Francisco in October 1989, damaging the Embarcadero Highway in the city centre. The motorway constructed on a bridge had been completed at the end of the 1950s, and it effectively isolated the city from the seashore. The renovation of the motorway after the

earthquake would have been very expensive. Instead, the decision was made to demolish the motorway and to replace it with a boulevard street on the ground level. This opened up a better connection to the shore from the centre, created a more pleasant urban environment as well as lots of new public space and parks. Also some 3,000 apartments and lots of office space have been built near the new boulevard. The increased use of rail traffic has been the most important effect in terms of traffic. In car traffic, travel times have increased slightly, mainly for longer distances.

## Cheonggyecheon

SEOUL, SOUTH KOREA



A four-lane motorway in two storeys was built over the former Cheonggyecheon River in Seoul, South Korea in the 1960s and



1970s. By the 1990s, the motorway was in such a poor condition that the need to renovate it was discussed. The demolition of the motorway came up as an alternative solution. A plan for the demolition of the motorway and the restoration of the river was completed in 2003. The project progressed rapidly, and the route had been demolished and the underlying river had been opened up in 2005 already. The demolition of the motorway and the restoration of the river created lots of positive effects. The project created new attractive urban space. The riverside is now very vibrant and popular both among citizens and tourists. The value of properties in the area has also increased markedly. The project also led to less motor traffic and an improvement in air quality.

### **McKinley Avenue**

MILWAUKEE, UNITED STATES

The City of Milwaukee replaced the 1.5-kilometre elevated Park East Freeway motorway with a boulevard in 2003. Park East Freeway was built in the 1970s as part of the planned ring road around Milwaukee's commercial centre. The ring road was never fully built because of strong opposition, and the motorway remained only in partial use. The traffic volume was 54,000 vehicles on weekdays. The motorway separated the north part of the city centre from the remaining centre, and keeping property values in the area low. The motorway was demolished in 2002 and the boulevard was taken into use in 2003. This freed up 10.5 hectares of ground for private developers. The boulevard seamlessly connects to the

surrounding street network, a new bridge has been built across the Milwaukee river and the pedestrian street in the city centre has been extended. There are three new districts in the newly constructed area with offices, retail sales, entertainment services and housing.



DAVY BELLINSON

### Avenue Jean Mermoz

LYON, FRANCE



In Lyon, France, a motorway-like elevated entry route was transformed into a boulevard over a distance of 1.2 kilometres in 2010–2012. The previous route separated areas from the remainder of the city and led to a decrease of property values. Goals of the transformation into a boulevard included changing the area surroundings, the route into an attractive gateway into the city, to reduce traffic, to create new housing options and to provide new services. In addition, the project included the demolition of six blocks of flats in poor condition, the renovation of another three and the construction of 360 new apartments as well as squares, parks and a shopping centre. The project was started in 2010, and new buildings are currently being built. The project is due to be completed in 2017.

## Network of public transport 2050



Existing railway and metro lines and future expansion of railway and metro lines



Crosstown lines



Radial lines and Archipelago line

City of Helsinki,  
City Planning Department  
Graphic design: Prakt  
Printing house:  
Painotalo Plus Digital Oy



# Network of public transport 2050

