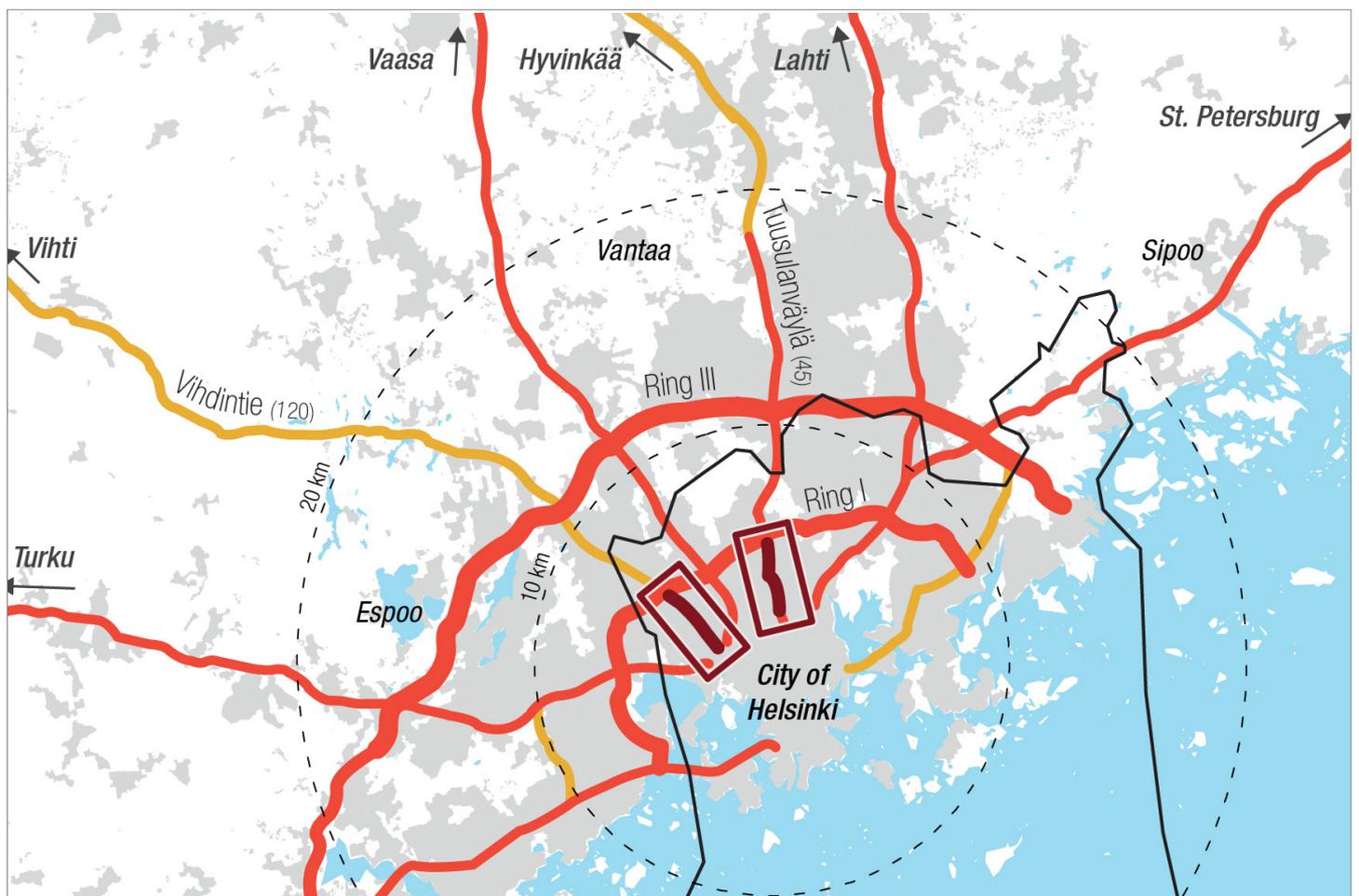


HELSINKI. CITY BOULEVARDS STRATEGY AND PROJECTS



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HELSINKI

CITY BOULEVARDS STRATEGY AND PROJECTS

Case Study Report for the METREX *From Roads to Streets* Expert Group
December 2020

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FOREWORD

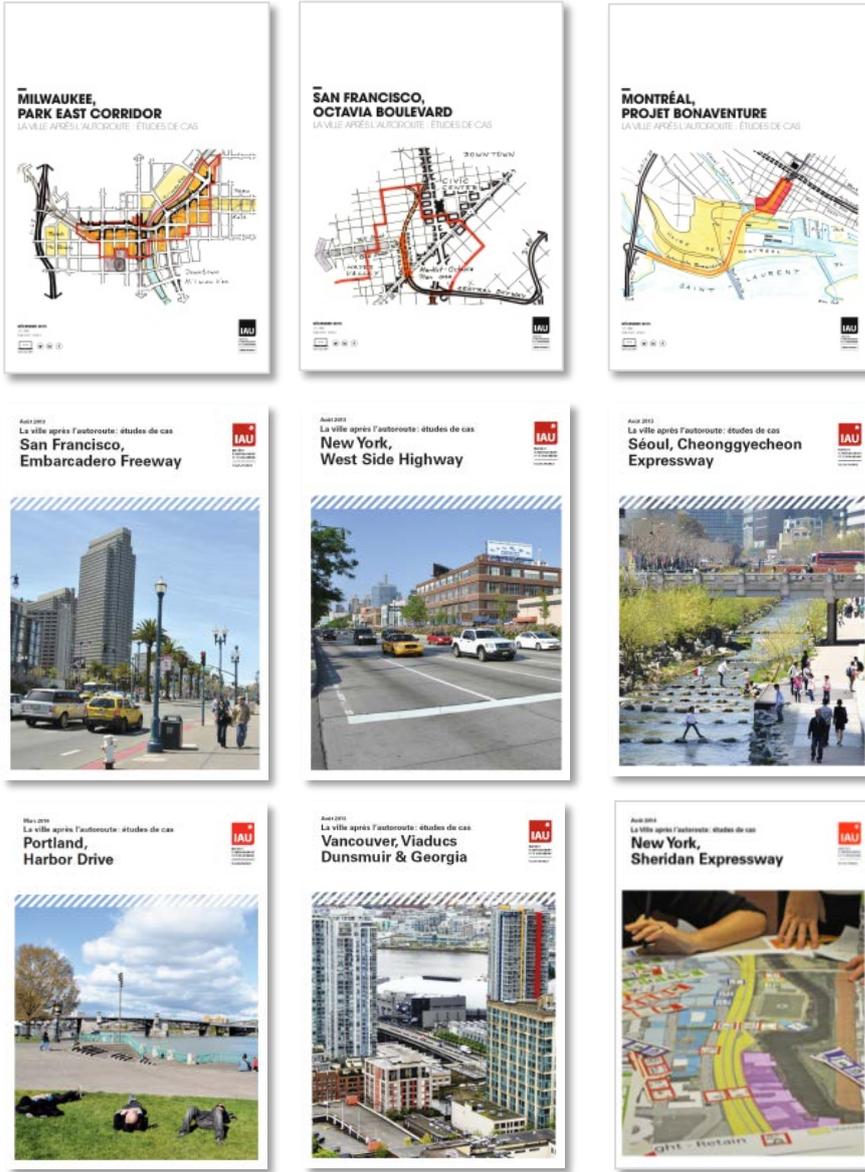
CONVERTING HIGHWAYS, RETHINKING CITIES

All over the world, cities and regions are confronted with the now-ambiguous heritage of extensive networks of highways and their fragmented (sub) urban landscapes. Because they were built they tend to be used: so these major road infrastructure systems play a role in moving people and goods within metropolitan areas, even if they may not be the most efficient way to do the job.

Highways with segregated interchanges create physical barriers within the cities and in their fringes; they limit pedestrian and bicycle movement and sever access to waterfronts and nature; they reinforce the social deprivation of roadside housing neighbourhoods and hinder regeneration efforts. The high volumes of traffic these highways promote generates noise, dust and air pollution, raising health and social justice issues. By providing seemingly easy access for cars and heavy-goods vehicles, extensive highways networks generally tend to encourage car-centric lifestyles, urban sprawl, mono-functional uses of space which in the end leads to more traffic and congestion.

In the last decade, social and economic patterns have changed, resulting in growing aspirations for the vibrancy of city life and car-free living in denser, mix-use, neighbourhoods served by more flexible, multi-use and greener public spaces, while keeping in close contact with nature. Cities and metropolitan regions respond to these trends by redeveloping former industrial areas and car-oriented urban fringe with more intensive land-uses, with the support of new metro, tramway or expressbus lines. These projects are increasingly becoming catalysts of green development strategies; sustainable urban mobility plans and climate-neutral policies.

The in-Covid and post-Covid contexts reflect a rapid and significant change in mobility, housing, working and leisure patterns, opening a new window of opportunity to reset our urban development and transport models. Highway transformation can help transitioning cities and regions towards more liveable, just and climate-neutral development patterns.



International case study reports on highway transformation
© L'Institut Paris Region

FROM ROADS TO STREETS METREX EXPERT GROUP



The METREX EUROCITIES URBACT Learning Platform in March 2020
© L'Institut Paris Region

Learning from international experience

Many cities –including Portland, New York, Seoul and, recently, Paris– have successfully removed or transformed stretches of urban highways, replacing them with multi-use boulevards lined with mixed-use new developments or even new linear parks and promenades. Why are they doing that? What happens with the traffic? What are the benefits and costs? Do these projects get public support?

To find answers to these kind of questions and inform ongoing projects and reflections in the Paris region, I initiated in 2010 a long-term research programme on *Metropolitan Avenues*¹ at the *Institut Paris Region*, the urban planning and environmental agency for the Paris metropolitan region².

As part of the programme, I examined over twenty highway-to-boulevard experiences on three continents (America, Asia and Europe). Of these, nine cases were studied in depth on-site, with their reports published in French:

- Seoul *Cheeonggyecheon Expressway* (2013)
- San Francisco *Embarcadero Freeway* (2013)
- Vancouver *Viaducts* (2013)
- New York *Westside Highway* (2013)
- Portland *Harbor Drive* (2014)
- New York *Sheridan Expressway* (2014)
- San Francisco *Octavia Boulevard* (2016)
- Milwaukee *Park East Corridor* (2016)
- Montréal *Projet Bonaventure* (2016)

The most significant result from this research is that these strategic metropolitan projects are complex and conflictual, but have long-term positive impacts on traffic and mobility, city regeneration, and the quality of the urban environment, often far beyond the project boundaries. A summary of results in English can be found in a paper called *Reinventing Cities: From Urban Highway to Living Space*³ (2018) reproduced in the Appendix of this report.

This research has influenced projects in France, including the Paris Seine Banks pedestrianisation (2016) and the ongoing reflections on the future of the Paris Périphérique and the region's highways, with the organisation of an International Competition on the *Future of Grand Paris's Highways* in 2018⁴ being one of the first steps.

The METREX *From Roads to Street* joint learning platform

In March 2020, METREX, the Network of European Metropolitan Regions and Areas, launched "*From Roads to Streets*", an expert group to serve as a platform for the exchange of knowledge and experience on the transformation of urban highways into city streets (places to move, to stay, to live, and to work in), as "*a key measure to transform the urban fringes of metropolitan cities and regions*"⁵. The Institut Paris Region is the lead partner.

The METREX *From Roads to Street* group works in close cooperation and support of the EURO CITIES "*Urban Regeneration in the City Fringe*"⁶ working group created in April 2020 with eight participating cities: Amsterdam, Brussels, Düsseldorf, Lyon, Prag, Vilnius, Göteborg, with Oslo as the lead partner⁷. The purpose of this group is to exchange experiences on the conditions and methods for transforming urban fringes in three main directions: overcoming highway barriers, creating quality public spaces, and managing radical land-use mix.

¹ *Avenues métropolitaines*. <https://en.institutparisregion.fr/know-how/international/rethinking-post-carbon-cities.html>

² Former Institut d'Aménagement et d'Urbanisme de la Région Île-de-France (IAU ÎdF). <https://en.institutparisregion.fr/>

³ **Urban Design #147, Urban Design Group UK, Summer 2018**

⁴ *Les Routes du futur du Grand Paris*, Forum Métropolitain du Grand Paris, Apur, Institut Paris Region, 2019.

⁵ Henk Bouwman, General Secretary of METREX. www.eurometrex.org

⁶ *Edge of Centre Transformation II, Urban Regeneration in the City Fringe*, EURO CITIES, April 2020.

⁷ Pernille Grimeland Røsvik, Project leader, with Jørn Roar Moe, Head of Planning and Peter Austin, Planning Advisor, City of Oslo.

The METREX *From Roads to Street* group aims specifically to further investigate the question of why and how converting traffic-oriented highways into streets could contribute to an environmentally friendly mobility, help design walkable, safe, socially balanced neighbourhoods, and be a driver for the revitalisation and intensification of fragmented, mono-functional, city fringes. The group draws upon the experience and expertise of its members in this field, and brings a regional, wide angle, perspective in the discussion.

Both METREX and EUROCITIES groups work in collaboration with a third network, the URBACT III 'RiConnect' action planning network, which consists of eight metropolitan and transport authorities: Porto Metropolitan Area, Gdansk-Gdynia-Sopot Region, Krakow Metro Region, Thessaloniki Region, Amsterdam Regional Transport Authority, Grand Paris Metropole, Transport for Greater Manchester, with the Barcelona Metropolitan Area (AMB) as the lead partner⁸. *RiConnect* proposes rethinking the mobility infrastructure in combination with metropolitan and local planning, to reconnect people, neighbourhoods, cities, and natural spaces.

These three networks are joining forces to share knowledge, experience, and expertise on these complex issues, in order to strengthen strategic and creative planning capacities of cities and regions. The idea is for planners from different horizons both "to learn through examples, discussions and presentation of projects" and "to learn by doing, through participation of group members in the local reflection and planning processes"⁹.

The European Union's policies, together with national government strategies, plays a major role in the planning, programming, and financing of highway networks in our cities and regions. The joint reflection of the three networks aims at raising their awareness of the social and environmental impacts of these policies and the need to shift funding streams towards their environmental integration and urban transformation.

The networks' joint learning platform relies on a series of events, both online and on site, such as peer to peer cooperation workshops; multi-actor transnational seminars; site visits; hands-on studios; as well as *ad hoc* and partner conferences.

The common work programme of the networks will cover a period of three years, with a final international conference anticipated in 2023 and intermediate events planned in 2021 and 2022.

Despite Covid-19 constraints, all three networks are now actively working after holding their (joint) kick-off meetings in early 2020: URBACT *RiConnect* (phase II) in Manchester (January 30-February 1), METREX online (March 30) and EUROCITIES online (June 24).

A case study-based learning process

The knowledge-based learning process is based on case studies of ongoing projects of highway transformation in different European partner cities. In-depth analysis and transverse comparisons are crucial to get a common understanding of local issues, strategies, planning approaches, reflections, and conflicts. Comparing scales, ambitions, framework policies, planning processes, and delivery instruments, can nurture the creative thinking of professionals from all networks to help find innovative and bold answers to the questions raised.

To trigger the process, the Institut Paris Region initiated a comprehensive research based on the voluntary participation from cities and regions as part in one of the three networks.

In 2020, four case studies of urban and highway transformation projects have been analysed with the help of local colleagues (many thanks to all contributors!) with the draft research reports soon to be published:

- Helsinki. *City Boulevards Strategy and Projects –THIS STORY*
- Oslo. *Rethinking City Fringe Highways. Hovinbyen and Østre Aker Vei Projects*
- Lyon. *Regaining the Riverfront. Transforming M6/M7 Highway Corridor*
- Brussels. *From Expressway to Boulevard. Delta-Herrmann-Debroux Project*

⁸ Joan Caba, Project Leader, Urban Planning Department, Barcelona Metropolitan Area.

⁹ *Urban Regeneration in the City Fringe Project Plan*, EUROCITIES-City of Oslo, March 2020. Revised Sept. 2020.

All draft reports have been written, illustrated, and mapped in way that can help understanding the local conditions, comparing projects together and learning from them. They share the same framework:

- Background: geo-historic context; current issues
- Strategies: urban development and mobility; climate-neutrality
- Project: highway transformation planning and delivery
- Discussion: questions and suggestions about the strategy and project
- Takeaways: first learnings to fuel discussions of the working groups

On top of these cases, we have started to document and map highway transformation ongoing processes in seven other cities and regions in Europe:

- Barcelona. *C-245 Road Integration Project/Busway 8*
- Birmingham. *Breaking the Concrete Collar A38/Snowhill Masterplan*
- Gothenburg. *Dag-Hammarskjöld Boulevard/Frolunda Project*
- Nantes. *A831 Highway Conversion/Busway 4 Project (delivered)*
- Paris. *A186 Highway Removal/T1 Tram Boulevard Project*
- Porto, *N12 Ring Road Improvement Project*
- Warsaw, *John Paul II Avenue Project*

In 2021, a comparative summary analysis based on these 4+7 cases is planned as part of our joint METREX EUROCITIES URBACT learning platform. The takeaways from these projects, and others perhaps (cities and regions are welcome to join!), should fuel the discussions and orient our work agenda for the months and years to come.

This report is about the bold strategy of the City of Helsinki to gradually convert all penetrating boulevards into mix-use city boulevards. It tells the story of the innovative research and planning process, and the way this project, which was at first opposed by national and regional authorities, is now getting implemented.

In wider perspective, this research is about the challenges, constraints, potentials and conditions facing a city attempting to transition from a functionalist-oriented urban development pattern to a more a more mix-use, pedestrian-friendly, human-centred, ecological urban design structure.

I hope you will find food for thought and action in this report.

Paul Lecroart
Chair of the METREX *From Roads to Streets* Expert Group
December 2020

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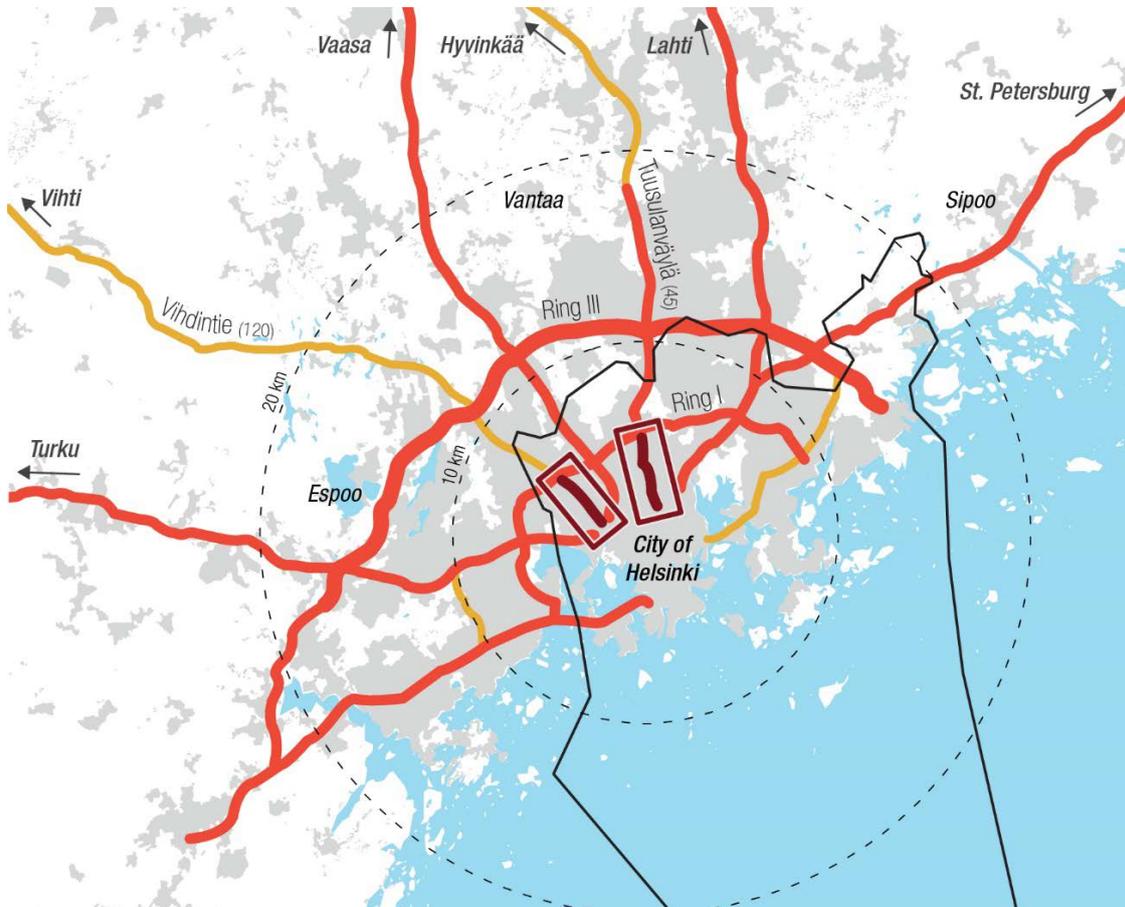
VIHDINTIE-HUOPALAHDENTIE AND TUUSULUAN BOULEVARD PROJECTS



Artist vision of a City Boulevard
© City of Helsinki/WSP



Helsinki city centre looking west with the Central station at centre, in 2010
 Harbour urban redevelopment sites (Kalasatama bottom right, Jätkäsaari top left) and Länsiväylä Highway (top centre)
 © Pöllö / Creative Commons



The Vihdintie- Huopalahdentie and the Tuusulan urban highways
 © OpenStreetMap, City of Helsinki, Institut Paris Region

INTRODUCTION

With a metropolitan population of almost 1.7 million¹⁰ and 656,000 inhabitants in the city itself¹¹, Helsinki is Finland's major urban hub as well as the country's most significant political, economic and cultural centre. Located on the Baltic Sea, the city is a major national gateway for maritime traffic, with passenger and goods traffic being in turn discharged in the heart of the city onto an extensive regional highway.

After the Second World War, Helsinki's development turned from urban to suburban, guided by the functionalist zoning principles with a strong reliance on car-based infrastructure. From 1960 onwards, regional organisation was based on large housing suburbs separated by forest corridors and connected to the centre by highways and rail. Today, this low density decentralised heritage is challenged by people's aspiration for more vibrant ways of life and by the need to find space for a growing economy and population: the City of Helsinki's 2016 Masterplan advocates for the emergence of denser, mixed-use neighbourhoods, with most urban facilities and services easily accessible within walking or cycling distance.

The transformation of Helsinki's highways and expressways into urban "city boulevards", also known as "boulevardisation", appears as a core tool to achieve this density-oriented development policy: municipal officials indeed plan to cater for one third of future urban growth through the regeneration of areas located along these road corridors.¹² This strategy will of course necessitate a radical overhaul of the roads' design, function and characteristics inside the Ring I highway. The Vihdintie and the Huopalahdentie highways, which are located in the city's northwestern part, will be the first ones to undergo such transformation, with the Tuusulan expressway linking the city centre to the airport being second.



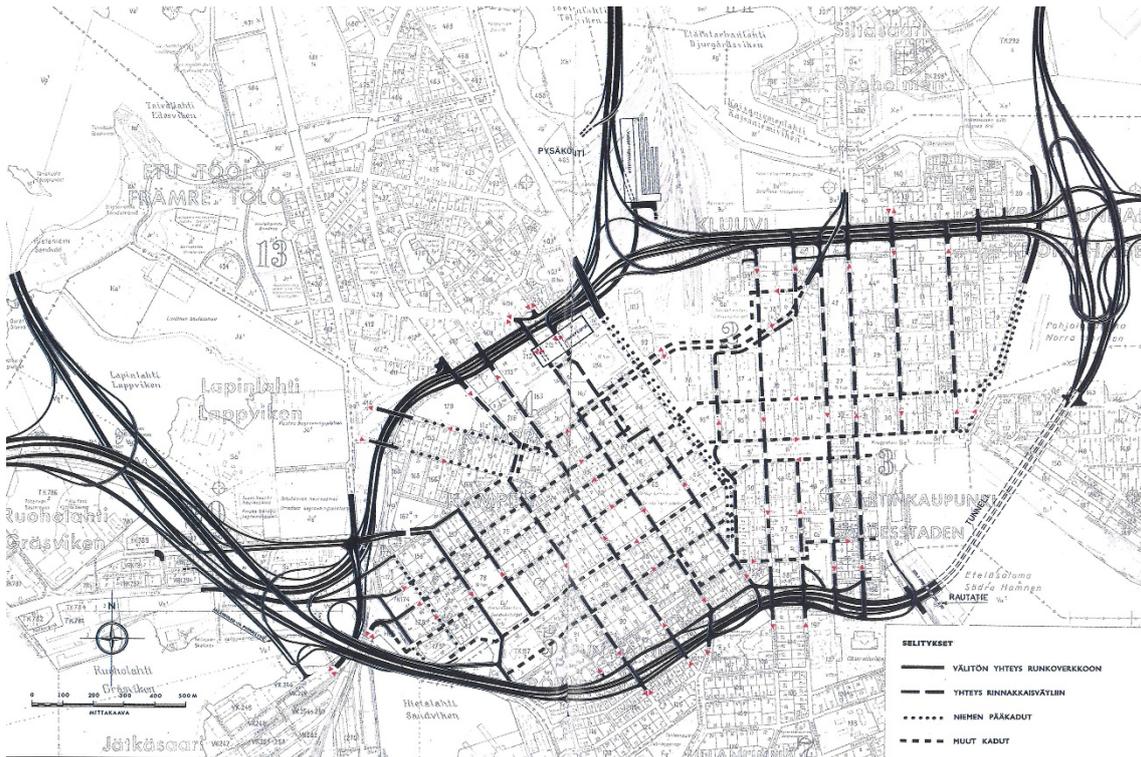
The Lansiväylä (Western) Highway with its Bus & Taxi reserved lane and unbuilt green buffer zone on each side

© Paul Lecroart / Institut Paris Region

¹⁰ Eurostat statistical definition of Helsinki's metropolitan region. The Helsinki-Uusimaa administrative region has about 1.5 million.

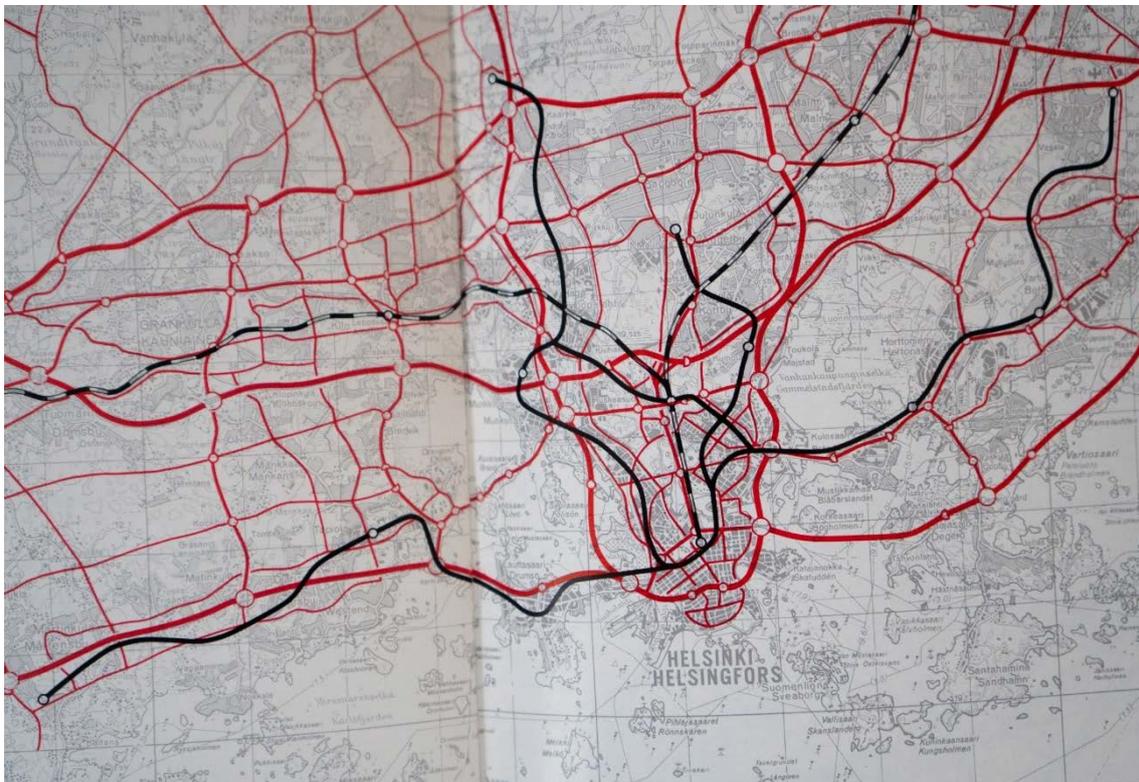
¹¹ Tilasokeskus, 2020

¹² City of Helsinki (2017), *Helsinki City Plan*, p.5.



The 1968 Helsinki Traffic Plan

It projected the demolition of large parts of the city centre for highways connecting the suburbs together, but was later abandoned
 © City of Helsinki Archives / Wilbur Smith & Ass / Pentti Polvinen



Helsinki Transport Plan of 1968 inspired by American highway planning

An extensive highway system (in red) was proposed with 3 east-west expressways and Ring roads suggested. Many sections of this network was built and is now proposed for de-struction. Rail network appears in black © City of Helsinki

1. Background: From Highway-City to Network City

1.2. Post-War Functionalist Planning in Helsinki

Up to the 1950s, most of Helsinki's urban development took place within the inner city and relied on the demolition or the modernisation of existing buildings. In 1950's the theory of suburbs became the norm in Helsinki and had a great influence on the 1960 General Plan¹³.

From the 1960s onwards, functionalist concepts advocating a strict separation of urban functions such as housing, workplaces and traffic presided over the planning of the expanding city. A strong emphasis was then put on the financing and construction of suburban housing districts in close proximity to natural green spaces. The design of these "forest suburbs" was also influenced by the garden city movement, which had emerged earlier in the century across Europe, famously translated in Finland by the construction of the Tapiola district in Espoo, Helsinki's western neighbour city. In the Finnish capital, the progressive urban sprawl away from the city centre was also facilitated by a proactive land acquisition policy.

This changing paradigm in city planning had major consequences on mobility patterns in Helsinki. The growing distances between urban activities led to a rapid increase in car dependency, facilitated at the national level by the deregulation of private car use and purchase in 1963. The number of private cars in Finland increased from 160,000 in the early 1960s to 643,000 at the end of the decade¹⁴.

This increase coincided with the unprecedented development of Helsinki's road network: the country's first highway, known as Länsiväylä or Western Highway, was built in 1962 to connect Helsinki with Espoo¹⁵. Other radial expressways were built up during the 1960s and the 1970s, linking Helsinki with the towns of Turku, Porvoo and Tuusula. Planning for the city's three ring roads also begun over the same period, although Ring I expressway was only completed in 1980.

In spite of the growing popularity of car-oriented development among Helsinki's planners and politicians, protests and scepticism against urban highways emerged in the 1960s and 1970s, which contributed to limiting the expansion of the Finnish capital's road network. In 1968, a traffic plan designed by engineers Pentti Polvinen and Wilbur Smith commissioned by the municipality, proposed the construction of a highway network in the seafront and through the centre. The plan had to be rapidly withdrawn as a result of public outrage, testifying of an emerging conflict between the aspirations of highway planners and the interests of local residents.



The Highway Tunnel Project under Helsinki city centre

This 2+2 lane underground expressway, planned for 40,000 cars a day at an estimated cost of €1.4 bn, was rejected in 2019 by the Urban Development Committee

© City of Helsinki

¹³ Buhrgard, S. (2015), *From Expressways to Boulevards*.

¹⁴ Lahti (2017), *The 1960s shopping centre grid of Helsinki: A framework for future development*.

¹⁵ Ulyanov, A. (2017). *Helsinki and green space, 1850-2000: and introduction*.

1.2. The City-Region Today: Strategic Issues

Confronted with the heritage of a car-oriented planning history, a dispersed low-density urban form, and robust long-term economic and demographic growth trends, Helsinki metropolitan region faces significant challenges regarding its land-use, housing and transport model.

Both the city and the region have seen a demographic boost in recent decades: the city's population has grown by 17.6% between 2000 and 2019¹⁶, while the region has grown at a rate of 1.3% a year since 2000. It has reached 1.5 million inhabitants in 2019 and is expected to grow to 2.1 million in 2050.

Such an increase generates a considerable growth pressure on the municipality, exacerbating the scarcity of land and triggering a housing shortage: between 2015 and 2018 alone, average housing prices in the City of Helsinki have risen by 7.8%, while prices at the national level only grew by 2.6%¹⁷. In order to cater for this increasing population, Helsinki's previous masterplans of 1992 and 2002 focused on the urban redevelopment of the former harbour areas of Jätkäsaari and Kalasamata, and on the intensification of the Pasila business district now well advanced. However, there is a need today to prepare the future development of the city beyond 2025.

Concerns are also emerging in Helsinki regarding the future of traffic and mobility patterns. The metropolitan region is now served by an extensive network of segregated expressways, with six radial highways converging to the city-centre from the outer suburbs and two motorway-like highway bypasses: Ring I on the fringe of the city and Ring III in the near suburbs. Ring I carries now around 100,000 vehicles a day on average (+60% from 1993 to 2014) while Ring III carries up to 70,000 vehicles a day. Traffic forecasts to 2030 show that, even if all public transport and bike projects are delivered, more congestion is to expect in relation to the growth of the metropolitan region.

Less cars are entering the city today than 25 years ago, however: 24,000 cars a day in 2014; 30,000 in 1990 when the city had 130,000 less residents. The modal share of car use at the municipal scale is estimated to have gone down from 29% in 2013 to 19% in 2018, a positive change in terms of sustainability¹⁸. At the same time, the number of motor vehicles in the city of Helsinki has steadily increased since 2000, from 218,780 then to 332,580 in 2018, a 52% rise¹⁹. The amount of cars per 1,000 inhabitants appears to have increased too, from 336 cars per 1,000 inhabitants to 416.

Travel patterns are changing with an increase in transversal trips – spanning from east to west and from suburb to suburb – rather than to movements made from the suburbs towards Helsinki's city centre, which tend to diminish. This development is evidenced by the increasing use of Ring Road I, which has seen its traffic rise by over 60% between 1993 and 2015²⁰.

While there have been some discussions around the introduction of a congestion charge in order to deter the use of motor vehicles, this policy is beyond the scope of municipal officials and can only be introduced by the national government. In the meantime, the City of Helsinki must find innovative ways to encourage environmentally friendly forms of transport. This entails the need to increase the accessibility and safety of existing road corridors for non-motorised vehicles and pedestrians. In 2011, a critical mass bike ride was organised by a collective on the Länsiväylä highway in order to demand safer cycling lanes – which are now better integrated in the regional transport strategy.

While the prospect of transforming existing road corridors to accommodate other mobility forms have been gaining popularity among Helsinki's residents and local officials, car-oriented paradigms and policies still seem to yield considerable weight regarding the city's governance.

Until September 2019, a construction project aimed at building a road tunnel under and across the city centre. This 4-lane highway would have ran for seven kilometres from the Sörnainen district to the West Harbour was proposed and defended by Mayor Jan Vapaavuori. However, this project has been rejected due to opposition by the local council. This recent development nonetheless shows that debates around the further expansion of Helsinki's highway network are not fully closed.

¹⁶ City of Helsinki (2019), *Statistical Yearbook of Helsinki*, p.14.

¹⁷ City of Helsinki (2019), *Statistical Yearbook of Helsinki*, p.29.

¹⁸ City of Helsinki (2019), *Helsinki Facts and Figures*.

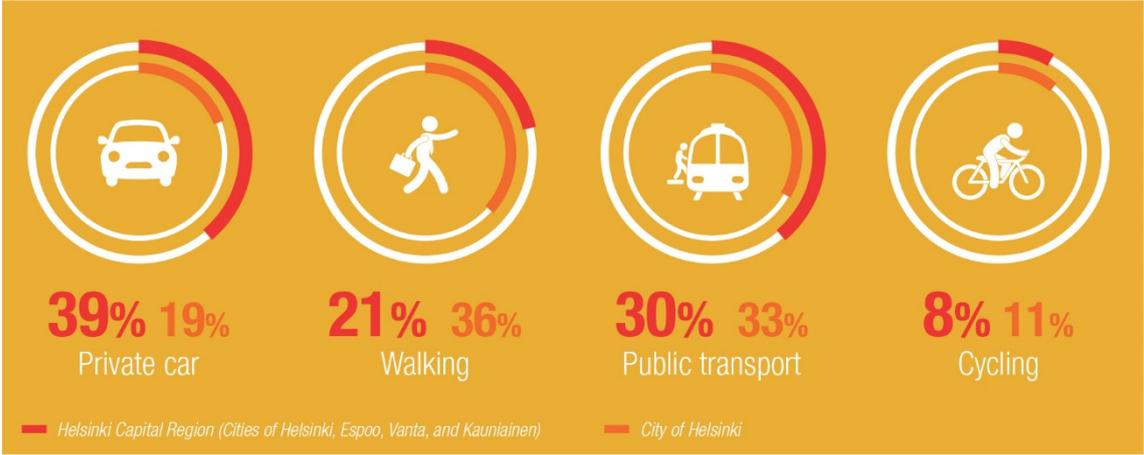
¹⁹ City of Helsinki (2019), *Statistical Yearbook of Helsinki*, p.33.

²⁰ City of Helsinki (2016), *City Boulevards in Helsinki*, pp.4.



Key data for Helsinki and Greater Helsinki (14 municipalities)

Sources: Statistical Yearbook of Helsinki, Helsinki facts and fi (in BOX gures, HelsinginSeuti.fi, Eurostat 2016



Modal split in Helsinki Capital Region (2016) and in the City of Helsinki (2018)

© Helsinki facts and figures, City of Helsinki (2019); Deloitte City Mobility Index (2016)



Helsinki highway-oriented regional landscape © Pani Garmyder/Shutterstock

Planning and Governance in the Helsinki Metropolitan Region

The *City of Helsinki*, the Finnish Capital, is a municipality of 650,000 inhabitants and 214 km². As all municipalities in Finland, Helsinki is autonomous in its planning, housing, transport and environmental policies, which are integrated in the *Helsinki City Plan (2018)* and the detailed local plans.

Helsinki Capital Region (HCR) is a cooperation body of the 4 denser municipalities of the metropolitan core which has over 1 million inhabitants and 770 km². It includes two major cities: Espoo (280,000 inhabitants) and Vantaa (225,000). They share together the Environmental Services Authority (HSY). The *KUUMA Region Board* represents the 10 suburban municipalities outside the metropolitan core.

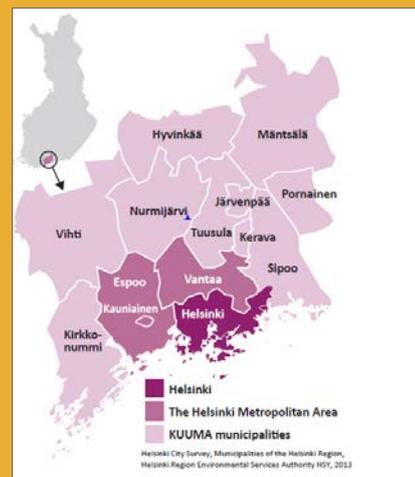
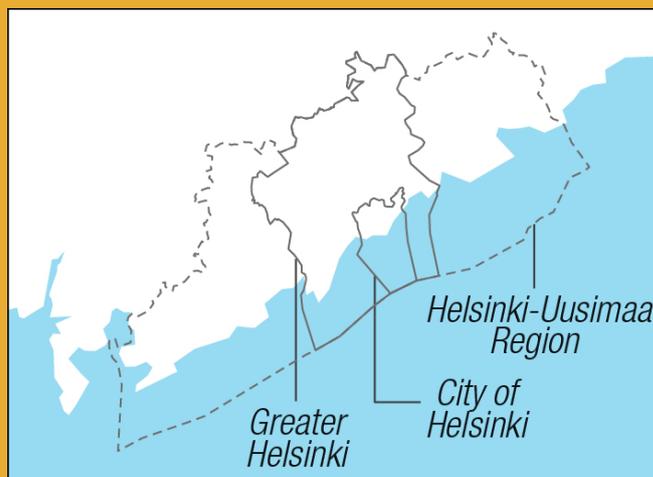
Greater Helsinki (Helsingin Seutu) is the metropolitan voluntary cooperation organisation of the Helsinki region also known as the *Helsinki Region Cooperation Assembly*. It gathers the 14 municipalities of the Capital and the KUUMA regions, and has around 1.4 million inhabitants and 3,700 km². Planning cooperation takes the form of *Letters of Intent* between municipalities, the National Government and other partners.

Helsinki Region Transport (HSL) is the transport authority for Greater Helsinki (14 municipalities) responsible for the *Helsinki Region Transport System Plan (HLJ 2015)*. In addition, HSL is directly in charge of the public transport network for 9 of these municipalities including Helsinki.

The Helsinki-Uusimaa Region (HUR), one of the 19 institutional regions of Finland, comprises 26 municipalities, including all municipalities of *Greater Helsinki*. It has approximately 1.7 million inhabitants and 9,100 km². The Regional Council of Uusimaa is primarily in charge of regional development, regional land-use planning and the environment. It is responsible for long-term *Regional Land-Use Plan (2014; currently revised)*, which is the mandatory framework for municipal plans. The 2020 revision of the Regional Plan should allow for boulevardisation.

The *Helsinki Region Land Use Plan 2050 (MAL 2050; approved 2019)* is a voluntary land-use, transport and housing integrated action plan, agreed jointly by all 14 municipalities, with the *Helsinki Region Transport* and the State, in close co-operation with the *Helsinki-Uusimaa Region*. Designed in parallel with HLJ 2015, the *MAL Plan* attempts to concentrate the urban development in or around existing or future station areas.

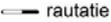
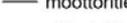
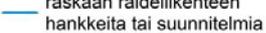
Over 90 percent of housing production should take place in land use zones prioritized in regional development and no less than 85 percent of the population should live in “sustainable transport zones”, with access to public transport. The *MAL Plan* gives no detail for the most urbanised parts of the region and does not explicitly develop a regional *boulevardisation* strategy.



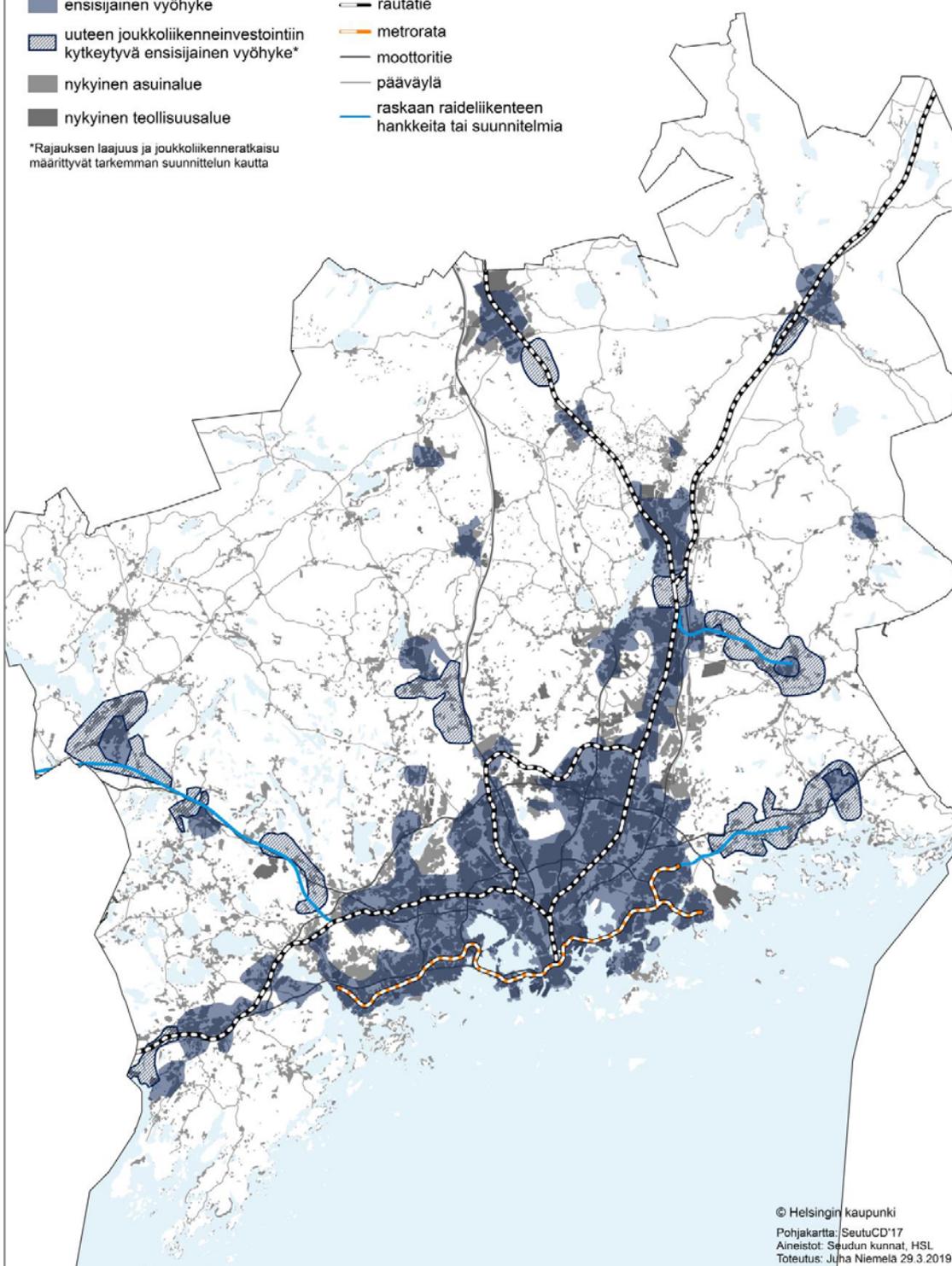
The 4 level governance organisation of the Helsinki Region © Institut Paris Region / © Greater Helsinki

MAL 2019 - Maankäytön ensisijaiset kehittämisvyöhykkeet



- | | |
|---|--|
|  ensisijainen vyöhyke |  rautatie |
|  uuteen joukkoliikenneinvestointiin kytkeytyvä ensisijainen vyöhyke* |  metrorata |
|  nykyinen asuinalue |  moottoritie |
|  nykyinen teollisuusalue |  pääväylä |
| |  raskaan raideliikenteen hankkeita tai suunnitelmia |

*Rajauksen laajuus ja joukkoliikennematkaisu määrittyvät tarkemman suunnittelun kautta

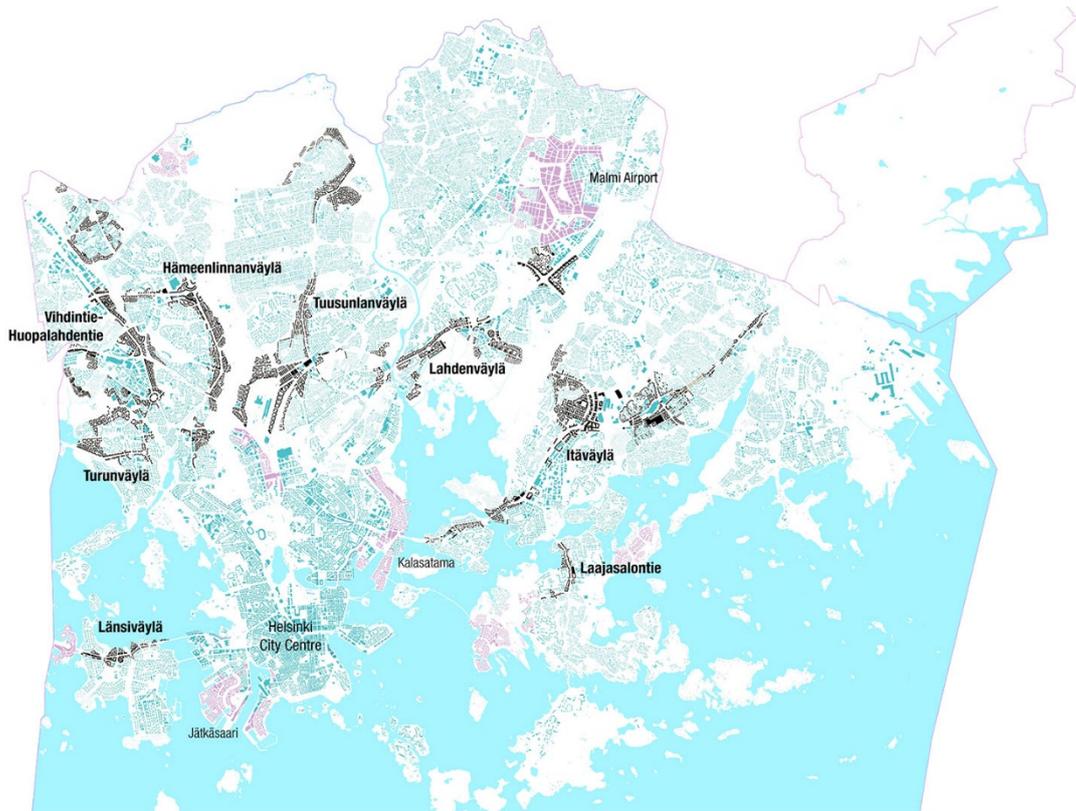


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 Pohjakartta: SeutuCD'17
 Aineistot: Seudun kunnat, HSL
 Toteutus: Juha Niemela 29.3.2019

The MAL 2019 Land Use Plan 2050 for the 14 municipalities of Greater Helsinki

Its design has been closely coordinated with the Transport Plan

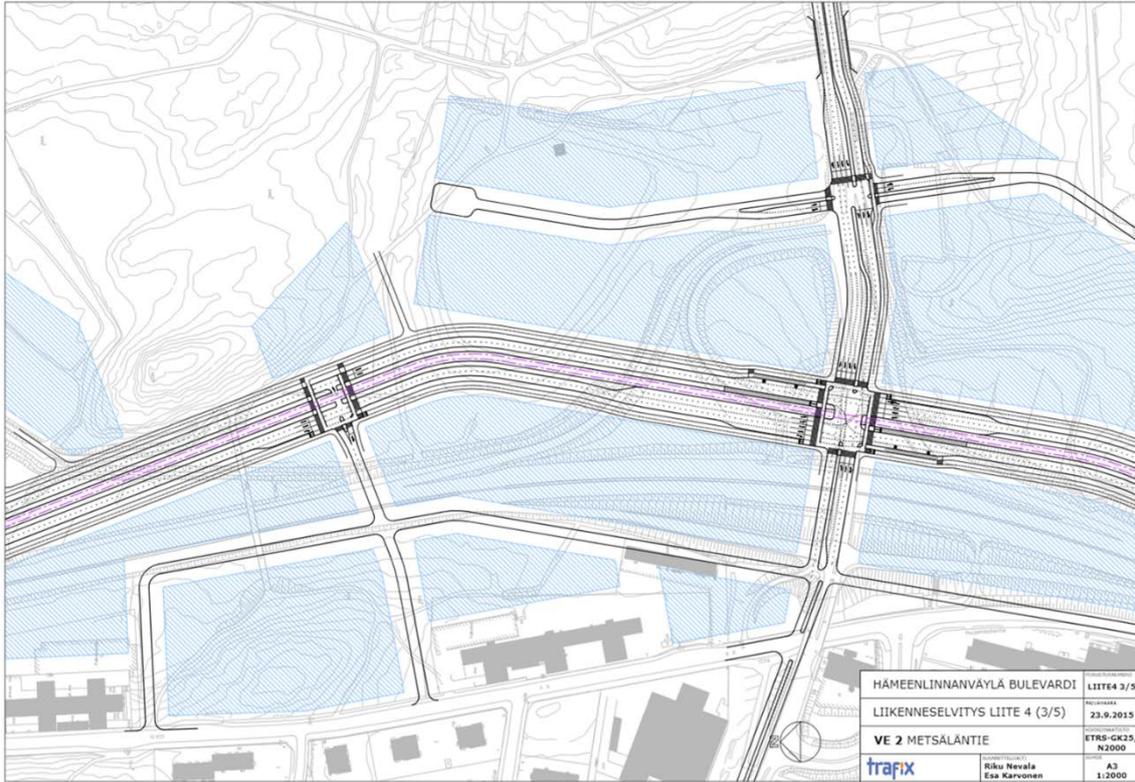
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Helsinki 2050 Vision with urban intensification areas, including the seven boulevard corridors
 Black = future City Boulevard corridor developments; Pink = ongoing harbour projects and Malmi airport reconversion
 © City of Helsinki Planning Department / WSP 2015 © City of Helsinki, modified by L'Institut Paris Region



Collage of the Helsinki City Boulevard Vision 2050 with reference to Paris' Boulevards
 © WSP / City of Helsinki



Traffic Simulation of Hammeenlinnanväylä Highway transformed into a Tram-Boulevard, North Helsinki in 2015
 Blue = potential development areas. Light Grey Contours = existing highway interchange replaced by buildings and at-level crossings
 © Traffic Survey of Hammeenlinnanväylä Boulevard. © Trafrix Oy/City of Helsinki



Visioning the former expressways as city boulevards: multimodal tramway streets in high density mix-use urban environments
 © Serum Arkkitehdit / City of Helsinki

2. Helsinki's City Boulevards Strategy

2.1. Design Process and Support Studies

The idea of transforming radial motorway-like roads entering Helsinki into urban boulevards is the result of a long design and planning process that emerged in the 1990s. As early as 1989, Helsinki Mayor Raimo Ilaskivi suggested “to transform the motorways inside Ring I, and possibly other ones, to be more urban so that the land along them could be used for building”²¹.

Research on “boulevardisation” has been part of an overall strategic visioning process for the long-term future of Helsinki led by the City Planning Department in the past 15 years. The concept of highway-to-boulevard transformation made an appearance in the Greater Helsinki Vision 2050 in 2007.

In 2012-2014, with the help of consultant firms, the Planning Department led a series of strategic land intensification capacity surveys and urban design visioning processes with reference to existing “boulevard cities” (Paris) and highway removal/tramway boulevards projects (San Francisco, Lyon). Draft visions for 2050 were published and discussed as part of the new City Plan elaboration process, backed by various studies.

The 2013 Traffic Feasibility Study (Strafica consultants)²². This first research explored the effects to 2050 on mobility, accessibility and the economy, of various level of land use intensification in the motorways-like corridors within Ring I. Three options were considered:

- Low intensification of land use with no change to the highway network (*No Change Option*);
- Moderate intensification with reduced speed limits of 60 km/h (*Slow Highway Option*);
- Higher intensification with highway-to-boulevard transformation (*Boulevard Option*).

All options were in line with the Helsinki Region population and jobs growth prospects (2.1 million inhabitants in 2050) and with Transport Plans to 2035. The results show that both intensification options, *Slow Highway* and *Boulevard*, could have positive economic effects, estimated in the range of €600-1100 a year per inhabitant. Benefits of the *Boulevard Option* include: improved accessibility, reduced total traffic time, increases in pedestrian and cycling movements, increased use of public transportation, reduced road traffic, emissions and accidents.

However, the modelling shows that the *Boulevard Option* reduces by half the capacity of radial roads inside Ring I, resulting in congestion and increases in travel times by car. In this approach, positive effects brought by land-use intensification do not compensate for congestion: €70 million a year are generated by intensification *versus* an increase of socio-economic costs of transport of €100 million a year. Negative effects of congestion may be mitigated by higher parking fees or/and introducing a congestion tax.

The study recommends to develop public transport transverse connections between suburbs and radial links outside Helsinki. It stresses the need to adapt the transformation to suit the individual conditions of each road corridor, with the southern parts of Vihdintie and Tuusulanväylä highways being the best corridors to start planning the transformation. Based on a traditional land use and transport modelling approach, this study could only recommend to maintain traffic-flow capacity.

The 2014 Target Impact Assessment of City Boulevards (WSP consultancy) was very influential in the planning process. It used a different methodological approach with a Vision for 2050 as a starting point with Helsinki's population reaching then 860,000 residents. From this point, it casts back to the current situation to determine the actions and changes that need to be promoted in order to make the desired future possible.

A (*Highway-to*) *Boulevard Scenario* (named BULE as *Boulevard* in Finnish), with new housing development for 100,000 inhabitants and jobs located along seven highway corridors, is compared to a *Business-as-Usual Scenario* (BAU), where the population patterns follow the 1990-2010 trends with 80,000 inhabitants located outside Helsinki in the wider region.

²¹Cristina Suomi and Tapani Rauramo, in Buhrgard, 2015: p.34.

²²Traffic Feasibility Study, Strafica consultants, City of Helsinki, 2013 (in Finnish)



Lansiväylä (Western) Highway today as it cuts through Helsinki's neighbourhoods
© City of Helsinki



Lansiväylä as it could look like after transformation, with new buildings lining a planted boulevard. Design Research (2010)
© Carlos Lamuela-University of Helsinki / City of Helsinki

The study assesses the impacts of *boulevardisation* on: traffic and transport, accessibility, urban structure, services, health and economic development. The research shows that the City's Vision 2050 economic, social and health goals cannot be fulfilled in the *BAU Scenario* whereas they could, under certain conditions, in the *BULE Scenario*.

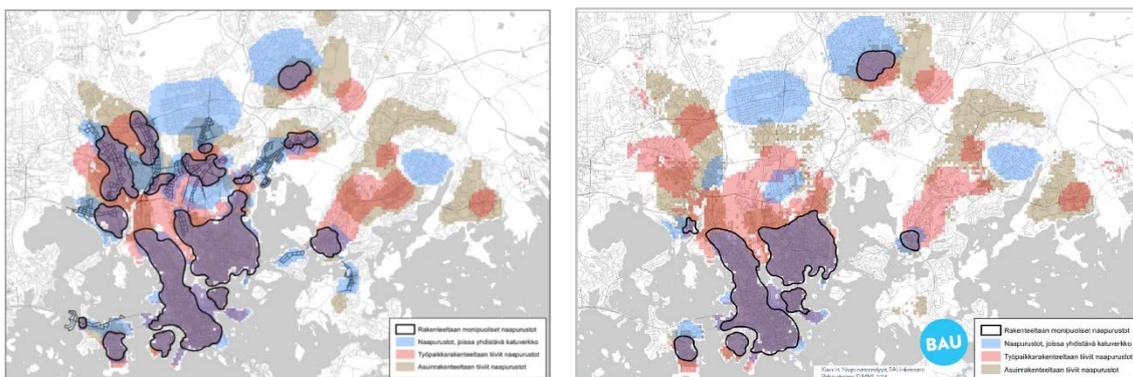
The *BULE Scenario* strengthens Helsinki's city centre expansion (including Pasila Business District's) and its innovation economy; it gives visibility for international investment. As WSP states: "In the *BULE Scenario* the average distances travelled would get shorter, making a greater portion of them accessible by foot or bicycle, with an increase in the modal share of public transport. A shift towards city boulevards would support economic growth, employment and the development of new urban structures, which would further benefit the economy".

Travel times by car passing on the boulevards increases by 5-20% during morning peak time in the *BULE Scenario*. However this does not generate traffic chaos or significantly impair the accessibility of the city center as long as the lost car traffic capacity is compensated by an increase of the public transport offer, combined with more cycling and walking. Average daily traffic on boulevards should go down from the current figures of 30,000-70,000 vehicles a day, to 22,000-40,000 vehicles a day with road pricing and higher parking fees.

The 2015 Regional Effects of Urban Boulevards Study (WSP consultancy). As an answer to critics, the City of Helsinki commissioned WSP consultants to produce an impact assessment study to explore the regional consequences of the boulevardisation of all highways within Ring Road I. Using the *CityROI* urban capacity method created during the Target Impact Assessment study. This research was based on the following principles: 50 km/h boulevards, with 2+2 lanes for vehicles, a fast tramway platform, cycle lanes and sidewalks.

This study shows that the shift towards city boulevards would be beneficial for the regional economy and employment as increasing densities along boulevards encourages the creation of businesses. It shows that the denser urban structure of the Helsinki Region created by removing the highway barriers has positive regional effects on mobility, but only if new transversal and radial public transport links are planned and built before 2050 beyond the current HSL 2015 Plan.

Reducing the capacity of highways entering Helsinki slightly increases car-users' travel times to the city core, but decreases travel times in the KUUMA Region cities. However, higher parking fees and a road pricing scheme are needed to help keep traffic flowing on the new boulevards. All highways cannot be transformed into urban boulevards at once: changes to the transport network need to be incremental and designed timely with urban redevelopment so that traffic, people and businesses have time to adapt to the new conditions.



The Target Impact Assessment of City Boulevards: Business as Usual (BAU) Scenario; Boulevard (BULE) Scenario

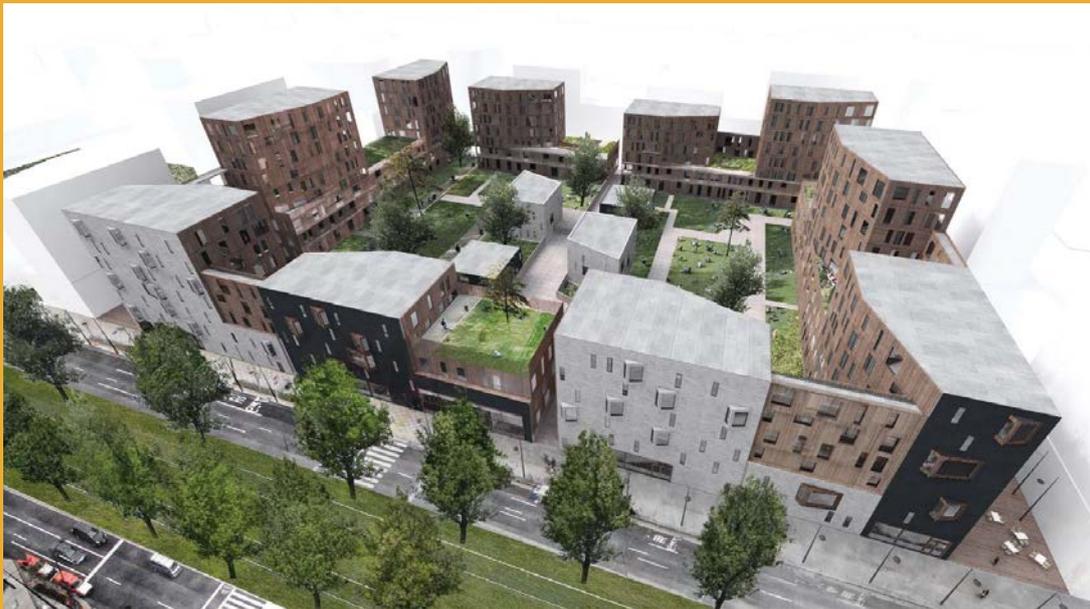
The high density mix-use potential increases dramatically in the BULE Scenario (See legend on p.38 of Burhgard)

© WSP/City of Helsinki

Urban Boulevard Blocks Study 2014 (Serum Architects consultancy)

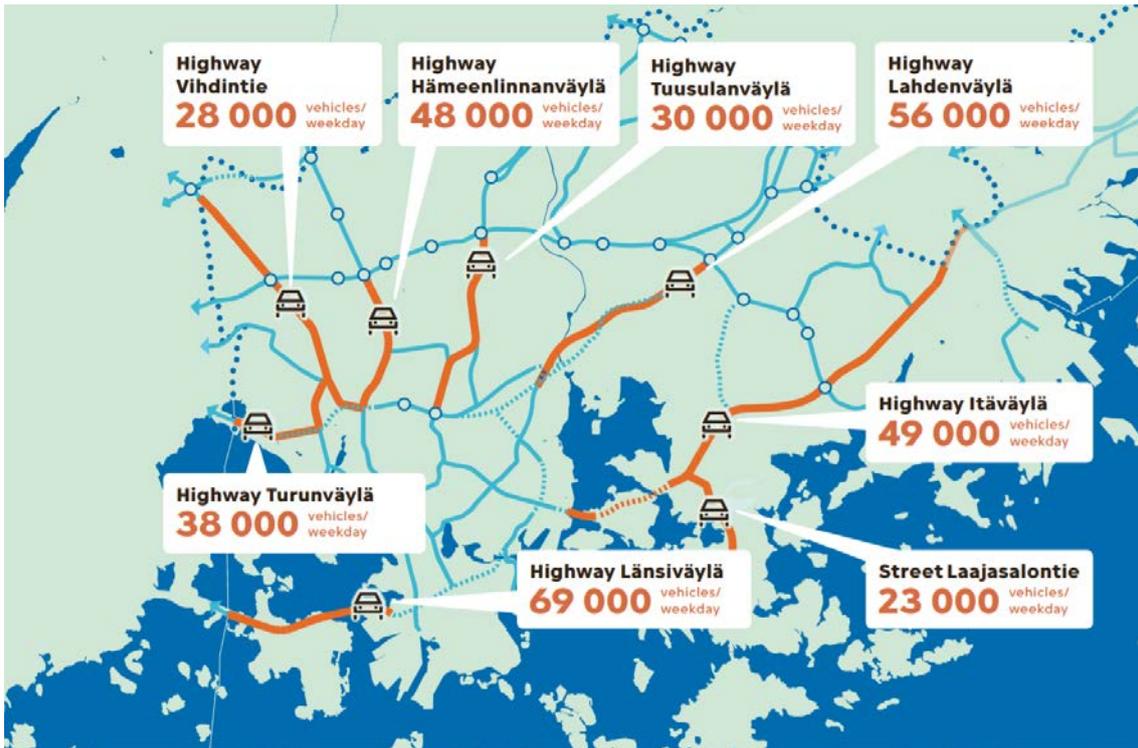
Conducted on behalf of the City of Helsinki, this study explores the most appropriate form of buildings for housing to be developed along newly transformed boulevards with traffic noise issues. It considers different city-block sizes (for example 75 x 50m), block form (open/closed) and building heights, located along boulevards ranging from 40 m-wide streets carrying 30,000 cars a day to 53 m-wide avenues with 75,000 cars a day.

The study finds that building for housing and other uses (kindergarden, schools or shops) could be possible along boulevards with heavy traffic volumes. Noise levels can be limited to less than 55 dB (A) in daytimes and 50 dB (A) at night in the courtyards, but reaches high levels along the boulevards.



Noise simulation of a partly open housing block showing how the noise enters the courtyard with a 75,000 cars a day boulevard

© Urban Boulevard Blocks Study 2014 / © Serum Arkkitehdit Oy / City of Helsinki



Highway entering Helsinki planned to be transformed into boulevards, with average daily traffic levels (2014)
 © City of Helsinki, Helsinki City Masterplan (2016)



Helsinki 2050 Vision with new boulevard corridors
 © City of Helsinki / ESRI City Engine (2015) / WSP



The Junatie axis leading to the Itälväylä Highway with its poor quality road environment.

The covering of the highway in the Kalasatama redevelopment in the distance has been controversial

© Paul Lecroart/ Institut Paris Region



Tram density in Arabiaranta, Helsinki

© Paul Lecroart/ Institut Paris Region

2.2. The 2016 City Plan: Intensification and “Boulevardisation”

Helsinki’s urban development strategy is summarised in a document known as the *Helsinki City Plan* first presented to the public as *Draft City Plan* in 2015, published in 2016 as the *City Plan* and in force since 2018. This long-term strategic land-use plan is to guide the densification of Helsinki’s city structure to make room for some 860,000 inhabitants by 2050 (650,000 today), with new jobs and facilities, while preserving a healthy environment.

Such a potentially sustainable growth strategy, it argues, should be achieved through the intensification of the most suitable areas for future development. This includes the expansion of city centre functions along highway corridors transformed into boulevards and the development of centres along a denser rail-network system. Building in areas with existing infrastructure and services is seen as less costly than building in new suburban areas. It should, in principle, help preserving the green corridors pattern, a major landscape feature of Helsinki.

According to the Director of City Planning at the City of Helsinki, Mikko Aho, Helsinki’s urban development capacity is of three types: “*roughly one third is located in the central city expanding alongside the city boulevards, one third is implemented as infill development in the new regeneration areas of older estates and one third in new construction areas, such as the decommissioned Malmi airport*”²³.

The City Boulevard Strategy implies the redesigning of 30 to 40 km of motorway-like highways, supported by the development of 30 km of new light rail lines (tramway). Such a structural – but gradual – transformation would only concern the sections of highways located *inside* the city’s ring highway, known as Ring I. According to the latest figures, this “*boulevardisation*” should provide an additional housing capacity for 80,000 inhabitants city-wide, while promoting 50,000 new job opportunities²⁴.

The transformation of motorway-like corridors located within Helsinki into pacified and multimodal streets integrating new mixed-use districts is seen by municipal officials as one of three key ways to meet the projected urban development targets.

Seven existing segregated highways, with current average daily traffic (ADT) levels ranging from 30,000 to 70,000 vehicles, are expected to be redesigned as at-grade new boulevards by 2050 (from west to east):

- Länsiväylä Highway (69,000 ADT; 5 km), a strategic connection to the city of Espoo (Kt51);
- Turunväylä Highway (38,000 ADT; 3.5 km), the Finnish national road to Turku (V1/E18);
- Vihdintie Highway (29,000 ADT; 4 km), a mostly at-level regional road (Mt120);
- Hämeenlinnanväylä Highway (48,000 ADT; 3.2 km), the national road to Tampere (V3/E12);
- Tuusulanväylä Highway (30,000-57,000 ADT, 2 km), connecting to Vantaa airport (Kt 45);
- Lahdenväylä Highway (56,000 ADT, 2.5 km), the national road to the North (V4/E75);
- Itäväylä Highway (49,000 ADT, 4.5 km), a major eastern expressway (Mt170).

Boulevardisation is seen as an effective way to expand the urban core northwards by creating new high-density, multifunctional districts located outside Helsinki’s hypercentre. This responds to the issues of land and housing shortage while promoting a city-wide polycentric pattern. Transformation is expected to have significant positive financial effects for the entire Helsinki region and even at the national level, expanding the regional productivity.

The goal is to create a pattern that reduces travel distances and favours cycling and walking, rather than car use by concentrating mixed-use neighbourhoods and facilities which meet most of residents’ everyday needs within a limited area. Helsinki owns 65 % of the unbuilt land of the Plan, including non-built buffer zones along the highways. Therefore, it is expected that the project can be partly financed by the revenue from land.

²³ City of Helsinki (2019a), *Helsinki City Boulevards*, p.4.

²⁴ Presentation by Harri Verkamo, Project Director at the City of Helsinki.

Boulevardisation, Mobility and Low Carbon Strategies

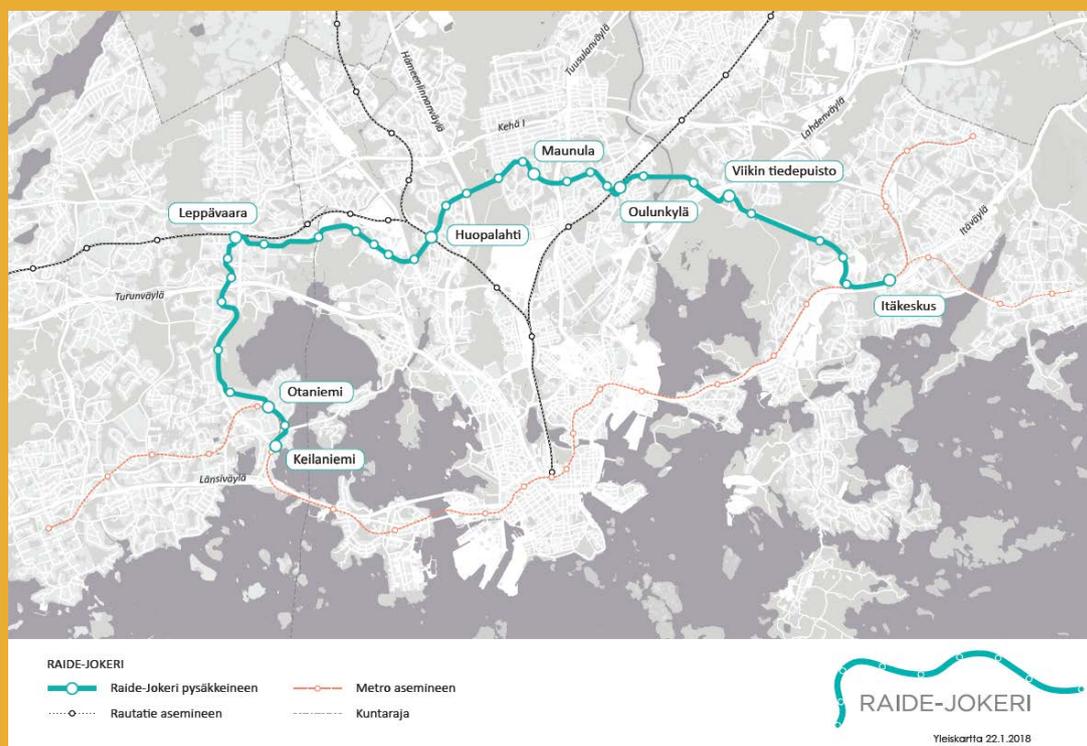
The *boulevardisation* and the emergence of new urban centres in currently suburban environments is underpinned by a wider willingness to develop a “polycentric network-city”, in which urban functions and services are not only concentrated in central Helsinki, but spread out across the entire city knitted together by good public transport connections.

The *Helsinki Mobility Development Program (2015)* was prepared to meet the goals set for traffic and mobility in the city's strategic programs and regional plans. The mobility development program supports the choices made in traffic planning and guides the direction of Helsinki's transport policy as part of urban planning. As a principle, transport planning should prioritise walking first followed by bike traffic, public transport, business transports and passenger cars in that order. Driving speeds should be reduced in order to reduce traffic noise and to improve road safety.

The *Regional Transport Strategy* seeks to enhance ‘transverse’ connections (east-west), rather than only reinforcing existing radial connections towards Helsinki's core. Three new light rail line projects are currently underway, including the Jokeri-I line, a new transverse line to connect eastern Helsinki to Espoo in the west¹. Construction of this 25 kilometres long line started in summer 2019. It will replace Helsinki's busiest bus line #550 and will become a backbone of public transport between the new boulevards. The east-west metro line connecting Helsinki to the eastern suburbs will be extended westwards further into Espoo.

Promoting cycling is crucial. Along with thirteen surrounding municipalities, Helsinki is committed to the implementation of a high-quality, safe regional main cycling network. The city is also developing dedicated logistical routes to cater for heavy traffic which is central to port activities.

Through these strategies, Helsinki largely aims to reduce its carbon emissions and thereby to meet the objectives set out its 2035 Carbon-neutral Action Plan, approved in December 2018. The municipality vows to become carbon-neutral by 2035, which should be achieved by reducing Helsinki's emissions by 80% compared to 1990 levels, and by compensating for the remaining 20%. 147 actions to meet this target are recorded in the Action Plan, 30 of which concern traffic and transportation (e.g. increase of car parking fees, introduction of mobility as a service packages, increase of electric cars).



The Raide-Jokeri-I transverse light rail currently under construction. Tramway corridors and future boulevards intensification support the ‘network city’ concept of the City Plan 2018

© Helsinki Transport Authority

Healthy Streets: Air Quality Challenges

Transforming highways with medium to high levels of traffic into healthy, safe and pleasant street environment has been pointed out by many experts, including the *Helsinki Region Environmental Services Authority (HSY)*, a joint agency of the four Capital Region municipalities.

As the City Boulevard Summary (City of Helsinki 2016) states, *“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.

Each boulevard assessment study includes an air-quality analysis measuring nitrogen dioxide (NO₂) and fine particles (PM 2.5) levels *before* and modelling the *after* situation. It appears that *“apartment block structures for new housing on the boulevards and the placement and height of buildings have a significant effect on air quality”*.

Studies show that *“Planning well-ventilated block structures which do not prevent mixing of air flows is recommended. The intake of fresh air supply for buildings will have 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. 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”*.

Traffic volumes, notably heavy-goods vehicles traffic, greatly affects the air quality. The development of low-emission motor traffic should help improve air quality. *“Euro-directives for heavy traffic will reduce the emission level considerably in the near future. Electric and hybrid cars are expected to become more common”*, but that will not be enough as the City Boulevard Summary notes. *“The traffic volumes need to be kept as low as possible in order to be able to fulfil the air quality criteria”*. Increased reliance on a reinforced tram, metro and bus service will be needed, as well as higher parking fees, road-pricing and improved cycling and walking offer.



Green square in Helsinki © Paul Lecroart / Institut Paris Region

3. Debate and Conflicts on the Boulevard Strategy

3.1. Criticism and challenges

Following the publication of the City Plan in 2016, the idea of transforming segregated expressways into urban boulevards has created a lot of debate, both against and supporting in the region, and made the headlines of the national and regional press. A survey initially suggested that a majority of residents (54%) of the Greater Helsinki Region were opposed to the *boulevardisation*, but support for the concept may be higher today.

A major setback to the boulevardisation plans was suffered in 2018, when the Administrative Court of Helsinki, appealed by the Finnish Transport Agency and the Uusimaa Centre for Economic Development, Transport and the Environment²⁵, ruled against the conversion in the case of four of the seven entry routes – Hämeenlinnanväylä, Lahdenväylä, Länsiväylä and Turunväylä – after determining that the city had failed to provide sufficient grounds for the conversions. This Regional Land-Use Plan, adopted in 2014, which holds superiority over Helsinki's municipal provisions, stresses that unrestricted motorised traffic flow capacity is to be maintained on such arteries. Despite the City's attempt to appeal the judgement at the Supreme Administrative Court, the latter was upheld.

Planners and elected officials from suburban municipalities (such as KUUMA-Region cities outside the Capital Region) have criticised the lack of discussion and collaboration around the project within the Greater Helsinki Region. Some have worries about the potential negative impact on the accessibility to the city centre and on traffic congestion, especially when they come from municipalities that do not have good public transport connections. The Finnish Transport Infrastructure Agency expressed concern about the potential reduction of harbour access for trucks, on the slowing down of commuter travels and long-distance coach traffic.

Some stakeholders are also critical about the idea of concentrating too much urban development, density and jobs in Helsinki: they feel urban growth should be more evenly distributed within the region following a polycentric principle. Many think that, as most highways were funded by national tax money at the time of their construction, their transformation by the City of Helsinki should be compensated if they are to be removed. The City could, for instance, pay a contribution towards new regional public transport links or new park-and-ride facilities. This could open opportunities for negotiation at the regional level²⁶.



Länsiväylä highway as it ends close to in Helsinki city centre

© Paul Lecroart/ Institut Paris Region

²⁵ These organisations argued that, of the seven planned road transformations, “four city-boulevards did not meet up their status as regional and national traffic routes”.

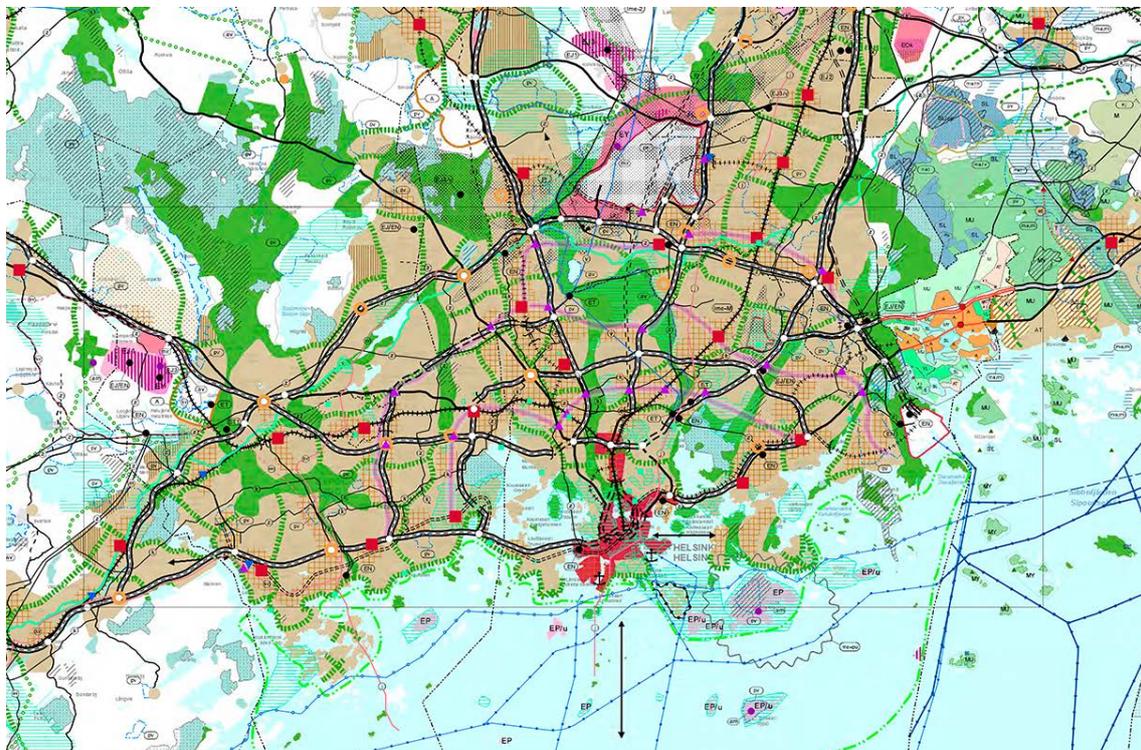
²⁶ Mikko Laukkanen, *Boulevards of Growth. Assessing the planned boulevardizations in Helsinki in the context of city-regionalism and land-use conflicts between municipalities*, Master's Thesis, University of Helsinki, 2017.



Traffic daily volumes on highways in the Helsinki Region with boulevards projects

Ring I North carries 105,000 vehicles a day on average

© Suomi and Rauramo, in Buhrgard 2015 © HSL Helsinki Transport Authority



The Uusimaa Regional Land-Use Plan (2014) showing the extensive network of strategic highways

© Helsinki-Uusimaa Regional Council

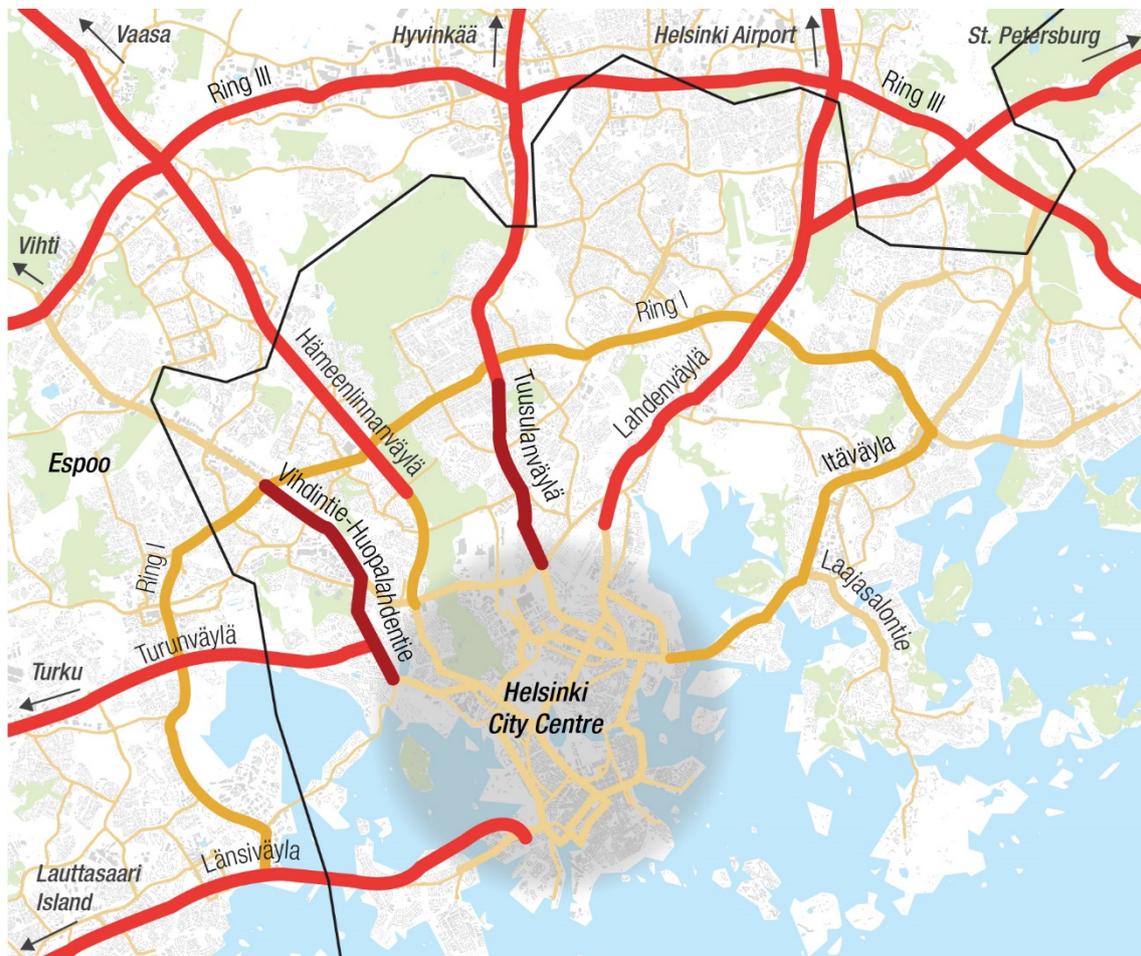
3.2. A Green Light for the Boulevards?

In August 2020, a revised Helsinki-Uusimaa Regional Land-Use Plan has been approved with a version that does not anymore refer to the mandatory need to maintain traffic capacity on the road stretches inside Ring I. It now seems that Helsinki's initial 2016 City Plan with its comprehensive Boulevard vision has, if not a green light, an orange light. The municipality could now re-introduce the overruled *boulevardisation* projects. The planning process however needs to be done again and possible new plans needs to get approved by all political and judicial levels in order to be passed.

However, the detailed *boulevardisation* planning and implementation process will start with the roads owned by the City that are not part of the national highway network:

- The Vihdintie-Huopalahdentie Highway: planning process underway (see below);
- The Tuusulanväylä Highway: at an early stage of planning process (see below);
- The Itäväylä Highway: planning process not started yet.

Actually, the first expressway-like section of road to be transformed into a boulevard will be the short Laajasalontie Highway spur where plans for a redevelopment of the corridor to host around 6,000 new inhabitants were decided in 2018. This will include the removal of a highway interchange and its replacement by an at-level crossroads.



© L'INSTITUT PARIS REGION, organisme associé 2020
Sources : OpenStreetMap, ViaMichelin





Updated City Masterplan with 3 highways approved for boulevardisation: Vihdintie, Tuusulanväylä, and Itäväylä

© City of Helsinki (2020) © City of Helsinki/L'Institut Paris Region



An artist vision of the future boulevards

© City of Helsinki (2016)

4. City Boulevard Projects

4.1. The Vihdintie-Huopalahdentie Boulevard Project

With its general planning framework approved in 2019 by the City of Helsinki's officials, the Vihdintie-Huopalahdentie City Boulevard Project will be the first to be completed. Targeting an area located in Helsinki's northwestern part, this project includes a transformation of a 4 kilometres long road corridor and a simultaneous redevelopment of a 134 hectares project area into a high-density and mixed-use urban neighbourhood.

Unlike the other highways planned to be transformed into boulevards, the Vihdintie-Huopalahdentie road is not a segregated expressway. It is a hybrid dual carriageway road set in a suburban environment.

Background and Issues

The 4 kilometres long road section targeted by the transformation project spans two different roads: Vihdintie, with a small stretch of Kaupintie, in the northern part; and Huopalahdentie, with a small stretch of the Turunväylän Expressway in the southern part.

Its area extends northwards from the crossing between Vihdintie and Kaupintie, and stops southwards at the crossing between Huopalahdentie and Paciuksenkatu. Vihdintie and Huopalahdentie connect in the middle of the perimeter through the Haaga roundabout, a 2 hectare-large infrastructure sheltering a non-accessible green space in its middle.



The Turunväylän Expressway connection with Huopalahdentie Highway is a major barrier in the neighbourhood

© City of Helsinki



The Hague roundabout today, with the Vihdintie (right) and the Huopalahdentie (middle left)

© Helsingin Kaupungin Kiinteistövirasto

The current Vihdintie road has evolved from an old, 46 kilometres long, regional route also known as *Seututie 120*, which extends from Helsinki towards the municipality of Vihti, at the north-west of the Finnish capital. The road was delivered in the late 1950s, but it was widened in the 1970s to increase its capacity. Huopalahdentie, which is a less significant axis at the metropolitan scale was developed from the 1930s to the 1990s.

The stretch of Vihdintie located within the municipality of Helsinki carries 28,000-30,000 vehicles per weekday on average in 2014²⁷. Compared to other road corridors in the City Boulevard strategy, Vihdintie remains of secondary importance in the municipal and regional network. In addition, the Vihdintie-Huopalahdentie stretch that will be converted into a boulevard, already benefits from relatively “urban” characteristics, and is more integrated into the local road network than many other highways crossing the capital:

- The Vihdintie Highway is mostly composed of 2+4 or 2+3 lanes, with lateral cycle lanes as well as dedicated bus stops. The road is predominantly located at ground level, with four traffic light junction crossings enabling pedestrians to cross the corridor.
- The Huopalahdentie Highway has 2+2 and 2+3 lanes, with sidewalks and bike paths in some parts, bus stops and nine traffic light junction crossings. In its southern part, the axis is complemented by two side lanes connecting the road to neighbouring buildings (separation of local and regional traffic).

These characteristics explain why the Vihdintie-Huopalahdentie corridor will be the first highway to be converted into a boulevard (after the short Laajasalontie Highway spur). In the 2013 Traffic Study, Vihdintie was identified as one of the most suitable axis for boulevardisation²⁸. The last stretch of Turunväylä Highway connecting with Huopalahdentie is also part of the Plan, but its transformation would need a green light from the National highways agency.

Despite the Vihdintie-Huopalahdentie corridor not being an expressway, car-traffic is predominant with pedestrian and bicycle relegated to the fringe of the road. The highway is a barrier between the

²⁷ City of Helsinki (2019b), *Helsinki City Boulevards*, p.13.

²⁸ STRAFICA (2013).

neighbourhoods of Munkkiniemi, Pitäjänmäki and Haaga. Buildings feel fairly isolated along a wide, and often undefined green space.

A 137 hectares project area has been defined for the Vihdintie-Huopalahdentie urban intensification. The northern part of this area (the Vihdintie corridor) has a variety of industrial, commercial and residential buildings, within easy reach from the Ring Road I. The southern part (the Huopalahdentie corridor) is mainly residential, with some commercial and office buildings. The district's social profile is close to Helsinki's municipal average.

Urban Design Principles

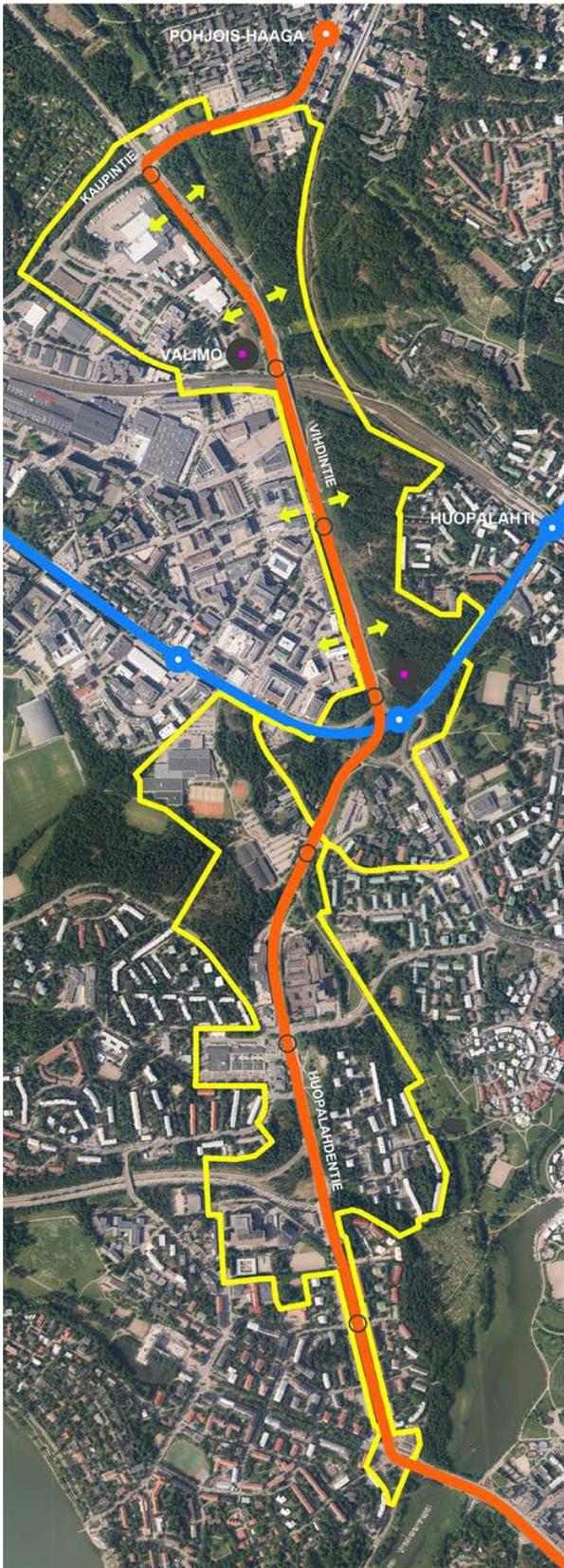
The City of Helsinki wishes to foster the emergence of a new, mixed-use district within the 137 hectares project area. The goal is to use the new tram boulevard to unite the different neighbourhoods and to enable a more urban lifestyle. This will be supported by increased densities and increased accessibility to services, public transport, cycling and walking spaces, and green areas.

With a target of 14,000 new inhabitants, this redevelopment will be based on new medium-rise housing blocks, along with some new offices, shops and school facilities. The development is expected to be relatively dense for Helsinki, a little over 100 residents per hectare.

The project implies the redevelopment of currently undefined open spaces which are part of the municipal preserved green wedges system, which is an important issue. Details of the programme are not available yet.

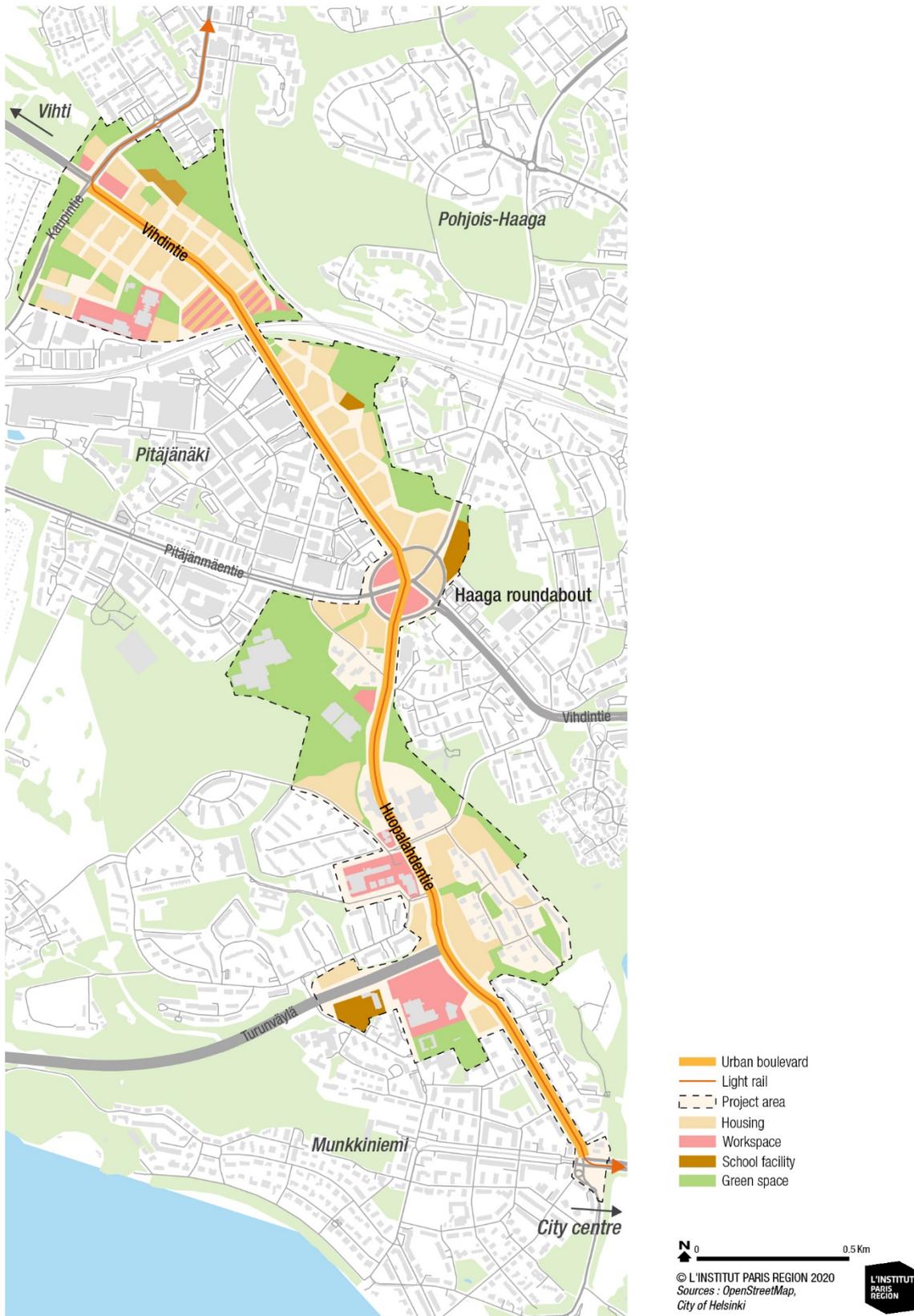


Early design sketch for the Vihdintie and Huopalahdentie boulevard transformation seen from the North (Ring I)
© Helsinki City Planning Department/Tapani Rauramo



The Vihdintie Road today near Haaga
© DR

Project Area for the Vihdintie and Huopalahdentie Boulevard Corridor
© Helsinki City Planning Department

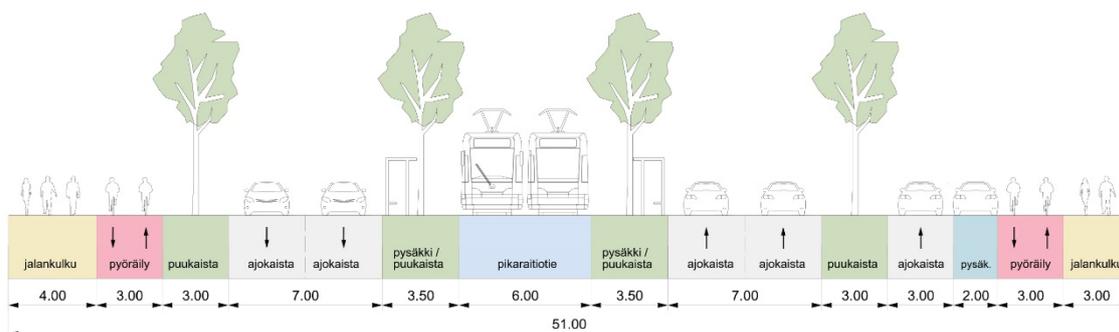


Draft plan of the Vihdintie-Huopalahdentie Boulevard Redevelopment Project

Road Design and Mobility Principles

The newly envisioned street design and traffic arrangements for Vihdintie are based on the reduction of road space dedicated to motor vehicles for the benefit of walking, cycling and public transport. Existing crossings for pedestrians will be improved, in particular around the Haaga roundabout in the middle of the area. New east-west connections will be created to contribute to the urban quality and reduce traffic speeds.

Vihdintie and Huopalahdentie boulevards will be reduced to 2+2 lanes (14 m of roadway for a typical 50 metres wide boulevard section), while a light rail line, bike lanes, sidewalks and green space would typically take around the rest of the section.



Cross-section of the proposed road design for Vihdintie

© City of Helsinki

The new light rail line will be built on Huopalahdentie and Vihdintie at the centre of the road axis. This fast tramway will run from Helsinki's centre to the Kannelmäki. This line will intersect with the transversal the Raide-Jokeri-I light rail line at the Haaga roundabout.

Project Timeline and Costs

The planning and redevelopment of the Vihdintie-Huopalahdentie corridor is carried out by the City of Helsinki. Total costs for the City are currently estimated at around €260-265 million²⁹: land assembly and preparation works will amount to €50 million, transformation of Vihdintie and Huopalahdentie highways into boulevards should cost €80 million (€20 million per km). In addition €30 million will go for new bridges and underpasses, €5 to €10 million for green areas, and €95 million for the building of public facilities.

Design Guidelines for the Vihdintie-Huopalahdentie area were approved by the Helsinki Urban Environment committee in late 2019 and now the area is under detail planning.

Final delivery of the Boulevard Corridor Redevelopment is expected in 2030.

Public Debate

The public hearing on the Vihdintie-Huopalahdentie transformation project took place in 2018 and 2019 both with public meetings and an online participatory GIS survey by Maptionnaire, which visualised the comments from the survey on a map. Over 500 often very detailed comments on the project were submitted by the public.

Opinions are divided about the project with residents welcoming the new transport connection and improvement of the walkability of the area, but the densification of the area and the loss of green space in the process are criticised.

The preservation of green open space, environmental qualities and ecological connections in the area seem to be major questions for the future of the project which today relies on the optimisation of public lands for development. Further studies are to be carried out by the City of Helsinki on these points.

²⁹ Presentation by Niklas Aalto-Setälä, 2020.



The transformation of the Huopalahdentie corridor

Left: existing situation with a 7 lanes for vehicle traffic giving access to the Turunväylä expressway. Right: the roadway is narrowed and shifted to the West allowing for new medium-rise development.

© City of Helsinki, Tietoa Finland Oy



Projected building of the Haaga roundabout as part of the future Vihdintie-Huopalahdentie tramway boulevard

© City of Helsinki



Timeline: Boulevardisation in Helsinki and the Vihdintie-Huopalahdentie transformation project

Source: City of Helsinki City Planning Department / © L'Institut Paris Région



Tuusulan Expressway today North of Helsinki centre around the Kapila Station
© City of Helsinki



Tuusulan expressway today looking south towards Helsinki city centre
 Kapila Station in the middle right of the image

© City of Helsinki



Tuusulan expressway today looking north south towards Helsinki city centre with Kapila station area in the distance

© Kuva Markus Jokela

4.2. The Tuusulan Boulevard Project

Tuusulanväylä expressway (Kt 45) is the strategic road connection between Helsinki city centre and the international Helsinki-Vantaa Airport. Designed as segregated expressway north of Pasila Central business district (CBD), it constrains the redevelopment of a high potential area, including the Käpylä rail station and the northern part of the area, which will be served in 2022 by the future east-west Jokeri I light rail.

Transforming the Tuusulanväylä Highway (Kt 45) into a boulevard together with a new tramway line aims at developing a new urban sub-centre in a strategically located area, 15 minutes from the centre and 20 minutes from the Airport. With a fairly heavy traffic today of 57,000 vehicles a day on average in the northern section, and 30,000 in the southern part, one of the challenges will be to create a healthy, green and vibrant environment along the new boulevard.

The planning process for the Tuusulan Boulevard 180 hectares area started in 2018. Planning Guidelines have been approved recently after public hearing in 2019, but many points remain to be studied, discussed and decided in the next years: the detailed planning phase should take place around 2022 and the building of the different projects could start around 2028.

Background and Issues

The Käpylä area development started after it was annexed to Helsinki in 1906. It is made up of a patchwork of different land uses, with sport stadium, office buildings, low density suburban houses, railway yards, and green spaces separated by the large roadway and its interchanges.

Completed in 1967, the transformation of the Tuusulanväylä into a 2+2 lanes expressway changed the landscape from the intersection of Pohjolankatu and Mäkeläncatu to the north and separated the station area from Käpylä. East-west street links are missing and the environment is clearly not walkable today.

Urban Design Principles and Programme

The Tuusulan Highway corridor is one of the city's growth priorities. Helsinki's City Plan 2016 aims at developing a major urban centre as a northern extension of the city core around the Käpylä station and the future Raide-Jokeri I line station. Both stations areas should be the key nodes of the new dense and diverse district, planned for about 20,000 new residents – together with service businesses (no fixed targets yet), retail, facilities and green space. All together, the 180 hectares project area should host around 925,000 square meters of new development.

The southern part of the area will have higher densities (1.8-2.0 floor area ratio), while the northern part will be low to medium dense (0.4 to 1.2). The area is surrounded by several recreational and green spaces which should be connected with new green/ecological links.

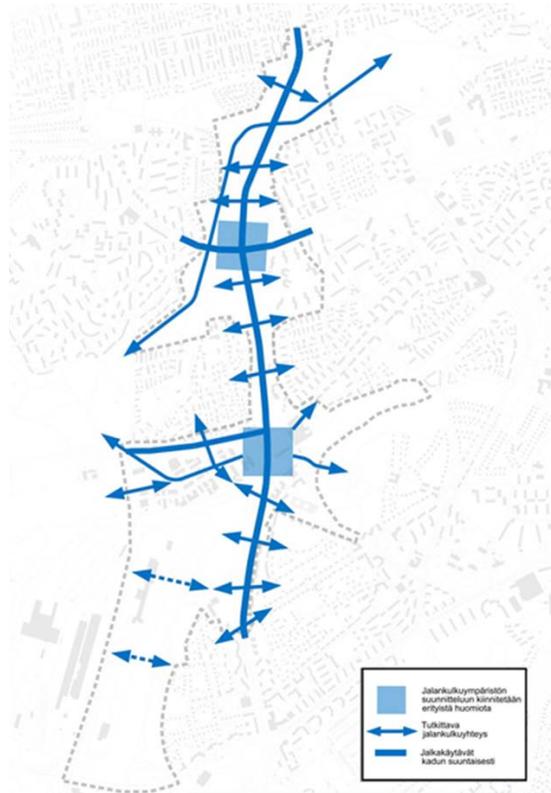
Boulevard Design

The transformation of the 2 km Tuusulanväylä Highway section south of Ring I into a fast-tram boulevard will imply the deconstruction of two major highway interchanges, the demolition of current pedestrian/bike underpasses and the realignment of the roadway. The future boulevard will be designed as a 2+2 lane street, with large sidewalks and bike lanes. It will integrate a new fast tram line that should contribute to the modal shift from the car to alternative modes in the future.

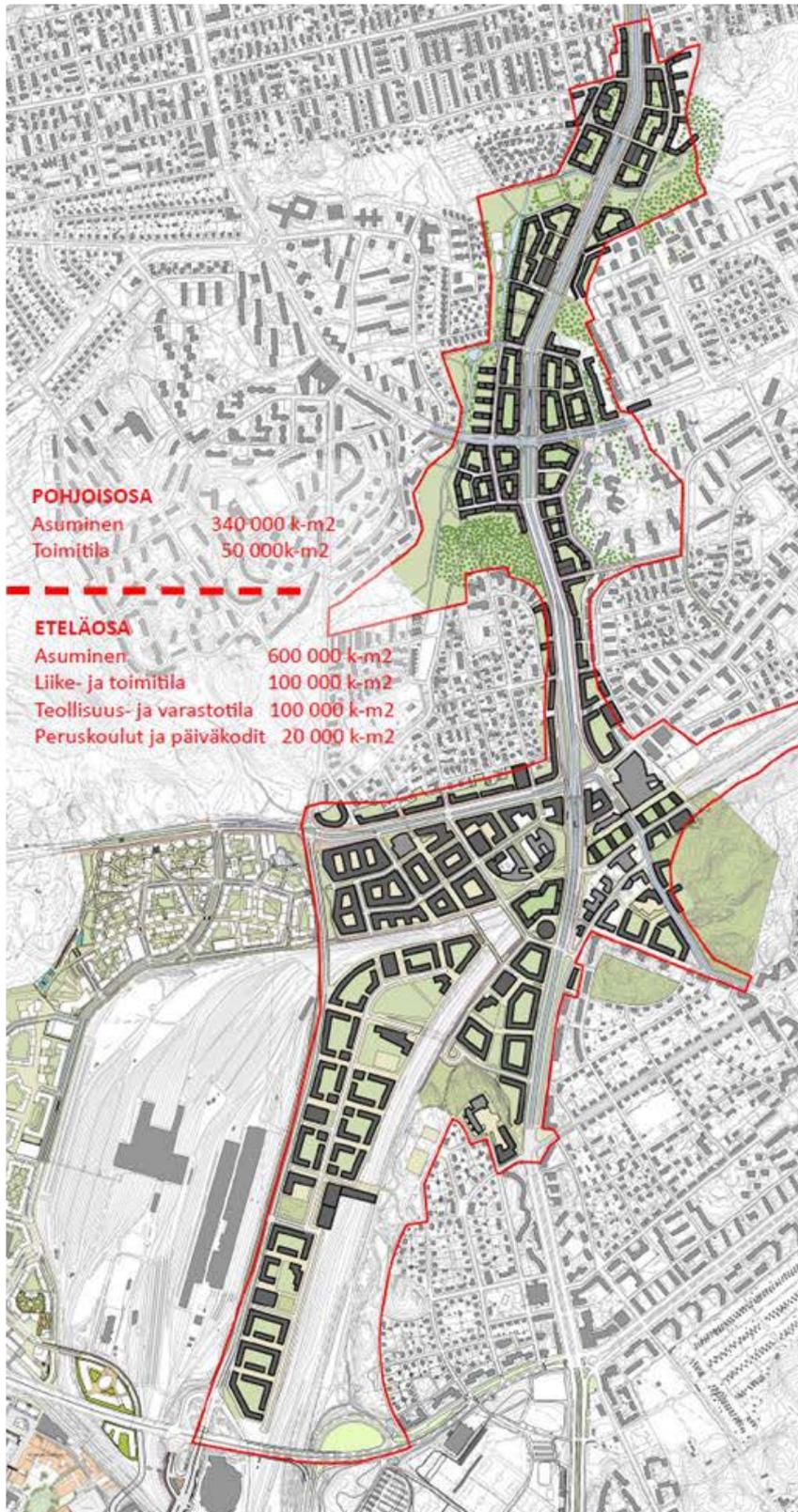
Building blocks should be as narrow as possible to allow for a dense urban street network combined with frequent at-level pedestrian crossings. Building frontages will have retail or business uses. The dense and active urban boulevard will have reduced speed limits of 50km/h. The *boulevardisation* aims at reconnecting neighbourhoods currently separated by the highway.



A typical public space split for section of a 41 m tramway boulevard
 © WSP/City of Helsinki



The Tuusulan Boulevard Corridor Project Area
 180 ha development planned for 20,000 new residents (left). Pedestrian connections planned in the Tuusulan Corridor (right)
 © City of Helsinki



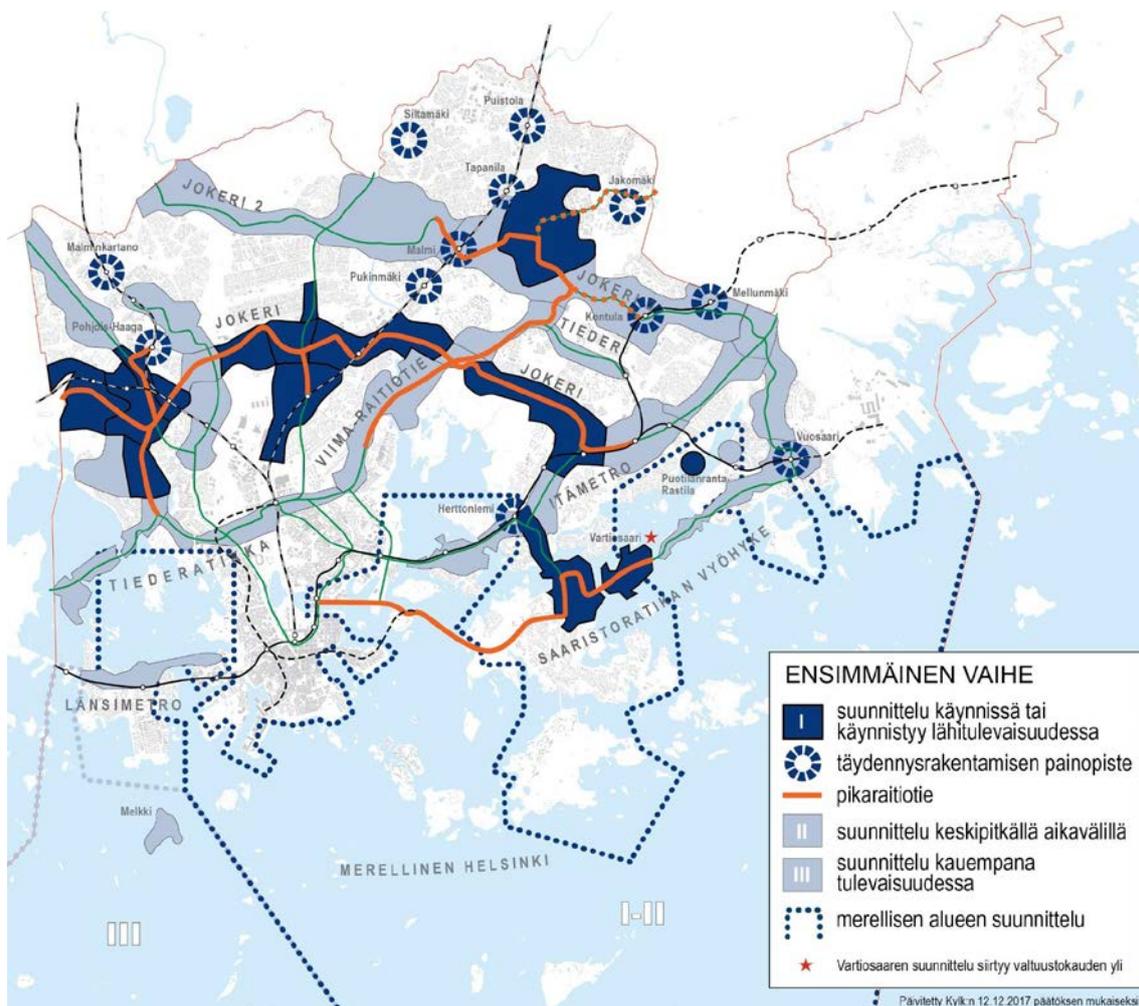
Building capacity and urban design simulations in the Tuusulan Boulevard Corridor

© City of Helsinki

5. Takeaways from Helsinki

The spatial pattern of the Helsinki metropolitan region is based on a system of comparatively small and compact historic centres (Helsinki, Espoo and Vantaa) fringed by a large, car-designed, low density urban and suburban ring served by an extensive network of segregated expressways.

Helsinki shows that these expressways, usually separated from the urban neighbourhoods by green buffer zones, sterilise valuable urban space that could be redeveloped more efficiently with a compact city-development approach. Helsinki City Planning department has estimated that reducing speed limits, transforming highways into city boulevards and intensifying land-use in their corridors could provide 1/3 of all municipal urban redevelopment needs to 2050. This would contribute to intensify land use, thus alleviating the pressure on green field land on the outskirts of the metropolitan region.



The urban intensification programme in Helsinki gives short-term priority (dark blue) to the redevelopment of the former airport site to the north, to the Jokeri I future ring tramway and to three *boulevardisation* corridors. Dotted circles indicate short term redevelopment sites; light blue, other long term corridor intensification

Sources: City of Helsinki / City Planning Department

Innovative simulation approaches

In 2018, the City of Helsinki became one of the few cities worldwide to have approved a comprehensive City Masterplan with the aim to transform all segregated expressways within the municipal limits inside the Ring Road into urban boulevards over the next decades. This strategy is the result of an intense visioning process that started fifteen years ago, supported by innovative research.

The Helsinki City Boulevard strategy process shows that traditional traffic modelling cannot be used to anticipate a different urban structure than today's'. In order to imagine a new structure for the city based on the extension of the city core along highways transformed into boulevards requires a new approach: a 2050 target-boulevard scenario impact assessment.

Evaluation of two long term scenarios, one with a new urban intensive, tramway-based boulevard structure, the other without it, shows that the Boulevard Scenario gives the best results for the overall development of the city. This, in economic terms (job creation), demography (population growth), mobility (modal shift to environmentally-friendly transport) and health. However, some challenges need to be overcome, such as the risk of congestion in 2050 (need for a road-pricing scheme) or traffic-related noise and air pollution along the new city boulevards where more residents will be living (challenge of a short term reduction of traffic volumes and speeds on boulevard-to-become-highways, long term shift to electric mobility).

Building a shared regional vision

One of the main challenges however is related to the acceptability of the highway-to-boulevard strategy both by public opinion and by the national and regional decision makers. Although the preparation of the Helsinki municipal City Boulevard strategy involved members of regional and national agencies, the project seems to have lacked a genuine joint-visioning process involving planners and elected officials from all municipalities and other stakeholders. This may be an important lesson for other core cities tempted by deciding on strategic highways within their municipal boundaries without measuring the real or symbolic impact their removal may have for their neighbours.

Another challenge is making national road agencies or administrations, whose mission is often to build new fast segregated roads, understand that the future of city-regions (and of our planet altogether!) may require transforming these roads into streets.

Although public opinion in Helsinki may be slightly in favour of the City Boulevard strategy, the planning and implementation phases of boulevardisation projects, such as the Vihdintie-Huopalahdentie or the Tuusuulanväylä may be challenging: along with the usual opposition from car-drivers to the reduction of traffic speed and capacity, large-retail box and business parks owners may resent what they see as a loss of accessibility, local residents may oppose an increase of housing density, while environmental groups may see fight the loss of the greenspace along the former highway corridors. Helsinki uses innovative online public participation platforms to involve citizens in the defining of projects.

The assessment of participation approaches and instruments is beyond the scope of this report: this may be an interesting theme for further research.

An Incremental Approach

Helsinki is implementing its highway-to-boulevard strategy in a tactical mode: starting with three or four highway sections owned or controlled by the municipality that don't play a strategic role in the road system but have a significant urban intensification potential on currently unbuilt adjacent land, usually in public-ownership. This increases the potential acceptability of the different projects.

Some of these, such as the Vihdintie-Huopalahdentie Highway are suburban roads with at-grade crossroads, making them technically easy to transform into boulevards. Others, such as the Laajasalontie, the Tuusuulanväylä and the Itäväylä highways are segregated expressway corridors requiring the removal of 2-level traffic interchanges and a complete redistribution of space. All will require a very finely tuned phasing to coordinate the deconstruction of parts of the infrastructure, with the building of the tramway lines and the new street infrastructure and the overall urban development.

The success of these individual projects will be a real-size test for the whole boulevardisation strategy.

KEY DATA ON PROJECTS

KEY DATA					
Boulevardisation of Vihdintie-Huopalahdentie highway (Mt 120)					
Strategic documents	Project progress	Relevant authority	Highway section subject to transformation	Daily traffic before transformation	Surface of the area being redeveloped
<p>Uusimaa Regional Land-Use Plan (2014)</p> <p>Target Impact Assessment City Boulevards (2014)</p> <p>Helsinki City Plan (2018)</p>	<p>Planning phase</p>	<p>Helsinki City (Helsinki-Uusimaa Regional Council) (Finnish Transport Agency)</p>	<p>4 km</p>	<p>28,000-30,000 ADT</p>	<p>137 ha</p>

KEY DATA					
Boulevardisation of Tuusulan highway (Kt 45)					
Strategic documents	Project progress	Relevant authority	Highway section subject to transformation	Daily traffic before transformation	Surface of the area being redeveloped
<p>Uusimaa Regional Land-Use Plan (2014)</p> <p>Target Impact Assessment of City Boulevards (2014)</p> <p>Helsinki City Plan (2018)</p>	<p>Early planning phase</p>	<p>Helsinki City (Helsinki-Uusimaa Regional Council) (Finnish Transport Agency)</p>	<p>2 km</p>	<p>30,000-57,000 ADT</p>	<p>180 ha</p>

INTERVIEWS

Interview with Niklas AALTO-SETÄLÄ, Strategic Urban Planner, Urban Environment Division, City of Helsinki, 23 September 2020

Exchanges with Irma KARJALAINEN, director, Helsinki Region Environmental Services Authority HSY, October 2019

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APPENDIX

Reinventing Cities: From Urban Highway to Living Space

Paul Lecroart shows the many benefits of transforming urban highways into people-friendly boulevards



In 1974 Portland replaced its Harbor Drive with a waterfront park; in 1991 the Embarcadero Freeway in San Francisco was dismantled; in 2001 New York rebuilt the 12th Avenue where an elevated highway had stood; in 2005 the Cheonggyecheon Expressway in Seoul made way for the river hidden underneath; and between 2013 and 2017 Paris pedestrianised the Seine riverbank highway. Now Paris Metropolitan Region is launching an international design competition to rethink the *Périphérique* and the *Grand Paris* motorway network.

So will segregated highways become a thing of the past in the post-car and carbon city? Research by the Planning Agency for the Paris Region (IAU) suggests that converting stretches of highways into multi-use boulevards and public spaces may open up new avenues for rethinking our cities in terms of liveability, mobility and resilience.

HIGHWAY-TO-BOULEVARD CASE STUDIES

Functionalist thinking and post-war planning have left many large cities, including London and Paris, with extensive, yet unfinished networks of urban highways. As they were built they were used, and still have a role in moving people and goods

within metropolitan areas. However, these limited-access grade-separated roads create physical barriers, tend to devalue centres, neighbourhoods and waterfronts, and hinder regeneration. The high levels of traffic they support generate noise, dust and air pollution, raising health and social justice issues. By providing seemingly easy access for cars, extensive highways networks tend to encourage car-centric lifestyles, urban sprawl, and more traffic congestion.

In the last decades, many cities have successfully started tearing down obsolete urban highways and replacing them with multi-use boulevards lined with mixed use new development, or new linear parks. Why are they doing that? What happens with the traffic? What are the benefits and costs? Are these projects backed by public support?

1 Seoul: the Cheonggyecheon River, formerly a highway carrying 168,000 cars a day; removal of the viaduct and restoration of the river significantly reduced traffic. Image by Paul Lecroart IAU

To find answers to these questions and others, I have looked into over 20 highway-to-boulevard experiences either fully completed or planned in cities worldwide. Of these, nine cases were studied in depth on-site with reports published (in French): Seoul (Cheonggyecheon Expressway), Portland (Harbor Drive), San Francisco (Embarcadero, Octavia), New York (West Side, Sheridan), Milwaukee (Park East), Montreal (Bonaventure), and Vancouver (Northern False Creek Viaducts).

Most of these cases involve fairly central stretches of highways supporting heavy traffic volumes (in the range of 50,000 to 150,000+ vehicles per day), before being replaced by a boulevard and/or a linear park. This research is reference material to inform highway transformation strategies and projects in the Paris Region.

WHY DO CITIES GET RID OF URBAN HIGHWAYS?

Depending on the physical context and circumstances, city authorities decide to remove highway stretches for quite a pragmatic combination of reasons, including:

- **Aging infrastructure and rebuilding costs.** In San Francisco, Seoul, New York (West Side), or Toronto (East Gardiner), it appeared cheaper to dismantle crumbling elevated highways than to rebuild or bury them. Recycling viaducts into pedestrian connections can also give a new life to obsolete infrastructure cheaply, as in Seoul (Seoullo 7017) and Paris (La Défense Boulevard).
- **Revitalising blighted areas and unlocking redevelopment opportunities.** This is a main driver for change in Vancouver, Milwaukee, Montreal, Birmingham (Inner Ring Road), Lyons (A43 Mermoz), and Oakland (I-980).
- **Reclaiming the waterfront.** Transport engineers enjoyed building highways along river or seafronts, but these created barriers and therefore suppressed real estate values. Reconnecting cities with their historic setting and 'giving the waterfront back to the people', residents and visitors alike, often means converting the highways, such as in Portland, Seoul, New York and Paris.
- **Reducing through traffic and related nuisances.** This is central to the strategy supporting the Seoul, Paris, Lyons (A6/A7 Confluence), and Strasbourg (A35) reconstructions.

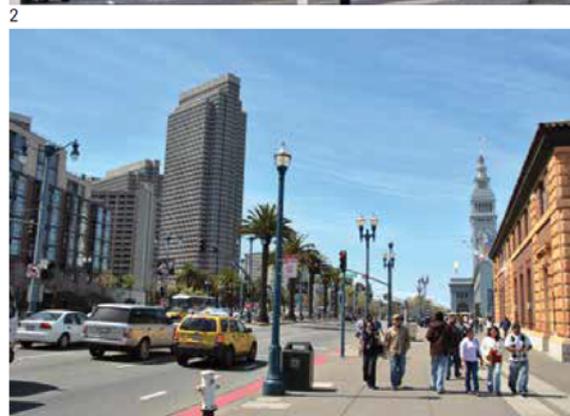
These context-specific goals are usually part of wider urban intensification policies, eco-friendly transport plans and economic strategies. However, many highway removal projects were accidental: both the Embarcadero and Central Freeway viaducts in San Francisco were closed after being damaged by the Loma Prieta earthquake in 1989, and New York's West Side elevated highway collapsed when a maintenance truck went through the viaduct in 1973!

DOES HIGHWAY TRANSFORMATION REALLY HELP REGENERATE CITIES?

Evidence from research shows that redesigning highway corridors can be a powerful driver for regenerating blighted or abandoned parts of cities, with a lasting positive impact on the city as a whole. Removing visual barriers, reconnecting streets, and improving the quality of the environment has changed the face of Portland, San Francisco, Seoul, Milwaukee and Birmingham. Replacing interchanges and ramps by straightforward crossroads unlocks vast pieces of land that can be reconverted into denser mixed use districts and parks.

WHERE DO THE CARS GO?

To many traffic engineers' surprise, closing highways does not usually create traffic chaos beyond initial adjustments. Where spare road capacity did exist in some of the cases studied (Seoul, San Francisco, New York), car traffic switched to local street networks. Traffic thus gets distributed more evenly on a larger number of streets. Congestion remained limited and less than forecast.



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Average daily traffic in the road corridor may decrease dramatically after removal – from 20 per cent in Portland to up to 82 per cent in Seoul. When accounting for trips diverted to alternative roads or to public transport, a significant share of earlier traffic appears to have simply evaporated, typically in the range of 10-25 per cent in the cases studied. Faced with a reduction of road capacity and speed, a proportion of motorists change their routes, time of travel, trip frequency or activity programme, while others switch to alternative modes. Changing conditions makes car drivers think twice, leading some to change destination or give up less essential trips.

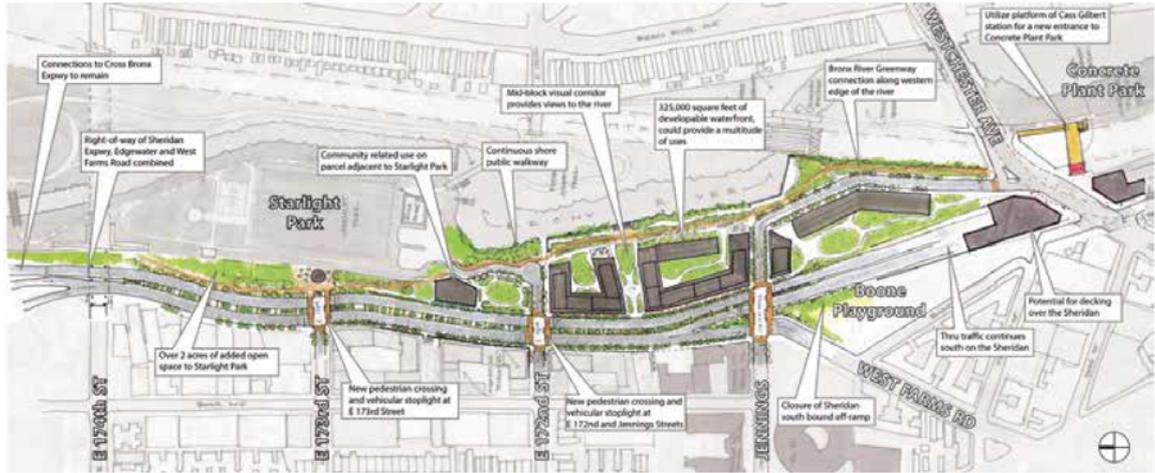
INCREASED CONNECTIVITY FOR EVERYONE

Some cities back up removal projects with specific alternative transport and travel management strategies. While reducing road supply on the Cheonggyecheon corridor, Seoul increased metro and express bus services, and discouraged solo car use through infrastructure tolls and parking policy. Local accessibility often improves with the removal of detours. A decrease of vehicular trips may mean increased accessibility for people as a whole.

Pedestrian and cycle mobility and static uses of public space for enjoyment increase sharply. However, more people on streets with still heavy car-traffic

2 San Francisco: Embarcadero Freeway in the 1960s, photo Tim Pharoah
3 The same area after the removal of the Freeway gave back the Bayfront to the people. Image by Paul Lecroart IAU

26 TOPIC



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levels (80,000 vehicles a day on New York's 12th Avenue today) may result in more car-pedestrian or car-cyclist collisions: the careful design of multi-lane boulevards is critical to their overall success. Ultimately, what we may see is a shift from a system providing off-peak fast travel for some (the motorists) to a 24/7 system of slower accessibility for all.

ENVIRONMENTAL EFFECTS

A reduction in the volume of motorised traffic and distances travelled tends to reduce fuel consumption, as well as CO₂ and fine particle emissions. Perceptions of noise levels decrease, even when actual levels remain high. Some highway-to-boulevard projects providing more greening may have a positive impact on the local climate: in Seoul, summer temperatures along the former highway corridor are now a welcome 5°C lower than on other arterial roads.

A FAVOURABLE COST-BENEFIT RATIO?

Transforming highways has a cost: in the cases studied, capital investment was in the range of €35-70 million (about £30-60 million) per kilometre. In view of the costs of maintaining or rebuilding infrastructure nearing the end of its life, transformation often proves cheaper. It may be a more affordable and longer-term solution than capping or tunnelling. Land freed for redevelopment can contribute to meet the costs.

COMPLEX PROCESSES, PUBLIC SUPPORT?

Redesigning a highway into a boulevard is always a lengthy, complex, and uncertain process in which open technical expertise,

4 New York: plan for the Sheridan Expressway in the South Bronx. Highway-to-boulevard projects can help deprived neighbourhoods while maintaining road capacity. Image by New York City Department of City Planning-ARR
5 New York: the boulevard replacing the Westside Freeway (2001): spectacular growth in bike and pedestrian traffic. Image by Paul Lecroart IAU

citizen participation, and political will play key roles. Convincing car-users and business interests requires lots of data, meetings and leadership. While controversial to begin with, these projects often win over the public during the process... or not, as in the case of Seattle (Alaskan Way). Just as in the 1970s, extensive highway plans were defeated by public opinion in San Francisco, London and other cities, many smart grass-roots coalitions are pressing governments today to remove existing highways and flyovers in cities including Paris, New York, Denver, Dallas and Sao Paulo.

SYMBOLIC ACTIONS OR PARADIGM SHIFTS?

Highway transformation projects have a strong symbolic impact because they affect objects traditionally connected with the idea of freedom and modernity. They bring us back to some of the fundamentals of city development, such as nature, heritage, parcels and streets, and into a more holistic way of thinking.

LEARNING FROM INTERNATIONAL EXPERIENCE

From an urban planner and designer's perspective, the main lessons can be summarised in four points:

- Transforming urban highways into boulevards encourages people to change their travel patterns: less essential car trips tend to disappear and eco-friendly transport modes tend to increase. This can free-up road capacity for other needs, such as higher added value car trips or goods distribution. Improving local accessibility is not detrimental to longer-distance metropolitan or regional trips.
- An integrated boulevard offers a comprehensive metropolitan level of services connecting people and activities, moving as many people, if not more, than a highway, but at a slower, smoother speed. Boulevards enable social and cultural interactions to take place, ultimately the



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raison d'être of cities and a key to their economic performance.

- Replacing a highway with a well-connected high-quality multi-use boulevard creates value and can unlock the mixed use regeneration of deprived urban spaces and improve the liveability of the city as a whole.

- As a tool in the sustainable planner's kit, highway conversion can be used pragmatically, for instance to leverage the revitalisation of a specific area. Successful tactical action on a short stretch where the highway is easy and cheap to change rapidly will help garner support for the transformation of longer stretches in the future. This is the strategy chosen by New York City for the Sheridan Expressway (by the Bronx River). In the United States, the country of the automobile *par excellence*, the success of removal projects stimulates many other cities to redesign obsolete highways. Seoul has removed 16 flyovers since 2005.

International successes in highway-to-boulevard transformation offer food for a wider rethinking of the functions, uses and status of urban highways in city regions. Profound changes are affecting the behaviour patterns of people and businesses, and the way that cities and regions are organised. Many developed cities worldwide, including Paris, New York, Los Angeles, Tokyo, London and Stockholm, have experienced an overall reduction in car use, traffic levels, and car ownership over the last decade.

Redesigning the existing urban highway network of large cities may be a smart way to address citizens' aspirations and metropolitan development challenges, including global warming related issues. It is not just about design: it is about rethinking the planning, movement, lifestyles, and wealth creation of cities and regions. This is a major trans-disciplinary task for the coming decades. ●

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Highway transformation projects have a strong symbolic impact because they affect objects traditionally connected with the idea of freedom and modernity.



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6-7 Montreal: the *Buonaventure* Highway, before and after the viaduct was demolished with a positive impact on the environment.

8 Paris: former Left Bank Expressway, now a pedestrian and cyclist promenade. Image by Paul Lecroart, IAU





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