

Turning a city of walls into a city for all

a redevelopment strategy to reunite the urban core with the metropolitan region of Grand Paris

by Karlou Westerbeek
June 2021

“Where New York, Berlin and London have successfully created metropolitan governments, can Paris overcome its inner boundary, and convince inhabitants of Paris Proper and the suburbs that they are all Parisiens? And to achieve this, should it sacrifice the Périphérique, the city’s most prominent physical and symbolic boundary?”

- Justinien Tribillon, The Guardian, 2015

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Throughout history, Paris has always been a city of walls. The differences between the wealthy core and the poor periphery are increasing rapidly. The Boulevard Périphérique, Paris's concrete ring road, is the spatial and symbolic manifestation of the imbalance between the city and periphery. The ring road works as a mobility bottleneck at the regional scale, while locally it strengthens the perception of urban inequality by complicating access to the resources of the city centre. Transforming this infrastructure element does not involve only spatial and functional restructuring, but also interventions at the social and governance level. This research and design project shows how the redevelopment of the Boulevard Périphérique can contribute to transform its spatial, functional, social and symbolic roles, in order to address the socio-spatial inequality challenges in the metropolitan area of Paris. A strategy for the redevelopment of the ring road is proposed, accompanied by spatial interventions and planning guidelines. The main outcomes are a strategic- and spatial framework that function as a toolbox for the redevelopment project. This toolbox consists of three important components: structural conditions, contextual needs and intervention possibilities.

Keywords
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infrastructure
intra-urban connectivity
redevelopment strategy
Métropole de Grand Paris

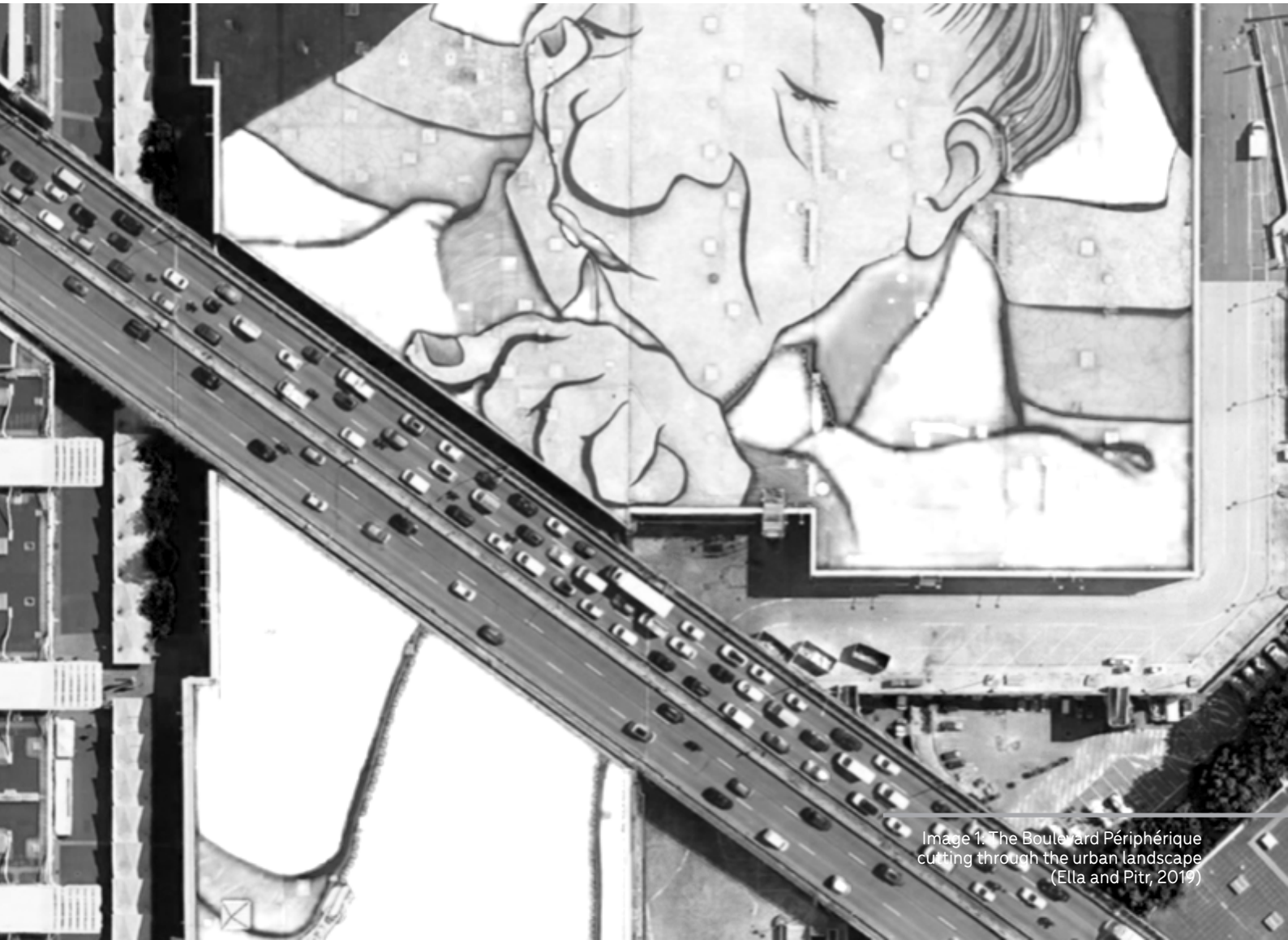

Image 1. The Boulevard Périphérique cutting through the urban landscape (Ella and Pitr, 2019)

"Talent is good. Practice is better. Passion is best."
- Frank Lloyd Wright

17.06.2021

The master thesis in front of you is the final work of my time as a student at the Delft University of Technology.

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I am proud to present this work to you and I hope you enjoy reading it.

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growing inequalities



Image 2: A piece of art in the 18th arrondissement (Author, 2019)

01

introduction

1.1 problem field
1.2 personal motivation
1.3 project location

1.1 Problem field: growing inequalities

In the past decades, several organisations have regained interest in the social aspects of cities, instead of approaching the city just as a technical construct (Sennett, 2018). Several policy documents and agreements have discussed the future of the city, such as The New Urban Agenda, Divided Cities and the Sustainable Development Goals (United Nations, 2015, 2017; OECD, 2018). Since the 1980s, urban studies show an increasing fragmentation and polarisation in metropolitan regions all around the globe (Graham & Marvin, 2001; Harrison et al., 2003; Lawrence, 2002; Moulaert, Rodriguez & Swyngedouw, 2003).

Within Europe, several metropolitan agglomerations experience a growing imbalance between the urban centre and the surroundings (OECD, 2018). These regions are focused on one central urban core, where most of the economic activity and resources are concentrated. The rapid (post-war) urbanization and the increase in car ownership in the past century have enclosed these historical urban cores in a maze of large-scale residential areas and major infrastructure. The differences between urban parts and communities within these agglomerations are increasing rapidly. The discourse adopted the term 'urban inequality' to illustrate challenges concerning growing social, economic and spatial differences between communities in the same urban agglomeration.

The Métropole du Grand Paris is a textbook example of a metropolitan agglomeration with an imbalance between the city core and its periphery, coming forward through increasing inequalities. According to Ellen Dunham-Jones and June Williamson (2009) "retrofitting the twentieth-century post-war suburbia is the architectural, engineering and governance project for this century" (Enright, 2016). Historical developments and interventions have prioritized some areas in the region over others. This paradigm has led to uneven relations between the city *intra-muros* and the surrounding periphery (Enright, 2016).

The majority of literature on social exclusion and urban inequality focuses on individual characteristics, and spatial features are neglected as a result (Cass, Shove & Urry, 2005; Bailey, Van Gent & Musterd, 2016; Nijman & Wei, 2020). Exclusion from all that the city has to offer, both socially and spatially, leads to the imbalance between city and periphery, and exclusion mechanisms play a key part in these processes.

1.2 Personal motivation

Growing up in a small village, the scope of the metropolitan agglomeration of Paris and large infrastructures made an impression on me. I have visited the city many times and noticed that my perspective towards it changed throughout time, especially when I started to study Architecture and Urbanism. It's a city full of contrasts, full of history and modernity, of diversity, of extremes. In this location, my personal interest and the described challenge come together. I feel that this project proposal can be interpreted as my "Ikigai" (García & Miralles, 2017):

a combination of what the world needs, what I am interested in and what I am good at.



MÉTROPOLE DU GRAND PARIS

48°51'52.9" N, 2°20'56.4" E

First settlement: 52 BC

Region: Île de France

Country: France [FR]

Départements: Paris, Hauts-de-Seine, Seine-Saint-Denis, Val-de-Marne, Essonne & Val d'Oise

Municipalities: 131

Area: 814,2 km^2

Population:
7.057.905 inhabitants
11.2% of France

Density:
8668,1 inhabitants/km^2

Dwellings: 3.592.115

Paris: a city of walls



Image 3: A view on the city from the Sacré-Coeur (Author, 2016)

02
problem focus

2.1 city of walls
2.2 imbalance city-periphery
2.3 Boulevard Périphérique
2.4 the 15-minute-city
2.5 looking forward
2.6 glossary

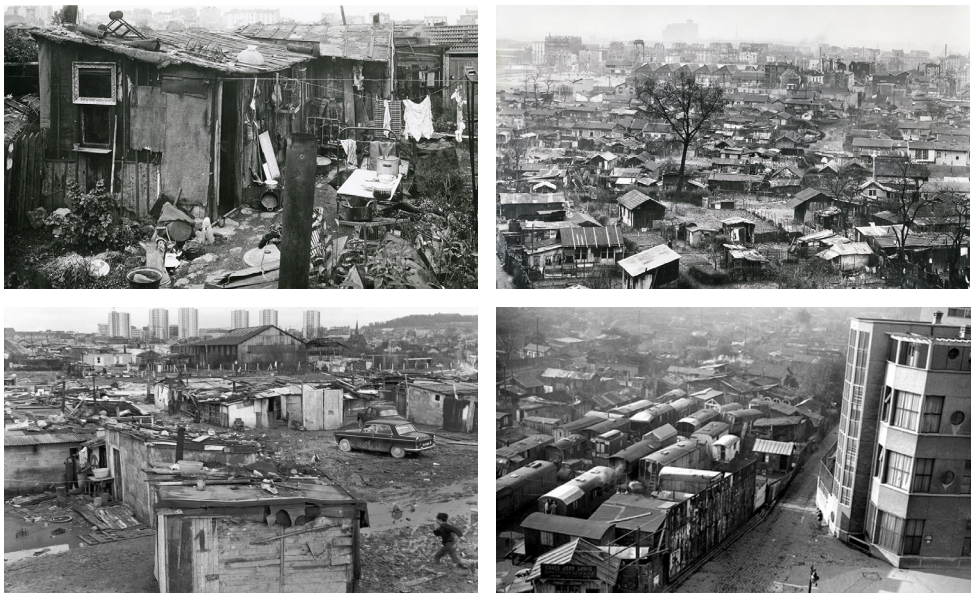


Image 4-7: photographs of the zone non aedificandi (Jules Romains, 1932-1946, via L'oeil de la photographie)

2.1 Paris: a city of walls

Throughout history, Paris has always been a city of walls. Urbanisation and expansion constantly redefined the boundaries of the city (figure 1). The walls served to defend the 'inner', indicate the administrative boundaries and manage the in-and-out flows of the city (Enright, 2016). In the mid-nineteenth century, the city centre was separated from the informal settlements in the outer areas by the construction of a 200-meter-wide *zone non aedificandi*: a no construction zone. This was a deliberate step to define a transition zone between the City Proper and the impoverished, non-regulated slum areas (Cohen & Fortier, 1989).

2.1.1 La banlieue

The first informal settlements surrounding the walled city were called *Faubourgs*, meaning "settlements outside the city" (Santé, 2016). When the city expanded and the settlements merged in the urban fabric, the term changed to *banlieues*, indicating that from now on, the inhabitants had to obey the commands of the city (Conruyt, 2019). The banlieue has a psychological dimension. In Haussmann's time, the banlieue was "a place where poor townsfolk were excluded [...] a place which was not exactly the city but neither the countryside, with an original and different culture" (Pinçon & Pinçon-Charlot, 2014, p.16).

2.1.2 Les Grands Ensembles and Cités

The post-war need for adequate housing led to the construction of nine *Grands Ensembles* around the French capital, meant to establish suburban housing for the middle-class of Paris combined with social housing. Due to the emergence of the new economy and the shrinkage of the middle-class group, these estates became vacant quite fast after their development. Middle-class households moved to more classical suburbs on the edge between city and countryside.

The immigration of foreign, low-skilled workers at the end of the century transformed the peripheral housing estates into "ethnic enclaves" (Marcuse, 1997). The lack of choice for affordable housing concentrated the incoming groups in these estates. The already monofunctional and monotone areas became grounds for a decrease in socio-economic diversity.

2.1.3 Decentralization and Les Villes Nouvelles

The post-war population growth in the metropolitan agglomeration led to the development of decentralization policies. To absorb the growing population and to relieve the pressure on the core city, five *Villes Nouvelles* were constructed (Deit, 1973). The deconcentration of economic activity coincided with the establishment of these new urban centres, and governments aimed to create a favourable business climate in these locations. The decentralisation incentive had already faded by the time these projects were completed in the 1990s. The expansion of the metropolitan region had by this time reached the urban poles, creating one extensive urban network.

Nowadays, most of the peripheral areas stand in clear contrast to the wealthy, vibrant and historic core of the city. They are not perceived as full urban spaces and inferior to the city centre. The phenomenon of exclusion predominates the core-periphery debate. Inhabitants are trapped in the physical and social space of the banlieue, a term that is increasingly being used to refer to the problematic urban zones (Angélil & Siress, 2012).



Figure 1: the former city walls of Paris (data: Gherdevich et al., 2013)

2.2 A modern city wall: the Boulevard Périphérique

The post-war expansion projects went hand-in-hand with large-scale infrastructure projects in the metropolitan region, under the planning paradigm of inter-urban connectivity. One of the main infrastructural projects in the post-war era was the construction of the Boulevard Périphérique.

In 1950, the 200-meter-wide *zone non aedificandi* became the construction ground for a concrete ring road, further emphasizing the isolation of the city centre (Cohen & Fortier, 1989). This ring road functions as a city wall with gates to enter or leave, just like the former wall upon which remnants it was built. The Boulevard was a symbol of modernity in the twentieth century. By that time, the car was perceived as one of the main items that represented individual consumption and wealth, next to homeownership (Du Monceau, 2016). The status of modernity was also represented through the size of the project (35 kilometres: the largest ring road project in Europe) and the level of investments (over 2 billion Francs) (Duigou, 1973). The construction of this ring road was coordinated from a national perspective, with neglect of local values.

In the last century, the negative impacts of urban highways came forward in different influential theories, such as Jane Jacobs' work "The Death and Life of Great American Cities" (Jacobs, 1961). The Boulevard Périphérique primarily has an impact on the direct neighbours of the infrastructure. They suffer from the "environmental impacts, land use impacts and displacement of communities", as described by Jacobs (1961). Permeability of the structure is one of the main issues and a challenge for the future of the metropolitan area.

Currently, it digests over 1 million cars per day. The Boulevard Périphérique is the element with the most congestion problems in the transportation network (V-traffic, 2014). That this ring road leads to environmental and safety issues, such as pollution and accidents, is clear. The barrier is not just a physical one, leading to discontinuities in the metropolitan network, but also a psychological one, as it emphasizes the economic and social differences between the city and the periphery. This imbalance has consequences for the social and spatial functioning of the metropolitan agglomeration as a whole.

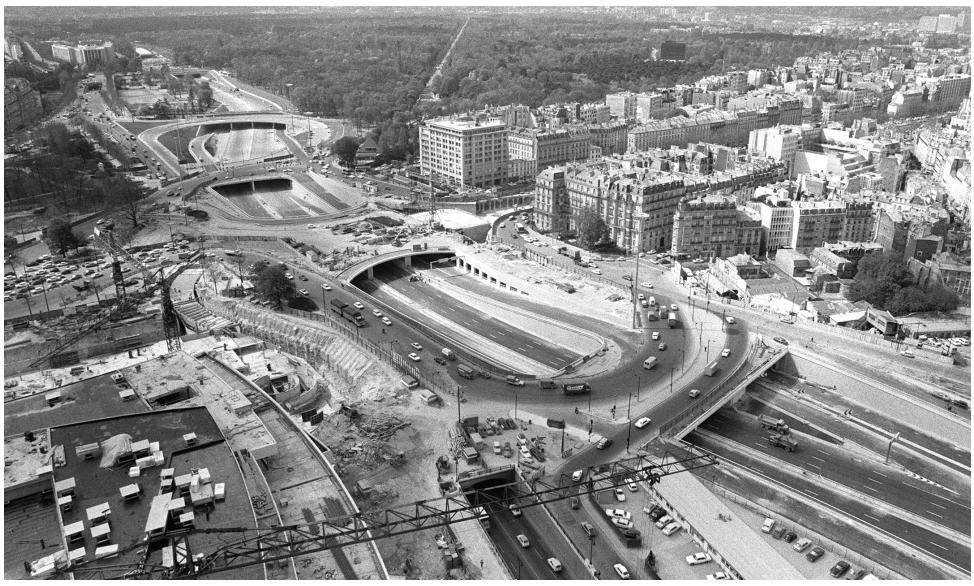


Image 8: the construction of the Boulevard Périphérique (AFP, 1973)

2.3 Imbalance city-periphery

The city-periphery is no longer a term to describe a spatial phenomenon, but also one to highlight a geopolitical hierarchy and social division (Joyeux-Brunel, 2015), or as Hazan (2010) describes in Angélil & Siress (2012): "To keep the underprivileged at a distance is very much in line with the history of Paris".

Spatial fragmentation

The current spatial composition of the metropolitan agglomeration reflects the status of society: the inner city areas are preserved for the privileged and the underdeveloped outskirts for the underprivileged. City walls and other physical exclusion mechanisms function as dividers in the urban fabric. A lack of confrontation between members of the same urban society, caused by spatial fragmentation, leads to social fragmentation and -polarisation.

Social fragmentation

In the past decades, tensions in the metropolitan area have led to commotion and a further declination of the concerned areas. The tensions are resulting from a persistent feeling of exclusion, supported by growing socio-spatial inequalities (Angélil & Siress, 2012). Demolition, burning automobiles, and dissatisfaction with policy-making were all part of the well-known 2005 riots (Laurence, 2016; Montagné-Villette & Hardill, 2007). These vigorous riots came as a surprise for many of the inhabitants of the city centre. This phenomenon is a logical outcome of first, the fact that elite groups tend to turn away from recognizing the (socio-economic) conditions of underprivileged groups and second, the spatial organization of the city, which ensures that the elite groups are never confronted with the underprivileged groups in their daily life (Cassiers & Kesteloot, 2012).

Cultural fragmentation

The region is also culturally fragmented. *Banlieues* is often used as a term to describe the urban areas with low-income housing projects and immigrant enclaves that frequently are the grounds of dominating negative news headlines (Angélil & Siress, 2012). Currently, the reputation of the *banlieues* has even further deteriorated, leading to "territorial stigmatisation" (Musterd & Ostendorf, 2011, p.12). Designating the peripheral areas as *zones urbaines sensibles* ('target problem areas') leads to a public perception of an overall troubled periphery, lacking the possibility to ever get out of the downward spiral. The establishment of a shared metropolitan identity is crucial in developing large-scale developments: it forms the base on which other decisions can be built (Enright, 2016). To establish a common identity for all urban residents of the metropole, physical and psychological access to the opportunities that the city offers are necessary elements (Dupont & Houssay-Holzschuch, 2005).

Governance fragmentation

The national state has been the country's main urban planner, up to the 1970s, but the global paradigm shift towards liberal capitalism has brought more dynamics to the planning system (Enright, 2016). This type of governance in urban development leads to more fragmentation, as the focus has shifted from creating value for the society to value for investors and companies (Enright, 2016). A process of decentralization has redistributed responsibility over the region, but local administrations have different ideologies, uneven access to capital and diverse challenges (Musterd & Ostendorf, 2011). This has led to the creation of many parallel policies, without a clear link to each other.

2.4 The 15-minute-city: an upcoming challenge for the region

The Mayor of Paris, Anne Hidalgo, has presented plans for the "15-minute-city" (*La ville du quart d'heure*): a contemporary planning concept that aims at providing all amenities necessary for a full urban life with a 15-minute-trip by foot or bike from your home (Euklidiadas, 2020) (figure 2). Next to that, public transport should be available within fifteen minutes. Hidalgo calls it "people-first infrastructure" instead of "car-first transit". According to Carlos Moreno, the route to pursue is to add more (active) movement possibilities such as walking, cycling and public transport (Moreno, 2019). The idea presented by Anne Hidalgo has a lot of potential in solving some of the described metropolitan issues, but the focus on the city centre could exclude inhabitants of the direct suburbs and consequently contribute to the increasing imbalance between city and periphery.

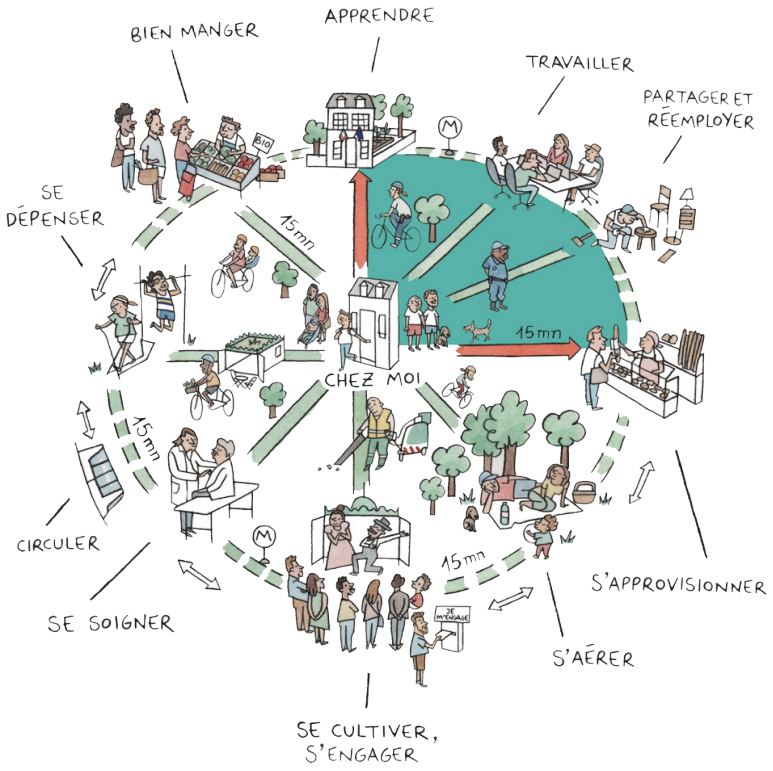


Figure 2: La ville du quart d'heure (Paris en commun, 2020)

2.5 Looking forward

Throughout history, Paris has always been a divided city, characterised by city walls and major differences between the city and the periphery. The explosive growth of the population and the agglomeration has put pressure on spatial, social and governance structures. The prevalent problems in the region lead to an increasing imbalance between the city and the periphery, symbolized by the city's ring road: the Boulevard Périphérique (figure 3). The "15-minute-city" concept is an opportunity for the metropolitan agglomeration to combat inequalities, but a precise implementation is necessary. A prominent role is reserved for the concrete ring road.

It is time to turn the tide in the increasingly divided city. But how?



Figure 3: the Boulevard Périphérique functions as the social and spatial manifestation of the prevalent problems

BOULEVARD PÉRIPHÉRIQUE (BP) = the 35 kilometre long ring road that encloses the city core of Paris

CITY PROPER = the city centre of Paris, enclosed by the Boulevard Périphérique, consisting of 20 arrondissements

PETITE COURONNE = the high-density agglomeration directly surrounding the historical core of the city

GRANDE COURONNE = the low-density agglomeration around the Petite Couronne, functioning as the transition zone between urban and rural

MÉTROPOLE DU GRAND PARIS (MGP) = the administrative and spatial perimeter of the metropolitan agglomeration, consisting of the départements of the Petite couronne

PERIPHERY = the entire urban and semi-urban agglomeration around the high-density core of the metropolitan region

BANLIEUE = the high-density agglomeration characterized by mass housing estates and large-scale infrastructure; often used as a symbol to describe a certain living environment and quality of life

LES GRANDS ENSEMBLES = the mono-functional housing estates that have been realised right after the Second World War

INTER-URBAN CONNECTIVITY = the connectivity between the main regional hubs and/or cities, facilitated by large-scale infrastructure

INTRA-URBAN CONNECTIVITY = the connectivity between parts of the same urban system, facilitated by small-scale infrastructure, focused on active transport modes and public transport

SPATIAL FRAGMENTATION = a lack of connections between secluded and/or isolated city parts due to infrastructures and urban layout

SOCIAL FRAGMENTATION = a growing polarization in the society leading to segregation and inequalities; often intensified by spatial fragmentation

CULTURAL FRAGMENTATION = the presence of different identities and mistrust in a metropolitan agglomeration and marginalization of certain urban parts

GOVERNANCE FRAGMENTATION = a lack of coherence and collaboration between (governmental) institutions, that hinders the establishment of metropolitan governance

15-MINUTE-CITY = a contemporary planning concept for many cities around the world, that proposes an urban lifestyle in which it will not take longer than 15 minutes by bike or foot to reach the main amenities to live a full urban life



Image 9: a view on the Centre Pompidou from Rue de Temple
(Author, 2020)



Image 10: a view on the city from the Tour Montparnasse (Author, 2019)

03

problem definition

3.1 problem statement
3.2 research aim and objectives
3.3 relevance
3.4 theoretical basis
3.5 research questions

Paris: a divided city

Throughout history, Paris has always been a divided city. The imbalance between the centre and the periphery has come to the point that the maladies in the city are not just contained in the affected areas, but spreading over the entire metropolitan region faster than ever. The differences between the wealthy core and the poor periphery are increasing rapidly. Tensions among inhabitants have led to confrontations, riots and a feeling of exclusion and dissatisfaction. Spatial, social and governance fragmentation hinder the possibility to resolve these issues. Next to that, economic objectives are prioritized in urban planning practices, leaving important societal and environmental challenges unaddressed. The metropolitan region needs to find a way to balance the global economic objectives and the local social and environmental objectives.

The Boulevard Périphérique

The Boulevard Périphérique, Paris's concrete ring road, is the spatial and symbolic manifestation of the imbalance between the city and periphery and a central element in the previously described forms of fragmentation. First, it indicates the boundaries of the core city governance, which hinders the establishment of a metropolitan governance structure. Second, it determines real estate and land value contrasts, expanding socio-economic differences between urban parts. Third, it represents the symbolic division between the two million *Parisians* and the ten million other *metropolitan residents*. Lastly, the structure itself serves as a physical exclusion mechanism, preserving the functions of the former city wall. The Boulevard Périphérique works as a mobility bottleneck at the regional scale, while locally it strengthens the perception of urban inequality by complicating access to the resources of the city centre. Transforming this infrastructure element does not involve only spatial and functional restructuring, but also interventions at the social and governance level.

3.2 Aim and objectives

The project aims to show how the redevelopment of the Boulevard Périphérique could turn the tide in the increasingly divided city. In this project, the Boulevard Périphérique is not just perceived as a physical barrier, but also as a manifestation of the social and planning structures in the region. The project will reveal the possibilities for spatial- and planning interventions in order to create an equal and well-connected urban area, with a strong metropolitan identity and a high quality of life.

The research aim is to reveal the roles of the Boulevard Périphérique in the increasing imbalance between city and periphery. The design aim is to show how the redevelopment of the Boulevard Périphérique can contribute to a better balance between the city core and its periphery.

3.2.1 Output

- a redevelopment strategy that shows the possibilities for the future of the metropolitan region and the role of the Boulevard in it
- a strategic framework to guide the transformation of the Boulevard Périphérique
- urban-scale design proposals to demonstrate how the core can be opened up and reunited with the metropolitan area
- planning recommendations to show how to balance economic, social and environmental objectives in spatial planning practices

3.2.2 For whom?

The groups that suffer the most from the described problems, are underrepresented in the political arena. Their voices and interests will be brought forward by this project. Addressing the described issues will have consequences for the overall functioning of the metropolitan region, as the current tensions lead to more social division. In the end, the result will affect all metropolitan inhabitants, but make the largest differences for the ones in need of change. The project will deliver a proposal for the future of the ring road and can thus contribute to decision-making processes of local governments.

The tension between the urban core and the surrounding periphery has been leading to social problems and violence for a few decades now. The growing challenge of urban inequality needs to be addressed, before exclusion and deprivation lead to an irreversible situation. This project aims to turn the tide in the increasingly divided city by proposing a redevelopment strategy for the Boulevard Périphérique, Paris's concrete ring road. The Boulevard Périphérique has been subject to research before, but this project offers an unique approach towards infrastructure redevelopment projects.



Image 11: Chroniques de Clichy Montfermeil (J.R., 2017)

Infrastructure redevelopment projects have shown the spatial and environmental value that can be added to a neighbourhood, like the Coulée Verte in Paris or the deconstruction of a highway in order to give the Cheonggyecheon river in Seoul space again. In research however, the social benefits that such (re)development projects can deliver are missing. This project aims to reveal the social consequences and benefits of infrastructure redevelopment. It advocates for a more social perspective in infrastructure redevelopment projects.









3.4.1 Introduction

Most of the literature is focused on individual characteristics in explaining growing inequalities between members of the same society, such as ethnicity, gender, age and education level (Buitelaar, Raspe & Weterings, 2016). This theoretical framework aims to expose the scope and characteristics of the city-periphery imbalance in Paris. It focuses on structural (spatial and organisational) conditions that shape the urban inequalities, instead of focusing on individual differences. It is necessary to reveal the socio-spatial aspects of the inequalities to understand the scope of the problem and to plan a more socially and economically sustainable future for the region.

3.4.2 Hypothesis

The hypothesis is that current urban structures strengthen the spatial and social exclusion of inhabitants of the peripheral areas in the metropolitan region of Paris. First, the literature review will show how the imbalance comes forward by exploring the type of socio-spatial inequalities in the case study of Paris. Second, the role of physical and organisational exclusion mechanisms embedded in the urban fabric will be explored, with a focus on transportation and mobility. A final discussion puts all the concepts in relation to each other. The framework ends with a call for action in planning for mobility and accessibility, in order to address the prevalent urban inequalities in the metropolitan region of Paris.

3.4.3 Urban inequalities

Residential inequality

In the past years, the connection between socio-economic processes and spatial organisation has increased in the region. It led to the increase of "islands of poverty" (Fleury et al., 2013) in the periphery directly surrounding the city centre of Paris. The social polarization is geographically visible, as the suburbs west of the city centre and the suburbs north of the city centre become more opposed, socially and economically (Fleury et al, 2013). The historic layout of the region is largely responsible for this divide. The former royal towns such as Versailles are on the west side of the city and consequently, the factories and lower-class neighbourhoods were constructed on the north- and east side, making sure the smell of the factories drifted away from the centre (Santé, 2016). The post-war housing demand led to the construction of housing estates in the periphery of the city, among which *Habitations à Loyer Modérés* and *Les Grands Ensembles*, designed as a combination for the middle class and social housing (Bertho, 2014). Due to the emergence of the new economy, the middle-class group shrunk and left the estates, which led to a concentration of solely social housing in the estates. The post-war immigration of foreign, low-skilled workers transformed the peripheral housing estates into ethnic enclaves (Marcuse, 1997). The lack of choice for affordable housing concentrated the incoming groups in these estates. Currently, most of the social housing is facilitated in these high-rise housing estates, leading to monochrome and monofunctional suburban areas (Blanc, 1993). In contrast, the city centre of Paris has never suffered from an exodus of the rich. It has always contained a concentration of high-end housing and wealthy inhabitants. Especially the western part of the centre has throughout history always been an enclave of richness (Grabar, 2013).

Near the end of the nineteenth century, Georges-Eugène Haussmann oversaw one of the largest urban development projects in the city. Recent studies have shown that this project did not directly lead to an outflux of low-income groups; it led to a clearer contrast between rich and poor neighbourhoods, also called "social engineering" (Willsher, 2016). However, this is not uniquely a historic process. In more recent history, urban renewal efforts and gentrification have strengthened the position of privileged groups in the inner city neighbourhoods (Carpenter et al., 1994). This led to an increase in housing prices, forcing low-income groups to move from the city centre into the housing estates (Hess, Tammaru & Ham, 2018).

Consequences of residential segregation

Individuals living in segregated areas that are disconnected from the place where resources are situated, have fewer opportunities for socio-economic growth (Cassiers & Kesteloot, 2012). Next to that, the concentration of low-income individuals itself already decreases the chance for socio-economic growth, because - among other issues - their high-potential social network is missing (van Kempen, 1994).

Access to resources

The isolation of urban parts leads to "social alienation", a sense of not belonging to society anymore (Angélil & Siress, 2012). The lack of mobility and access to urban services prevent certain socio-economic and ethnic groups from full participation in society (Gallez & Motte-Baumvol, 2018). The degree of accessibility to resources is mainly based on place of residence and access to transport (Gallez & Motte-Baumvol, 2018). One of the main concerns in the metropolitan agglomeration is accessibility from the suburban parts to the amenities and services in the city centre (Musterd & Ostendorf, 2011). Many of the housing estates in the periphery have been developed in an era focused on the private car. Car ownership was perceived as a necessity, or even a luxury, for the future. However, most of the current inhabitants of the peripheral housing estates lack the (financial) capacity to make use of private cars (Gallez & Motte-Baumvol, 2018) and are closed off from the rest of the urban area. Low-income groups have to find alternatives to the private car, such as walking, cycling or public transport. However, the access to public transport within the Parisian suburbs is extremely limited compared to the urban core (Enright, 2016).

When compared to higher-income households, the movements of low-income households are shorter and closer to their place of residence. This is also the case in the Parisian suburbs, where the majority of working-class residents are able to find jobs in their immediate vicinity (Gallez & Motte-Baumvol, 2018). However, these groups continue to be unable to participate in the components of the city that are essential for social integration, such as food provision, health care, sports, education and the cultural scene. These components of social life are increasingly situated in favour of the higher-income households, which has led to a decrease in access to resources for low-income neighbourhoods (Caubel, 2006). The possibility to reach services, employment and the social network of the city plays an important role in people's health, both physical and mental (Burns, 2020).

Unequal quality of life

The quality of the living environment, similarly to the ability to move around, has an impact on the health of the urban population. In the case of Paris, disparities in quality of life between the city and periphery exist and are increasing. Whereas the city centre is shielded from severe noise, certain peripheral areas suffer from noise pollution. Especially the urban areas around the airports and large infrastructures such as train tracks and highways deal with high levels of noise pollution (De Palma et al., 2007). Research has shown that the values of dwellings situated in noisy areas depreciated by 40% (De Palma et al, 2007; Gallez & Motte-Baumvol, 2018). Consequently, these housing areas will deteriorate and become enclaves of low-income households. Besides noise pollution, large-scale infrastructure leads to air pollution, impacting the quality of life in the surrounding area. Road traffic is responsible for 55% of the NO_x emissions in the metropolitan region of Paris (AIRPARIF, 2011).

3.4.4 Types of fragmentation

The inequalities in the metropolitan region are strengthened by several forms of fragmentation. Spatial fragmentation describes a situation in which the metropolitan region lacks formal connections between the different parts, which in turn leads to inequalities in the spatial and social realm (Cesafsky, 2017). The differences between urban parts lead to contrasting interpretations and uses of the city (Balbo & Navez-Bouchanine, 1995). This relates to concepts of social- and cultural fragmentation. Social fragmentation refers to a malfunction in the social networks in the city, because social ties between urban communities are non-existent or weak (Harrison et al., 2003). Cultural fragmentation is present when several different and/or clashing identities exist in the city, characterised by changing relationships among urban communities (Harrison et al., 2003). Marginalization plays an important role in this. Political fragmentation lies at the heart of fragmenting structures in the city. It relates to disintegration in urban policy and the presence of administrative divisions within the same urban agglomeration, leading to the impossibility to resolve the socio-spatial issues (Navez-Bouchanine, 2002). Separated jurisdictions lead to increasing social differences, because of the lack of coherence in addressing the problems (Morgan & Mareschal, 1999).

3.4.5 Physical exclusion mechanisms: borders and boundaries

A number of exclusion mechanisms embedded in the urban fabric play a role in the described fragmentation issues. In order to understand and perceive the city as a whole, it is necessary to be able to move through all parts of the urban area. Structures that prohibit accessibility and movement between the different urban parts serve as exclusion mechanisms. In the past decades, a principle from ecology studies has gained interest from urbanists. The difference between "boundaries" and "borders", two types of edges, characterises the urban landscape in many cities. A boundary is an edge where things end and interaction between species is not possible, whereas a border is an edge where things come together and interaction between species is possible (Sennett, 2018). These two types of edges have specific spatial characteristics. The boundary is often an intensive and fixed element in the landscape, and the border is a flexible, more open space. Boundaries are perceived as barriers, as places to stay away from. When the number and vehemence of boundaries in an urban area are increasing, an increase of social exclusion is inevitable. This leads to more segregation and isolation between city parts and urban communities.

Borders on the other hand encourage interaction between communities from both sides. Modern cities contain mostly closed boundaries, shaped by large infrastructures and functional zoning (Sennett, 2018).

In the previous decades, the main aim of infrastructure development was to connect city centres to regional economic or transportation hubs (Graham & Marvin, 2001). Constructing spaces for interurban flows results in large-scale mobility, but it also creates barriers for local communities and obstructs intra-urban connectivity: a "transport paradox" (Graham & Marvin, 2001). The areas that are left out cannot profit from the connections between centres, as the infrastructure is excluding the residents of these areas from access (Young & Keil, 2009).

3.4.6 Organisational exclusion mechanisms

Furthermore, the car-oriented lifestyle, stimulated by private investments and a lack of state intervention, has led to more (spatial) fragmentation in urban areas (Borsdorf & Hidalgo, 2005). Fragmentation and exclusion are stimulated by investments in urban space with an economic perspective, driven by the incentive to move capital and increase the land value (Borsdorf & Hidalgo, 2005). Even though the Parisian system within the Boulevard Périphérique is one of the most extensive and high-qualitative public transport networks around the globe, certain areas and inhabitants are excluded from the network. Moving away from the city centre, the cracks in the system become visible. The metropolitan region is subdivided into five concentric ticket zones, with additional pricing when moving away from the city centre. An exception is made for 'tourist' destinations such as the Charles de Gaulle- and Orly-airports, Château de Versailles and Disneyland Paris (RATP, 2020). This system highlights where the priorities in the transport system are: moving people around the region is based on economic objectives instead of social objectives. The exclusion of certain neighbourhoods in urban developments, that are aimed at reconnecting the parts of the metropolitan region, is a type of both physical and organisational exclusion. It highlights the fact that certain neighbourhoods are considered less important than others, and in some cases they are not even taken into account in the future of the region. This is not an exceptional path of development. Due to the emergence of a neo-liberal society, the attention of urban policies shifted from defending the interests of the urban society to focusing on market parties and private investments for economic growth (Cassiers & Kesteloot, 2012), negatively impacting the city-periphery balance (Nijman & Wei, 2020).

3.4.7 Need for change

Exclusion of something or someone means not granting access to a form of resource, in a spatial, organisational or psychological sense (Musterd & Ostendorf, 2011). Urbanists and policymakers are the ones that have the right instruments in their hands to combat spatial- and social exclusion. Transport has for a long time been regarded mainly from a technical, functional and economic perspective. For the future, social and environmental objectives should get equal priority in urban transport development (Gallez & Motte-Baumvol, 2018). Policy-making and spatial changes are needed to reduce the impact of the prevalent exclusion mechanisms and to create inclusive connectivity principles.

Comparing the urban transportation system to the human body, major inter-urban infrastructure elements represent the large vessels, while small-scale elements are the capillary parts of the system. These capillary parts are just as important for a healthy flow and exchange between organs as the large vessels. Reducing the amount and efficiency of the capillary parts will lead to the necrosis of certain living cells and exclude them from the system. This metaphor emphasizes the importance of connectivity and exchange between all parts of the urban system, not just between the main organs.

Policy-making

Forrest and Kearns (2001) have examined the potential of programmes that are aimed at reintroducing target areas in the urban fabric. However, policies should not focus on "assisting the poor", but rather aim for dismantling the exclusion mechanisms (Andersson, 2006). It is not about simply addressing the problematic target areas, but placing the challenges on a metropolitan scale, viewing the urban area as a systematic whole. In France, policies are mainly aimed at fixing the problems on the local scale, instead of regarding them in a larger, regional perspective (Angélil & Siress, 2012). Tackling the problems in a more integrative and collaborative manner could lead to more sustainable and just solutions. Investments should be aimed at reconnecting deprived neighbourhoods to the urban social- and physical network, taking the needs and constraints of the neighbourhoods into account (Burns, 2020). Equal priority should be given to social, environmental and economic objectives, in order to create a future-proof strategy. Next to that, cities should strive for justice, in a social, spatial and political sense. It is difficult to reach justice from one day to the next. Therefore, several steps come first. Equality indicates that every member of the society has the right to the same resources and that opportunities are distributed equally across the urban society, which in theory should lead to an equal quality of life (Ruth, 2019). In practice, this is often not the case. Equity goes one step further, by providing underprivileged neighbourhoods with the additional amenities and support that they require to alleviate inequities (Ruth, 2019). Striving for equity thus takes personal circumstances and individual differences into account. This leads to more equal chances and opportunities for living a full urban life. The ultimate goal should always be justice: ensuring equality in the fundamental social, spatial and political structures of the city. It is necessary to "fix the system" to create just cities and metropolitan regions (Ruth, 2019).

Strategic interventions

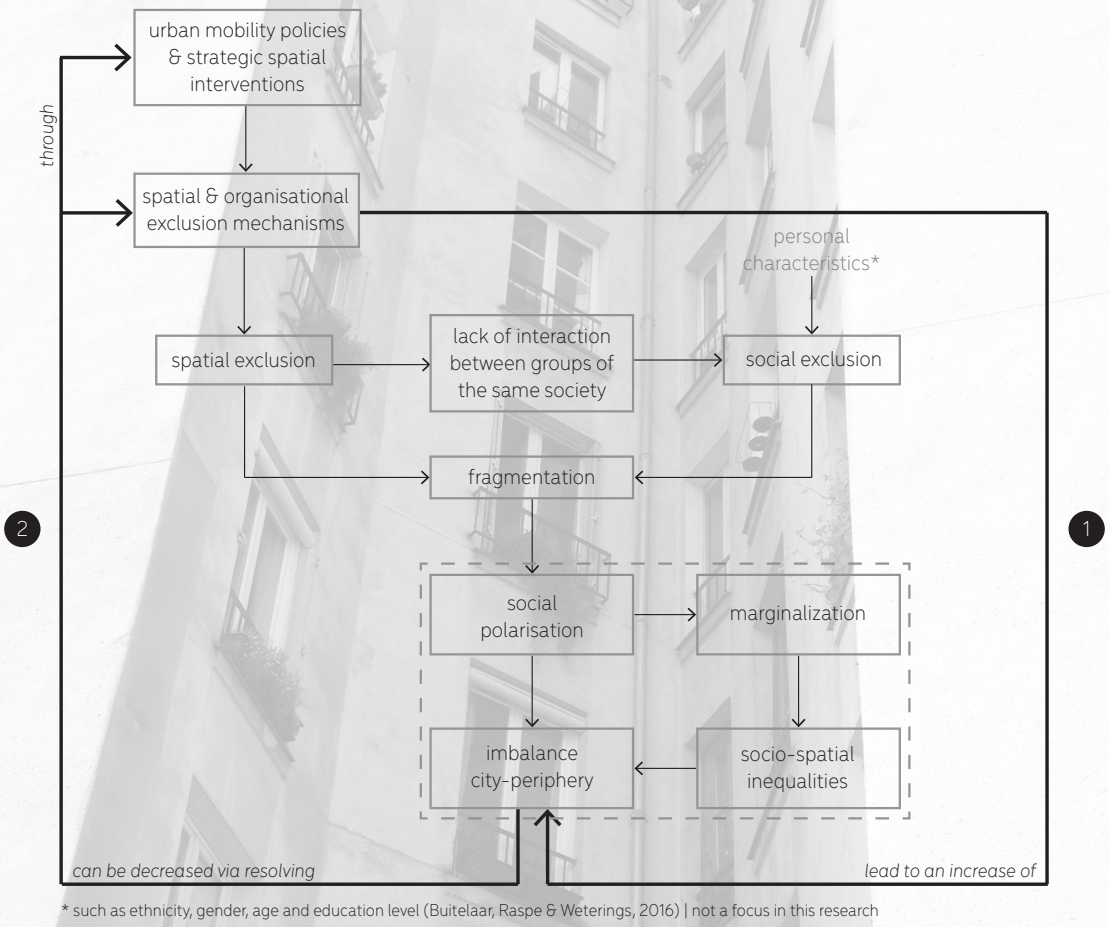
The urban zones in a metropolitan region form one system and must therefore be able to interact with each other. Possible obstacles for interaction should be removed. Strategic spatial interventions should aim at deconstructing the exclusion mechanisms and constructing suitable, sustainable and inclusive physical links (Wolch, Byrne & Newell, 2014). Several peripheral areas around Paris are completely isolated from the urban system, because of large-scale infrastructure aimed at inter-urban connectivity and a lack of suitable intra-urban connectivity links. According to a research conducted by GlobeScan and MRC McLean Hazel (2007), focused on exposing megacity challenges, "reorganising or revitalising existing infrastructure" is the main solution to transportation problems. The Organisation for Economic Cooperation and Development (OECD) describes that priority should be given to investment and development of "well-integrated sustainable transport systems, to improve conditions for pedestrians, cyclists and public transport users" (OECD, 2018). The design of interventions to facilitate active transport modes should take factors like health, safety and accessibility into account (Wolch, Byrne & Newell, 2014). This shift will have consequences for the intra-urban connectivity, public health and quality of the living environment. In the development of new infrastructure, thought should be given to the operability of the systems that support the network. To illustrate this, Anne Hildalgo, the mayor of Paris, recently announced plans that aim to refund public transport costs to scholars under eighteen, in order to increase educational options for young people (The Local France, 2020). When this proposal is complemented by strategic spatial interventions that link vulnerable neighbourhoods to places of opportunities, the effects can stretch beyond the scope of one individual household or neighbourhood.

3.4.8 Conclusion

This theoretical framework aimed to reveal the scope and characteristics of the increasing city-periphery imbalance in the metropolitan region of Paris.

The literature review has revealed that several structural conditions play a role (figure 4). The current policies and spatial interventions lead to physical and organisational exclusion mechanisms. In the case study of Paris, it can be concluded that a focus on infrastructure for inter-urban connectivity decreases the possibilities for intra-urban connectivity. The organisational exclusion mechanisms come forward in the focus on the private car in the urban transportation system and the development objectives of future urban transport. The development plans are aimed at regional economic growth and do not take the social needs of deprived neighbourhoods and its inhabitants into account. A consequence of this process is spatial exclusion. Over time, the lack of interaction between groups of the same society contributes to social exclusion. These forms of exclusion lead to growing fragmentation and polarisation. When certain areas within the same urban agglomeration are marginalized in policy-making and urban developments, socio-spatial inequalities will increase. These processes contribute to a growing imbalance between the city centre and the periphery.

The growing imbalance can be counteracted by resolving the exclusion mechanisms through new urban mobility policies and strategic spatial interventions (figure 4). To do so, the role of mobility needs to be reframed in our cities. First, in order to deconstruct infrastructure elements that function as physical exclusion mechanisms, and second, in order to improve mobility for those that are disconnected and cannot take part in the social life of the city. Even though transport and mobility are only one part of urban life, changes in the planning- and spatial system could lead to a more inclusive society, with economic, social and environmental benefits. In the case of Paris, the complete urban body could be revitalised by acknowledging that the flow through the capillary parts is just as important as the flow through the large vessels and that planning for inclusive connectivity is a medicine against increasing socio-spatial inequalities.



* such as ethnicity, gender, age and education level (Buitelaar, Raspe & Weterings, 2016) | not a focus in this research

Figure 4: the relation between social exclusion and spatial exclusion

Image 12: Parisian buildings (Author, 2016)

How can the redevelopment of the Boulevard Périphérique contribute to transform its spatial, functional, social and symbolic roles in order to address the socio-spatial inequality challenges in the metropolitan area of Paris?

sub RQ1

What are the scope and characteristics of the imbalance in the metropolitan region?

context

1A | What are the prevalent urban inequalities in the metropolitan region of Paris?
1B | What are the socio-spatial structures in the region and how do they represent the inequalities?
1C | What is the role of transport and connectivity in the growth of urban inequality?
1D | What type of exclusion mechanisms are embedded in the urban fabric and how do they function?
1E | What are the scales and scopes to address these problems?

sub RQ2

How do policy-making and spatial development contribute to the increasing inequalities?

diagnosis

2A | How did policy-making shape spatial developments in the region throughout history?
2B | What are the objectives of current policy-making and spatial developments? Which are prioritized?
2C | What are future challenges for the region as a whole and the metropolitan agglomeration?
2D | Who are the actors and stakeholders related to the Boulevard Périphérique?
2E | How does the physical and symbolic structure of the Boulevard Périphérique contribute to increasing inequalities in the region?
2F | In what way are the impacts of the Boulevard Périphérique related and in what fields do they come forward?

sub RQ3

What are the possibilities for change in the spatial- and planning structures in the case study of the redevelopment of the Boulevard Périphérique?

treatment

3A | What are the potentials for change on the local and regional scale?
3B | What is the perception of the involved actors, both the voluntary (stakeholders) and the affected (inhabitants), towards the exclusion mechanism and the growing imbalance between city and periphery?
3C | How can this potential be translated into a development strategy for the metropolitan region?
3D | What role has the deconstruction of the main exclusion mechanism, the Boulevard Périphérique, in this strategy?
3E | How can the development strategy be translated in a spatial strategy for the redevelopment of the Boulevard Périphérique?
3F | Which spatial- and planning principles derive from these strategies?

sub RQ4

What is needed for a just implementation of the proposed development strategy?

implementation

4A | What are possible spatial interventions to deconstruct the exclusion mechanisms, and where can they be implemented?
4B | What type of stakeholder organisation is necessary for the implementation of these interventions?
4C | How can planning be used as a tool for implementation of the development strategy?
4D | In what way are the proposed urban inequalities addressed by these interventions?
4E | How are the identified problems addressed with this development strategy?

04

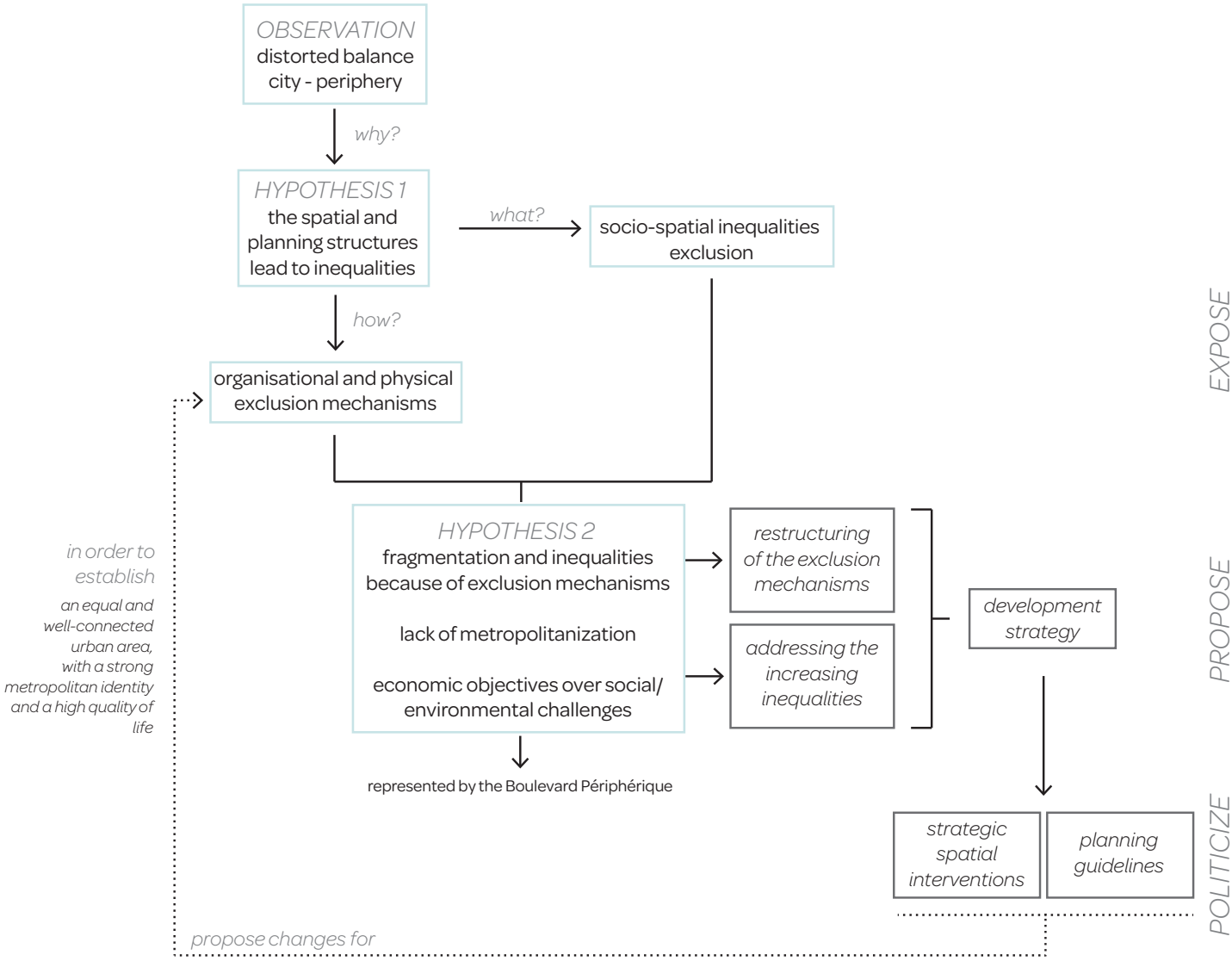
methodology

4.1 conceptual framework
4.2 research approach
4.3 research structure
4.4 methods & techniques
4.5 reflection framework

4.1 Conceptual framework

The conceptual framework presents the key variables of the project and their mutual relations, but also reveals the context in which the variables come forward. The relations can suggest (inter)dependence, hierarchy or causality. The framework is a guiding tool, to define the boundaries of the work and to structure the data, and a testing tool, to check the appropriateness of collected literature. The conceptual framework makes use of the structure presented by Marcuse (2009):

Expose inequalities, power relations, unequal developments, exclusion, spatial developments, spatial patterns, societal structures, (powerful) actors.
Propose possibilities and opportunities for transition.
Politicize collaborate and be smart about communication and networks.



part of theoretical framework
part of research & design

Figure 5: the conceptual framework

4.2 Research approach

This research is based on *mixed methods*, with a focus on qualitative research methods. The project links institutional and spatial design, which makes the choice for mixed methods explicable, because both qualitative and quantitative methods are required to achieve this goal. Mixed methods can be partly predetermined and partly evolve during the process, based on new insights and evaluation (Denzin & Lincoln, 2011 in Calabrese, 2020). The focus on qualitative data collection is based on the fact that this method is highly suitable for the exploration of new themes and for discovering possibilities (Amaratunga et al., 2002).



Similar to most research projects in the field of Urbanism, the research has been conducted in a specific location, and is therefore considered as an *applied* research, whereas a *fundamental* approach explores general themes or concepts (Calabrese, 2020).



Meaning is generated from the collected data and ideas in themselves, which makes the process more *inductive* than *deductive* (Amaratunga et al., 2002).



Another characteristic of this project is the *predictive* approach. The project aims at generating knowledge and speculates on possibilities for future developments. Predictions have throughout the topic been based on an accurate analysis on existing knowledge and evidence on the topic, as they should be (Calabrese, 2020).

phase	purpose	method	subRQs	outcomes	RQs
analysis	**understand** the scope and characteristics of the problems **understand** the processes and systems in the region **identify** the most important challenges and related actors **make up** a diagnosis for the region	literature review historical analysis spatial analysis policy analysis stakeholder analysis synthesis	1A 1C 2A 1B 1D 1E 2A 2B 2C 1E 2D 2E 2F	synthesis *inequalities, characteristics, impacts*	sub RQ1
exploration	**discover** possibilities for spatial change via fieldwork **conduct** a survey to reveal the perception of users	fieldwork survey	3A 3B	location perception of users map of the problematique	sub RQ2
elaboration	**establish** a development strategy **define** spatial principles **create** a spatial strategy and spatial framework	strategic planning	3C 3D 3E 3F	development strategy spatial principles spatial strategies spatial framework	sub RQ3
demonstration	**design** spatial interventions based on the principles	research-based design	4A	pilot projects final result	
implementation	**show** how planning can support and develop the project **propose** changes for the planning environment **develop** a phasing strategy **reflect** on financial aspects	strategic planning	4B 4C	phasing strategy planning tools planning recommendations	sub RQ4
reflection	**reflect** on the results	reflection framework	4D 4E		

Figure 6: the research structure

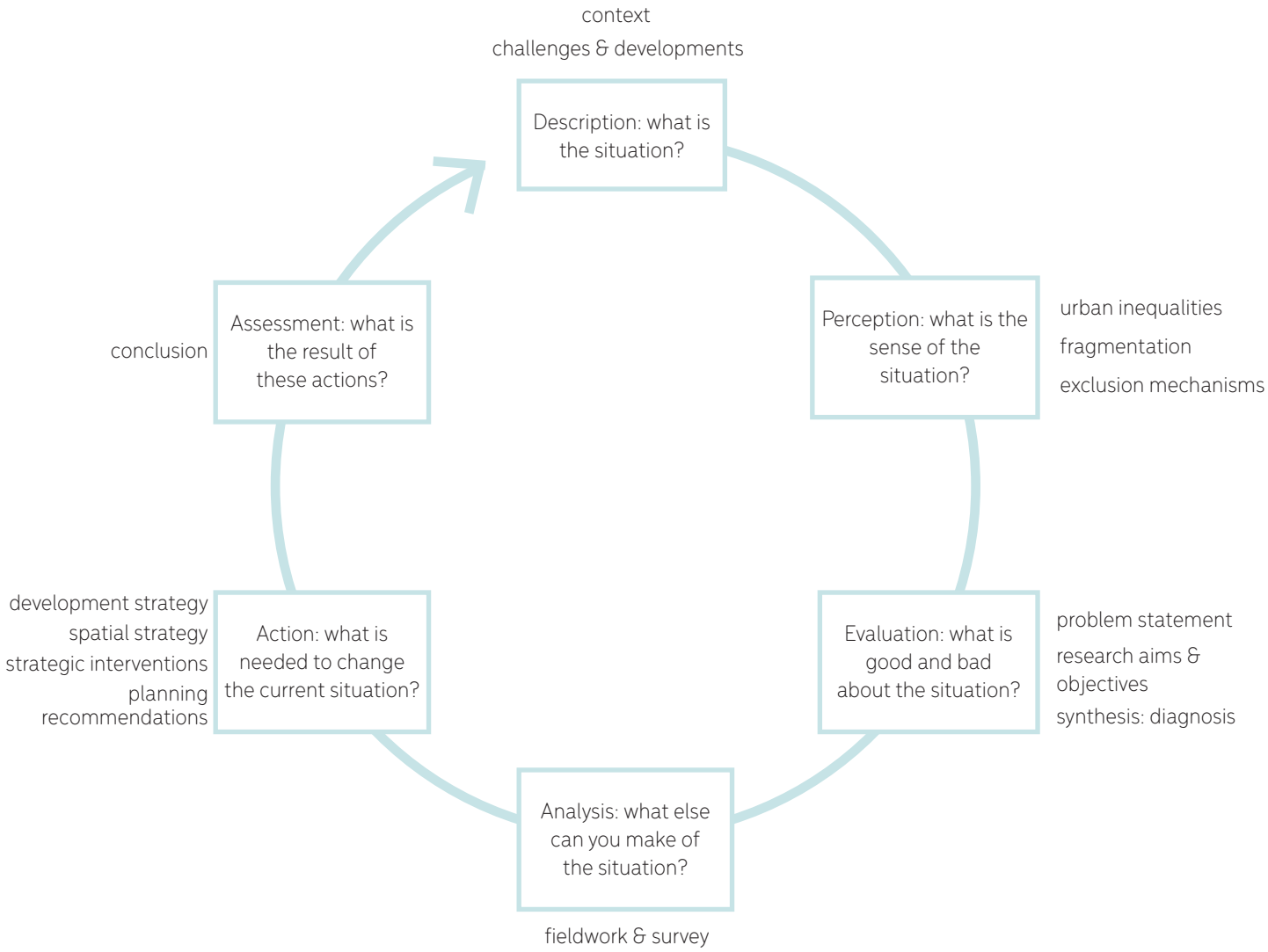


Figure 7: the evaluation framework

The evaluation framework is based upon Gibbs' reflective cycle (1988), but it is adapted to contribute to this specific project. The different components of the project all fulfil a specific role in finding answers to the research questions. It is a tool to evaluate the outcomes of the project and the relevance of the findings for the research aim.

method	technique	intended outcome
literature review	read take position	theoretical framework
historical analysis	documentary data analysis mapping	historic timeline transport development maps
spatial analysis	statistical data analysis mapping	regional maps figures & tables
policy analysis	documentary data analysis	urban policies main policy objectives
stakeholder analysis	Power-Interest chart	overview of stakeholders power-interest chart
synthesis	mapping verbal description	"diagnosis" of the region
fieldwork	transect route, photography, mapping, drawing, observing, verbal description, space syntax, Google Maps analysis, online video analysis (*partially at the site - partially from home*)	quality of space | characteristics | users | photo collage
surveys	online questionnaire	the perception towards the BP desires & needs of inhabitants
strategic planning	vision-making strategic planning	strategic framework spatial strategy spatial framework
research-based design	demonstrate the possibilities deriving from the framework	design proposals: pilot projects
strategic planning	stakeholder reorganisation project planning	planning recommendations phasing & finances
evaluation	review project aims and objectives reflect on final outcomes	evaluation framework

description

A literature review is useful to discover the existing knowledge on a topic, to combine existing knowledge to generate new links and to identify topics that need more research (Paré, Trudel, Jaana, & Kitsiou, 2015). It is also a means to justify and specify the research topic (Kuada, 2012).

The historical analysis serves to understand the spatial developments in the region throughout history. It is a retrospective tool that reveals important development plans and the associated decision-making processes.

The spatial analysis aims to track down the spatial factors and characteristics of socio-spatial inequalities in the metropolitan region. The analysis reveals general structures in the metropolitan region, next to a more specific analysis of the Boulevard Périphérique that elaborates on the specific characteristics of this infrastructure.

Policy analysis is used to deliver an overview of relevant policies and to reveal the main objectives in policy-making. With this data, flaws in the current policy-making can be identified (Hermans & Thissen, 2009). It took place through the analysis of "documentary data" (Denscombe, 2014, p. 226), consisting of government documents, reports and news articles.

Stakeholder reorganisation is necessary in order to "optimize cooperation potential" (Hermans & Thissen, 2009) for the redevelopment project. A power-interest chart maps the different stakeholders and their interest in this project.

The synthesis seeks explanations for the proposed observations and to explore possibilities. Because it is a qualitative method for data analysis, visual and verbal products are the result (Denscombe, 2014). In this stage, the collected data is conceptualised in order to create a "diagnosis" for the region.

The fieldwork identifies spatial possibilities and constraints at the site for the redevelopment. During the fieldwork an in advance determined transect route is guiding, to collect data through photography, mapping, drawing, observing and verbally describing the place. Possibilities for fieldwork at the site are limited because of the COVID-19 pandemic, therefore several desk research techniques are added to the fieldwork method. A log of the fieldwork is added in Appendix I.

Online questionnaires are used to collect data from inhabitants, to explore what the perception towards the Périphérique is. Besides that, the survey focuses on revealing the needs of local residents and wishes for change. The questions for the questionnaire are described in Appendix II.

A strategy is a manner to translate a vision into a plan. It focuses on the 'how?', through planning tools, the 'when?', via phasing, and the 'with whom?' through stakeholder planning (Stead et al., 2019). The strategic planning delivers both spatial and planning principles for the redevelopment project.

The design process is characterised by "exploring, deciding and experimenting" (van Dooren et al., 2013). During this stage, multiple alternatives and concepts are developed and tested against the previously defined spatial principles and diagnosis of the area.

The second stage of strategic planning brings values for policy-making and guidelines for the approach of the project forward. Several planning principles are proposed and stakeholders related to the project are reorganised, making them part of the development strategy.

In the final phase, the outcomes and findings of the project are validated. The reflection framework plays an important role in this.

the past, present and future



Image 13:
high-rise near Olympiades
(Author, 2020)

05
analysis

5.1 French spatial planning
5.2 transport development
5.3 Boulevard Périphérique
5.4 socio-spatial structure
5.5 policies & trends
5.6 planning environment

The analysis chapter dives into the past, present and future of the metropolitan agglomeration. The analysis focuses on the spatial planning history of Paris and the socio-spatial structures in the city. Finally, relevant challenges and policies are discussed. The chapter consists of three parts:

past | causes historical analysis	French spatial planning Transport development
current | status spatial analysis	Boulevard Périphérique Socio-spatial structure
future | challenges policy & trend analysis	Mobility transition Grand Paris development plan Socio-economic policies Environmental policies Planning environment

This information is retrieved from the chapter "Comprendre Île de France: une histoire du territoire" in the S.D.R.I.F. of 2013, published by the Région Île de France, unless stated otherwise.

5.1 French spatial planning

5.1.1 City governance

The region has always been under the rule of public institutions. It was never treated like other metropolitan regions in France. This exceptional position has to do with the persistent focus on Paris throughout French history and the former monarchy that exploited this focus. This led to large differences between Paris and other French cities. In the current planning system, some of the differences are still visible.

In 1919, the first law concerning municipal planning in the region was implemented by the national state. The establishment of a national institute to organise and develop the region followed in 1928. The focus on the central city left the peripheral municipalities with a lack of capacity and resources in the post-war reconstruction and urbanisation. In 1939, the first regional development plan, the Plan Prost, was presented. The post-war decade was an era of "grand strategic planning" (Flockton, 1982). The objective of strategic planning was to push France forward together with the other European economic powerhouses such as Germany and Great Britain (Flockton, 1982). In 1964, a new law subdivided the region into seven départements, establishing new power relations between the state and the region. Nevertheless, the state overruled the region in decision-making and implementation of projects. The subdivision was followed up by the designation of regional councils in 1972. The administrative status of the city of Paris changed into "city-département" by a 1975 law. Together with the implementation of this law, the *District de la région parisienne* became *La Région Île-de-France,* highlighting the focus on the region and not just Paris. From 1975 on, Paris became a city with a elected mayor, just like the other French cities.

In 1981, a national committee was established to focus on the (re)development of deprived neighbourhoods in the city. This was the beginning of the implementation of city policies, called "la politique de la ville" in France. The 1980s marked a period of decentralisation. From now on, municipalities could draw up their own development plans. More power was given to the region and the state slowly withdrew from the planning system. In the following years, forms of intermunicipal- and regional cooperation were developed and enshrined in the law. In French metropolitan governance, the central city government remains the central figure in the regional governance structure (Nicholls, 2005). During the decentralisation phase, when state power was redistributed over the region, the power was actually redistributed over the larger, central cities: giving them more authority than the other cities and municipalities in the region (Nicholls, 2005). This led to clear structural and strategic advantages for the main cities.

In 2000, "territorial cohesion plans" (SCOT) and "local urban plans" (PLU) replaced the regional masterplans of the past. The responsibility for the implementation of the S.D.R.I.F. regional plan of 1994 was given to the region. The 2010 law related to the Grand Paris development project established governance space for cooperation on the metropolitan scale and the possibility for "territorial development contracts" (CDT). In the years that followed, a review of the state-region relation was necessary, especially in the field of transportation. Responsibilities had to be redefined and redistributed.

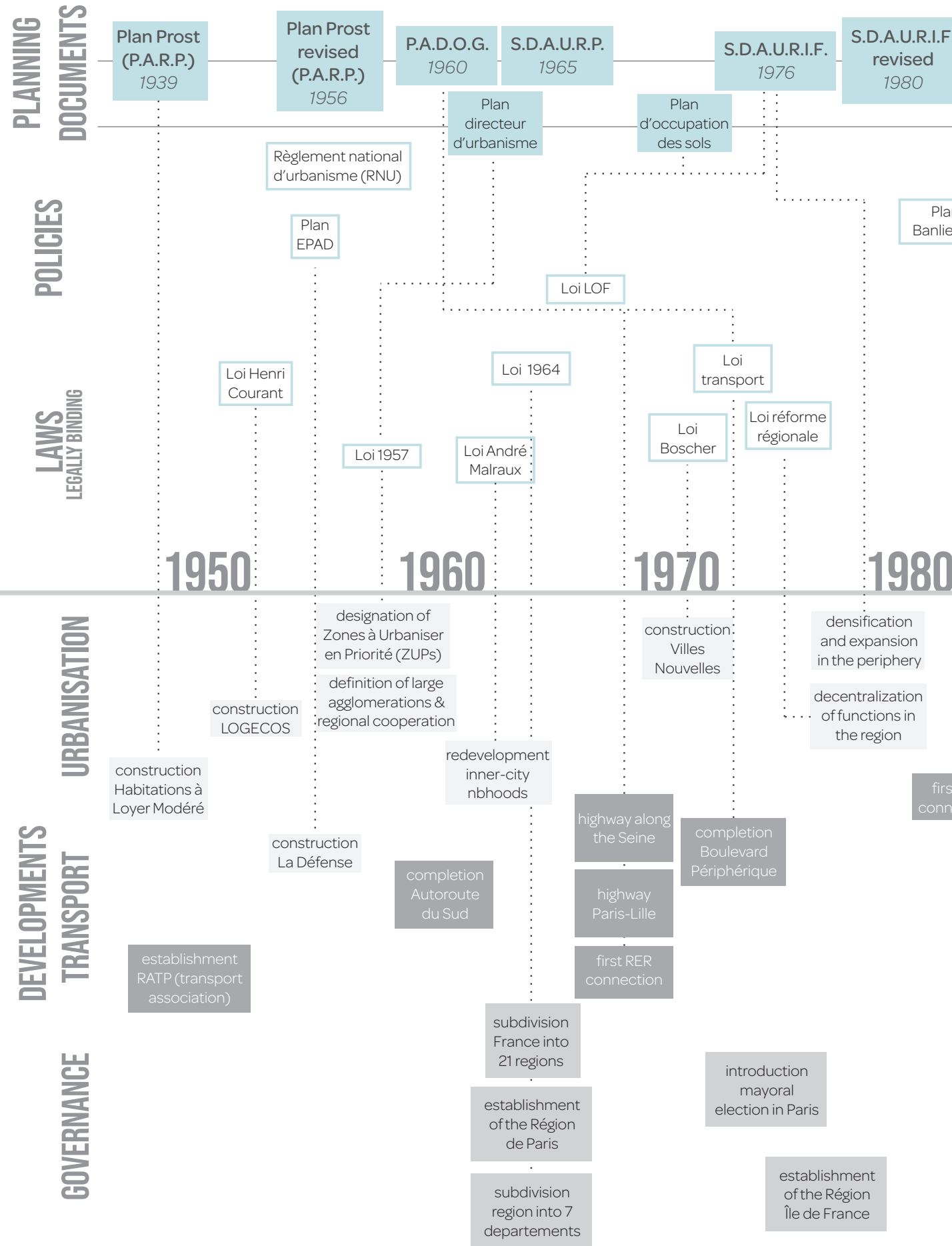
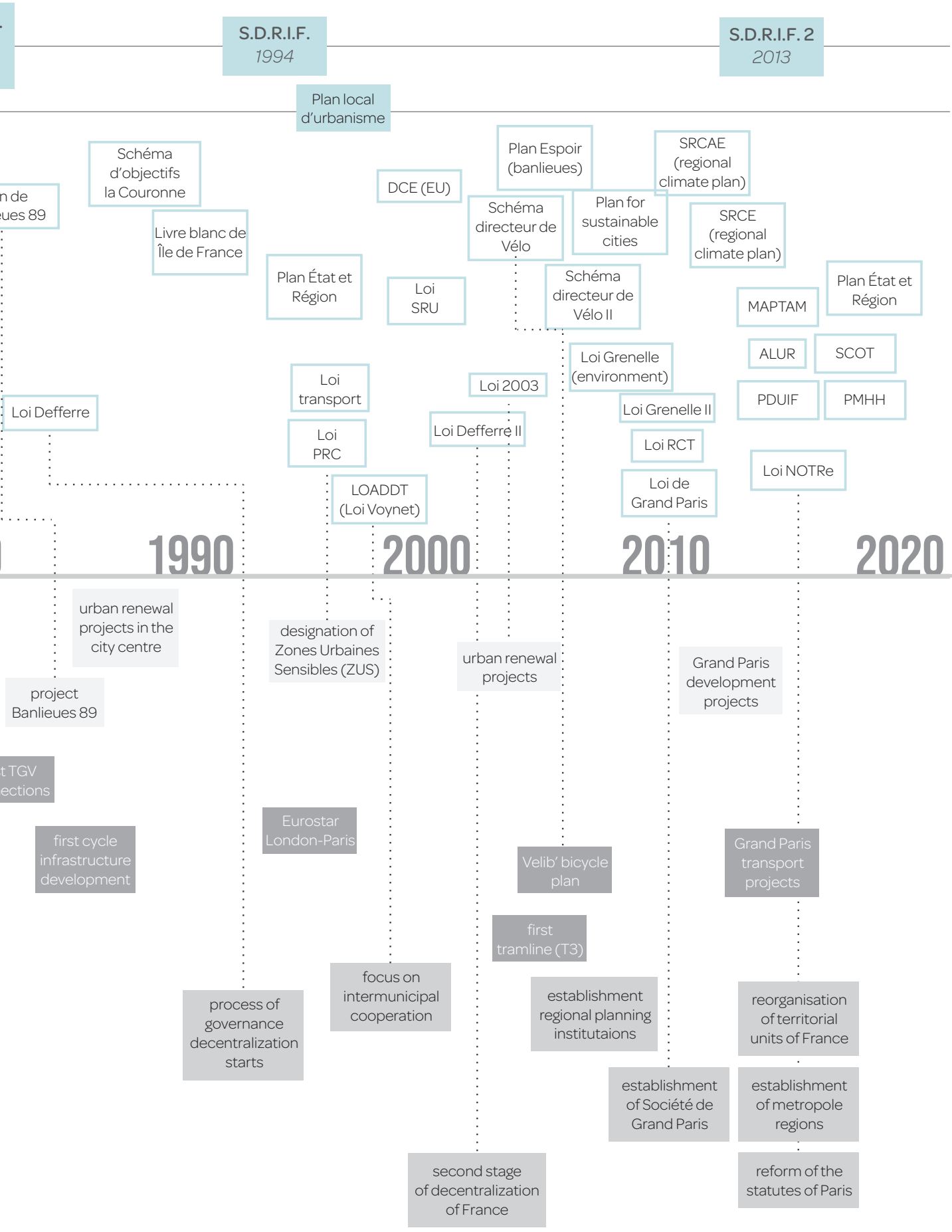


Figure 8: An historic overview of planning documents and outcomes (data: Ministère de la Transition Écologique (2020)


S.D.R.I.F.
1994
S.D.R.I.F. 2
2013
Plan local d'urbanisme
Schéma d'objectifs la Couronne
Livre blanc de Île de France
Plan État et Région
DCE (EU)
Loi SRU
Plan Espoir (banlieues)
Schéma directeur de Vélo
Plan for sustainable cities
SRCAE (regional climate plan)
SRCE (regional climate plan)
Schéma directeur de Vélo II
MAPTAM
Plan État et Région
ALUR
SCOT
PDUIF
PMHH
Loi Grenelle (environment)
Loi Grenelle II
Loi RCT
Loi de Grand Paris
Loi NOTRe
Loi transport
Loi PRC
Loi 2003
Loi Defferre II
LOADDT (Loi Voynet)
Loi Defferre
1990
2000
2010
2020
urban renewal projects in the city centre
project Banlieues 89
designation of Zones Urbaines Sensibles (ZUS)
urban renewal projects
Grand Paris development projects
first cycle infrastructure development
Eurostar London-Paris
Velib' bicycle plan
Grand Paris transport projects
first tramline (T3)
process of governance decentralization starts
focus on intermunicipal cooperation
establishment regional planning institutaions
reorganisation of territorial units of France
establishment of Société de Grand Paris
establishment of metropole regions
second stage of decentralization of France
reform of the statutes of Paris

This information is retrieved from the Centre de Documentation de l'Urbanisme, a subdivision of the French Ministère de la Transition écologique, unless stated otherwise.

5.1.2 Urban development plans

In 1939, the first masterplan for the city region was developed: the *Plan Prost (P.A.R.P.)*. The focus of this masterplan was on organized peripheralization and urbanisation. The inner city is left blank on all the maps, emphasizing the focus on 'the outer'. In this case, 'the outer' meant a circle of 35 km from the Notre Dame, Paris's central point. The aim of this plan was to develop the region as a coherent whole and to slow down peripheral urbanization, leading the urbanization trends in the right direction. A major focus was the development of car infrastructure to improve the accessibility in the aftermath of World War I.

The second masterplan for the Paris region was presented in 1956, as *a revised version of the Plan Prost*. In this plan, the city centre appeared on the maps and was thus taken into account in the regional developments. The main aim of this plan was to decongest the city centre by removing all the unnecessary land uses. Next to that, a round of urban renewal projects in the city centre was proposed. The post-war housing demand led to a development plan for large housing estates in the periphery of Paris. Different areas were designated as Zones à Urbaniser en Priorité (ZUPs). To protect the green hinterland, an allotment- and building limit was put in place. Throughout time, this limit constantly shifted outwards, because more space was needed for the city.

The post-war growth of the population and the city went so fast, that a new masterplan was necessary. In 1960, the first *Plan d'Aménagement et D'Organisation Générale de la région parisienne (P.A.D.O.G.)* was presented. The horizon of this plan was limited to 1970, in order to keep flexibility in the fast-changing world. Deconcentration and decentralization were the most important topics of the plan. Deconcentration meant the spread of urban functions and population over the region. Decentralization focused on a reorganisation of governance responsibilities. The plan also proposed the development of four new urban centres, among which La Défense, Paris's current central business district.

In 1965, the next plan was presented. *The Schéma Directeur d'Aménagement et d'Urbanisme de la Région Paris (S.D.A.U.R.P.)* replaced the P.A.D.O.G., because new policies were needed to implement the developments. The P.A.D.O.G. assumed a stabilization of the urban population, whereas the new plan took into account the numbers of population growth, car trips, car ownership and amount of dwellings, and could therefore elaborate on more specific development plans. This document breaks with the earlier masterplans, because it rejects the allotment and building limit. It assigns existing suburban centres for restructuring, densification and redevelopment, and next to that proposes new towns. Concerning transport and mobility, this proposal focused again on establishing a network of car-oriented infrastructure, to increase accessibility to and connectivity between the major regional hubs and new towns.

In 1976, the *Schéma Directeur d'Aménagement et d'Urbanisme de la Région d'Ile-de-France (S.D.A.U.R.I.F.)* overwrote the S.D.A.U.R.P.. An important change is already visible in the name of the document. The plan concerned the entire Île de France region, instead of only the Paris agglomeration. A renewed interest in the environment and quality of life aspects put some policies concerning green spaces and air quality in place. The plan revealed some plans for public transportation, but with a certain nuance that the car would still be the dominant transport mode in the upcoming decades.

The strategies aimed to answer the post-war challenges, such as population growth, transport demand and housing need. One of the main critiques towards the SDAU structural plans focuses on the generalised and ambitious descriptions, not suitable for the long-term (Flockton, 1982). The plans had too little interest for the local politics and implementation of the interventions, coming forward in a lack of proposed land policy instruments (Flockton, 1982).

The 1980s presented a slowdown in population growth, making space for more environmental-focused policies. The S.D.A.U.R.I.F. was revised and updated. The urbanisation limit was again put in place, to protect the green belt at the edge of the agglomeration. This plan envisioned the existing agglomeration as a potential in itself and aimed to strengthen "the existing".

In 1994, a new development plan presented the path for the region up to 2015: a long time-span compared to previous plans. Even though the decentralization processes in 1982-1983 redistributed power to the municipalities, the State remained responsible for the masterplan of the Île de France region. The plan strives for the enhancement of the polycentric region, using socio-economic trends to assign development spaces. The existing regional poles should therefore be strengthened, in order to function autonomously from the city centre of Paris.

The 2000 Solidarité et Renouvellement Urbains (SRU) law was a milestone in French planning history (Prévost et al., 2012). The former plans were replaced by Schémas de Coherence Territoriaux (SCOT) and Plans Locaux d'Urbanisme (PLU). The most recent masterplan for the region was presented in 2013.

5.2 Transport development

5.2.1 Highway development

From the eighteenth century on, road traffic increased in the Paris region. A radial network was favoured, increasing the accessibility of the central city (Lojkine, 1972) (figure 10). The highways were meant to improve the inter-urban connectivity to the core and as a result, the connections to the inner suburbs are insufficient. The plans focused mainly on the inner circular motorway, the Boulevard Périphérique.

In 1954, the first construction works for the 35 kilometre long ring road took place at the southern border of the city, at the same time as the construction of two inner-city boulevards aimed at decreasing congestion issues at the west side of the city (Flonneau, 2003) (figure 9). In 1960, the construction plan for the ring road was included in the P.A.D.O.G. regional development plan, changing the financial and organisational circumstances for the project. The state, district and city all contributed financially to the project, respectively 40% (national state), 40% (district of Paris) and 20% (city of Paris) (Flonneau, 2003). The total cost of the project amounted two billion Francs (Flonneau, 2003).

The ring road crosses 49 roads, 9 train tracks, 17 metro lines and the river Seine twice (Moghaddam, 2019). It connects to all of the arriving highways in Paris. Some of the junctions used to be, and still are, masterpieces of civil engineering.

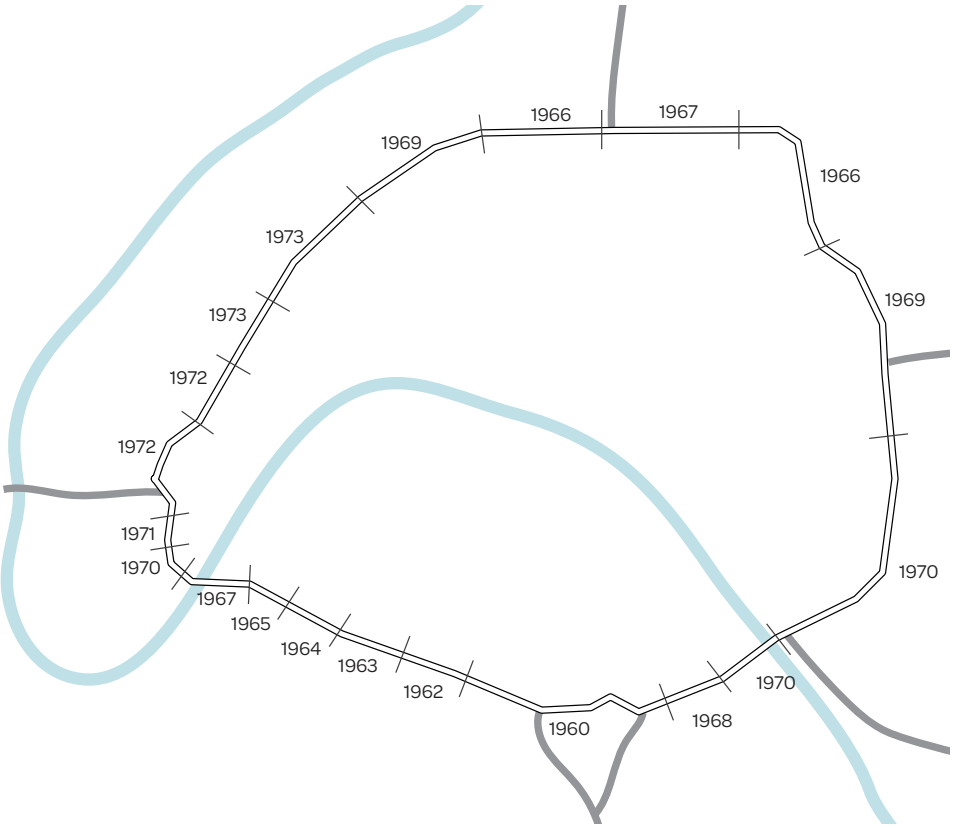


Figure 9: The construction of the Boulevard Périphérique (adapted from Flonneau, 2003)

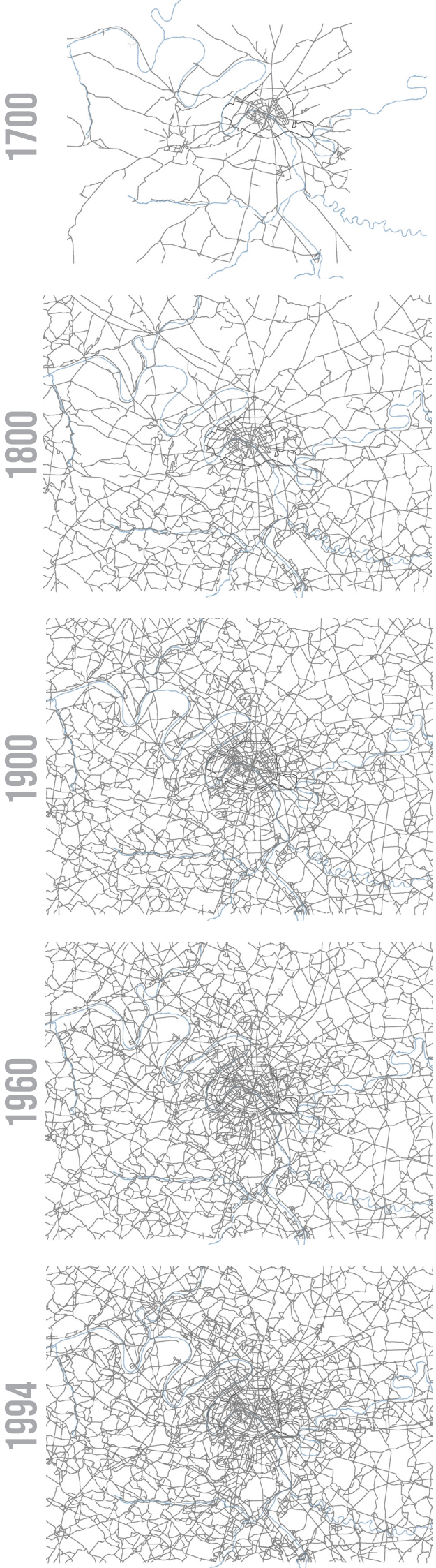


Figure 10: historical development of the road infrastructure (data: L'Institut Paris Region, 2020a)

5.2.2 Public transportation

Up to 2000, public transportation in the city of Paris was regulated within the city limits. In this year, the STP (Syndicat des Transports Paris) became STIF (Syndicat des Transports Île de France), taking the region into account in transport development as well (Le Galès, 2020). Île-de-France Mobilités is the current name of this organisation.

One of the main issues with the transport policies was the massive input of the organisations concerned with the transportation in the region, such as SNCF (French railway company) and RATP (Paris Transport Authority). These organisations preferred economic objectives over the (social) objectives of the regional development plan. Their involvement in the decision-making environment made sure that their objectives were pursued.

The focus on Paris in policy-making and investments led to a large difference in development between the city and the periphery. The suburbs could not benefit from the (infrastructure) investments in and around the city centre. The polycentric urban form that the plans strived for, was not reached because the transport policies led to an increasing scale for commuting and created an imbalance between residential areas and workplaces (Flockton, 1982). The construction of the RER train system went together with the development of the Villes Nouvelles (New Towns) around central Paris. The incentive of the system was therefore to improve the accessibility of the new towns to the central area, leaving other suburban areas out of the picture. Next to that, decisions concerning the RER system were taken in isolation from the wider plan (Flockton, 1982).



Figure 11: Current and future public transport lines (data: Ile-de-France Mobilités, 2020a, APUR, 2020j)

5.2.3 Mobility networks

The current networks for the different transport modes have a number of flaws. Discontinuity is most noticeable in the network for pedestrians and cyclists. The inner-city cycle network ends near the ring road. Although in the past years, efforts have been made to create an extensive cyclist network within the city centre, these routes stop at the Boulevard Périphérique (The Local France, 2019). This discontinuity discourages possible users from cycling because of concerns of safety and practical issues (The Local France, 2019). Outside the ring road, the cycle network is fragmented and unclear. Safe and efficient cycling- and walking routes are missing (Cervero, Guerra & Al, 2017).

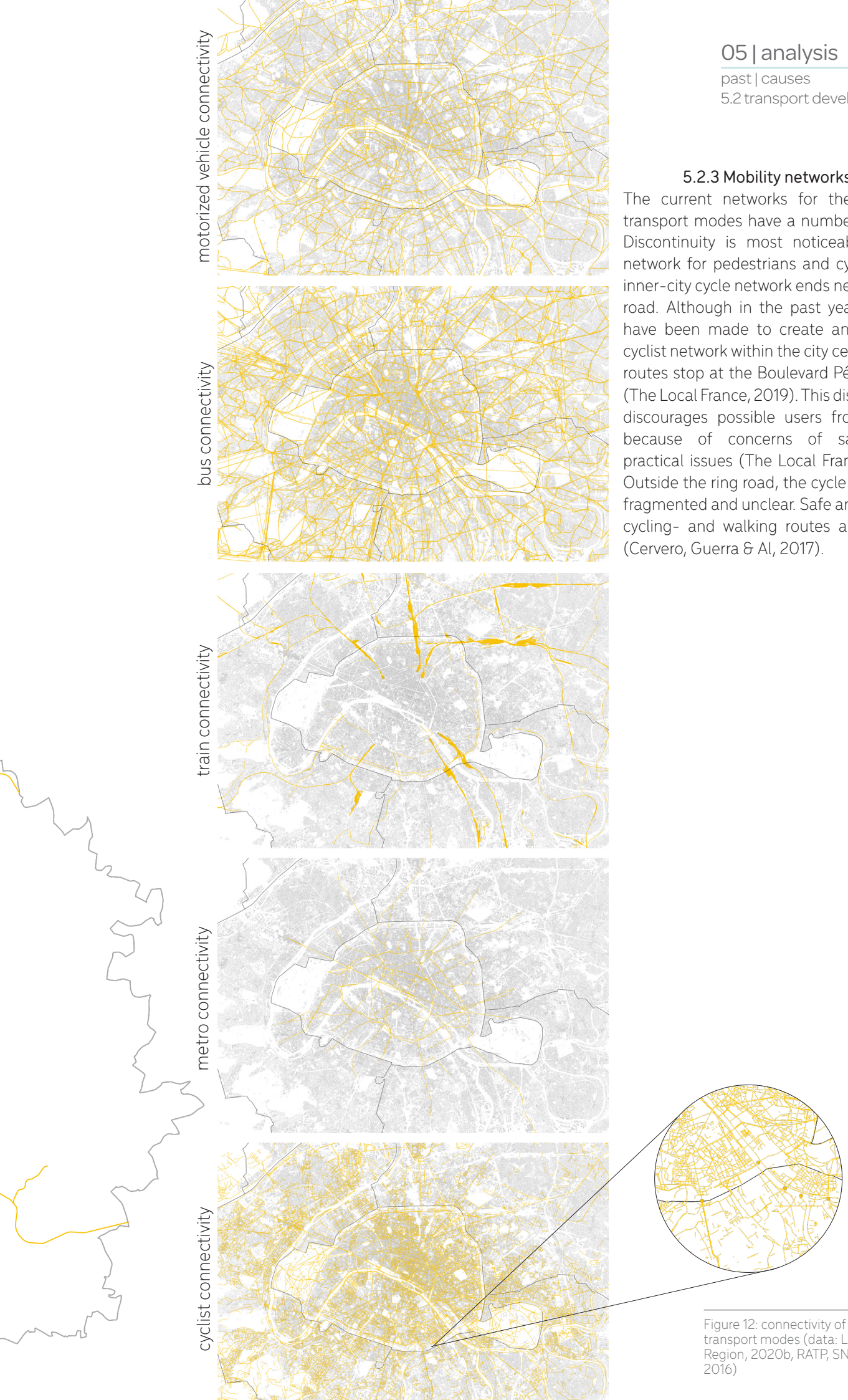


Figure 12: connectivity of the different transport modes (data: L'Institut Paris Region, 2020b, RATP, SNCF, OPTILE, 2016)

5.3 Boulevard Périphérique

This map highlights the different functions around the Boulevard Périphérique. Office parks appear to cluster around the major intersections of the ring road. At several points, a cluster of sport areas form a transition zone between the city and the ring road.

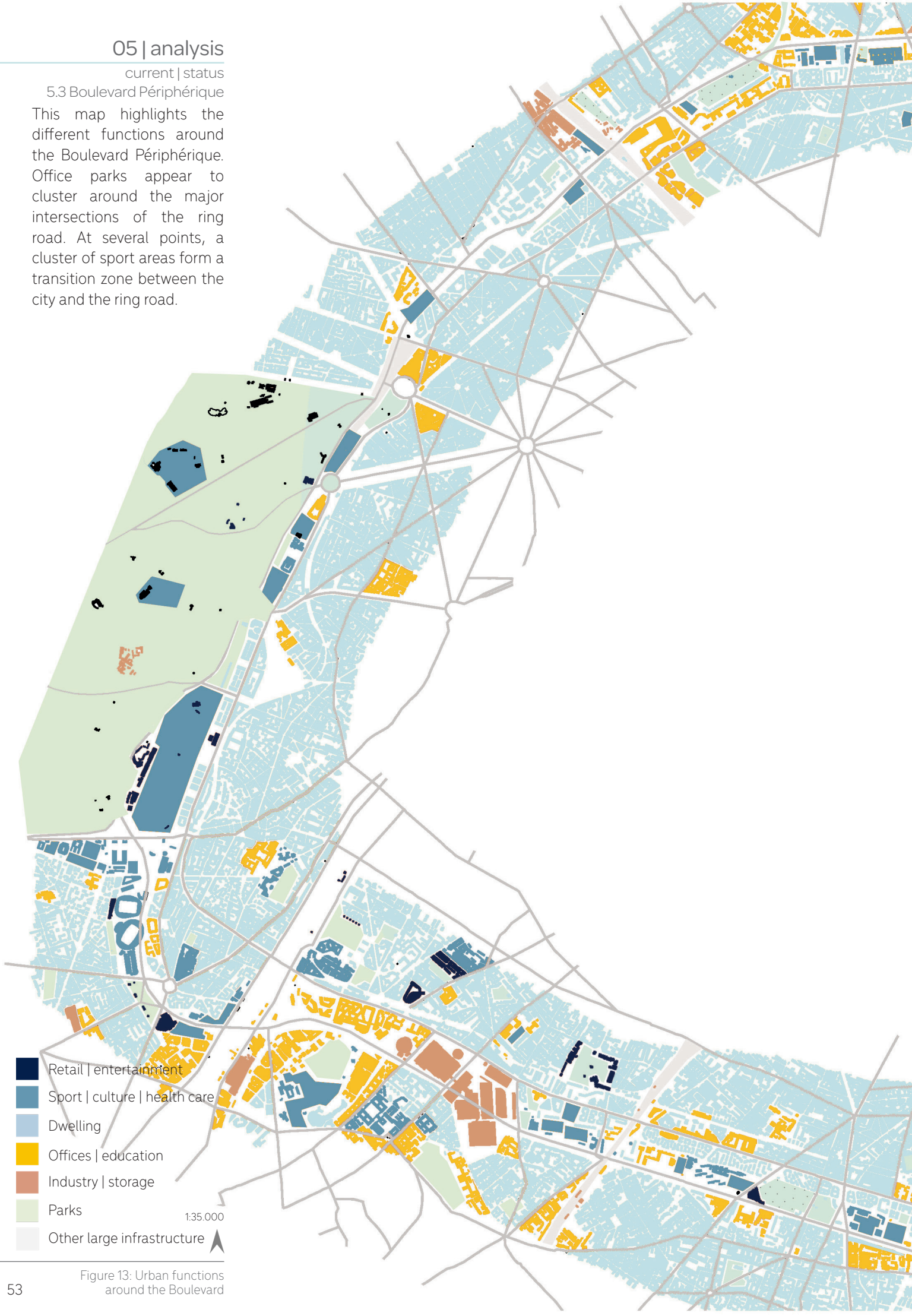
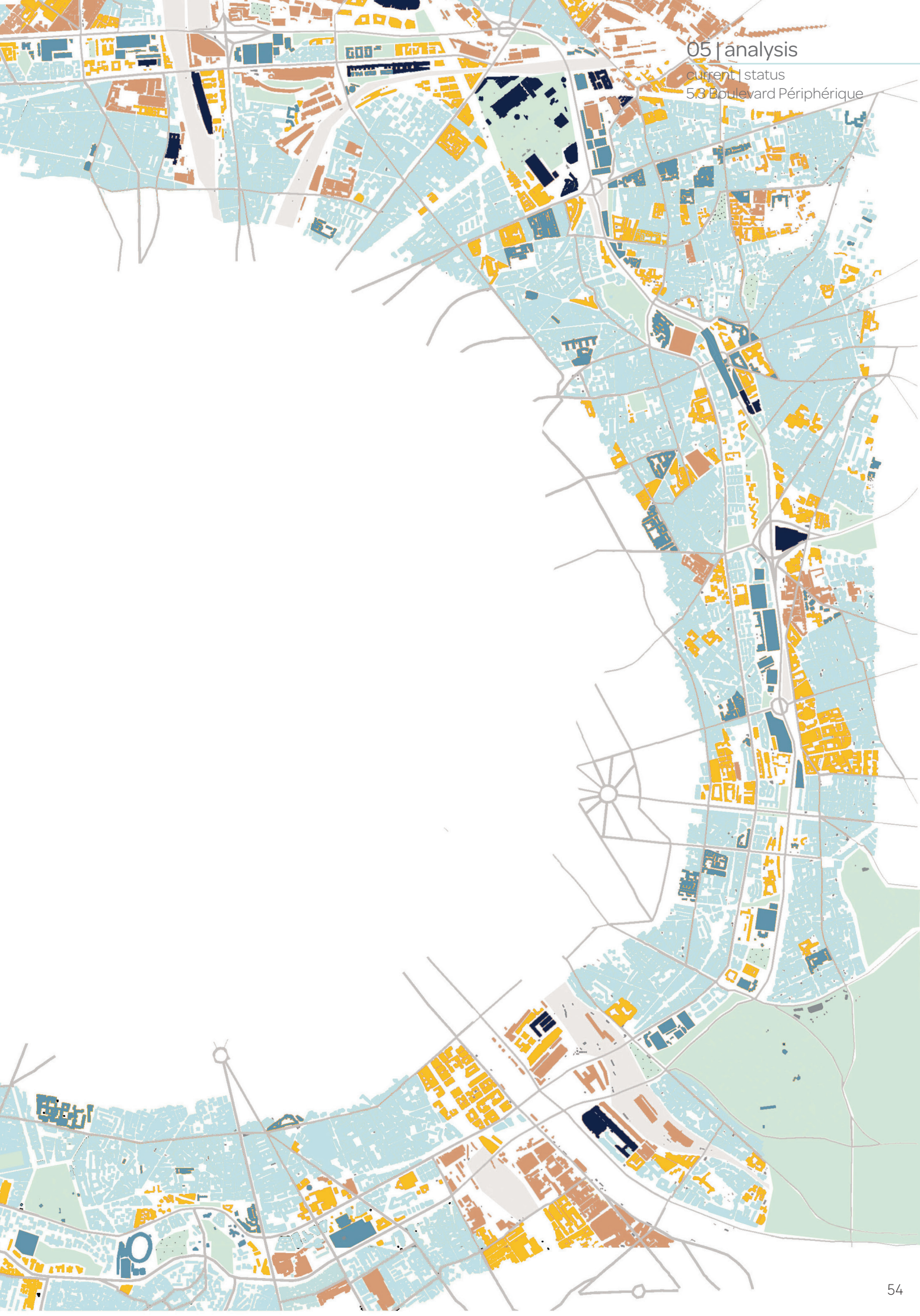


Figure 13: Urban functions around the Boulevard



5.3 Boulevard Périphérique

This map shows the segments of the ring road that function as boundaries and borders.



Figure 14: Borders and boundaries around the Boulevard



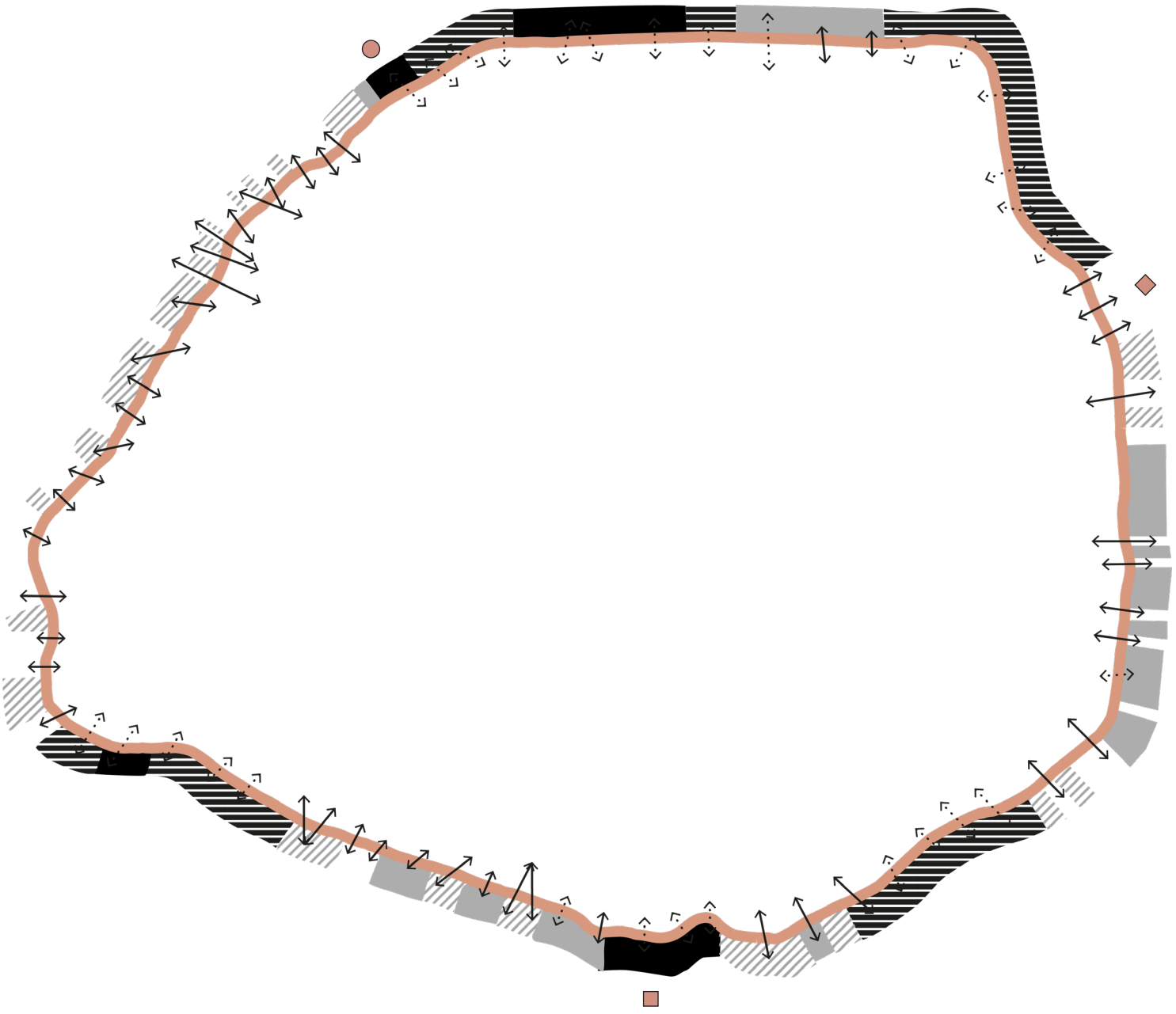
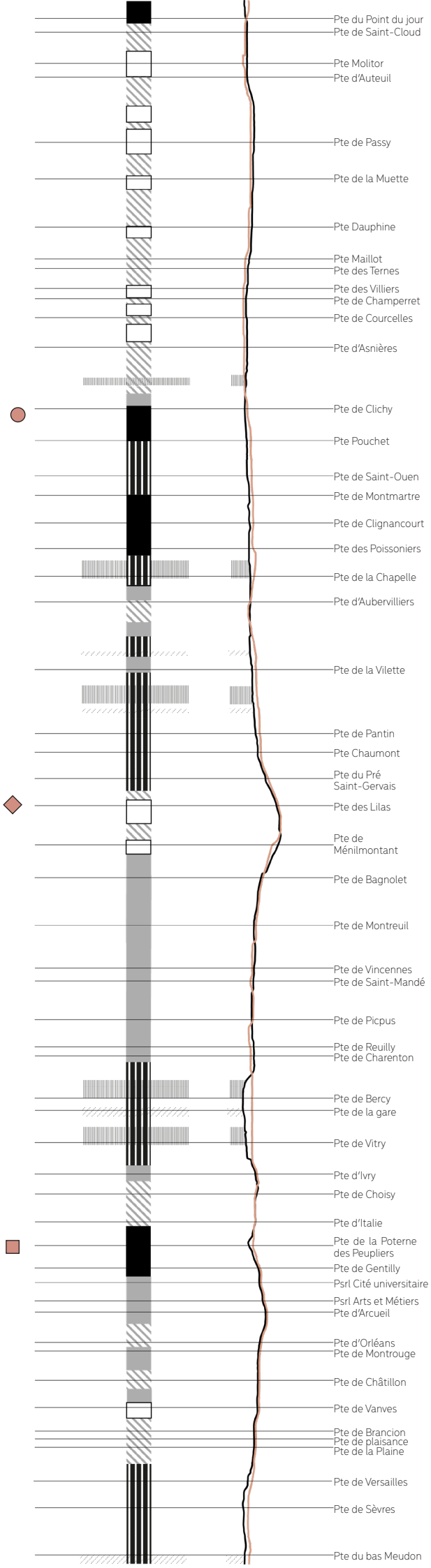


Figure 15: the typologies of the Boulevard Périphérique

The ring road structure is constructed in five different typologies: elevated (closed/ open viaduct), on ground level, in an open trench and covered. The map and section show the location of these typologies and the under- and overpassings.



elevated (closed viaduct)
elevated (open viaduct)
on ground level
open trench
covered
waterways
train tracks
Boulevard Périphérique
landscape height
overpassing
underpassing

Figure 16: the typologies of the Boulevard Périphérique in section

typology
[genotype]

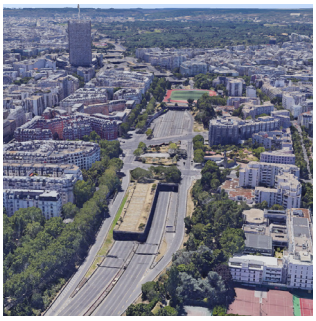
spatial configuration
[fenotype]

open trench



the highway in an open trench

covered



regular
a covered highway without additional functions



functions
a covered highway with functions such as sport fields, buildings or playgrounds



park
a covered highway topped off with park or green structures

ground level



regular
a ground level, multi-lane structure with entrances and exits and noise barriers



intersection
an infrastructural intersection that is part of the larger network, connecting highways

elevated



open viaduct
an elevated highway on an open structure with underpassings



closed viaduct
an elevated highway on a closed structure with not many underpassings



infrastructure knot
a location where multiple civil (infra)structures come together

Figure 17: the spatial configurations of the ring road (Google Earth, 2020a)

5.4 Socio-spatial structure

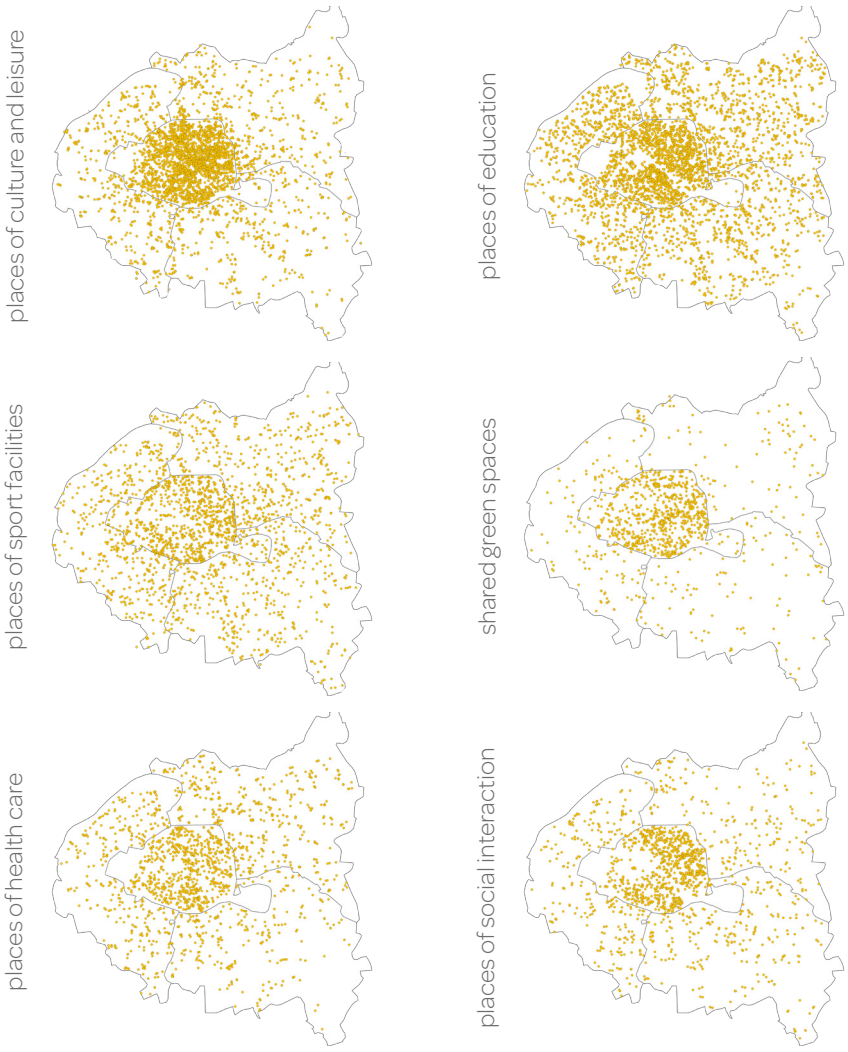
The Petite Couronne hosts both the department with the lowest incomes in France, Seine-Saint-Denis, and the two wealthiest departments of the country: Paris and Hauts-de-Seine (APUR, 2019).

5.4.1 Distribution of amenities

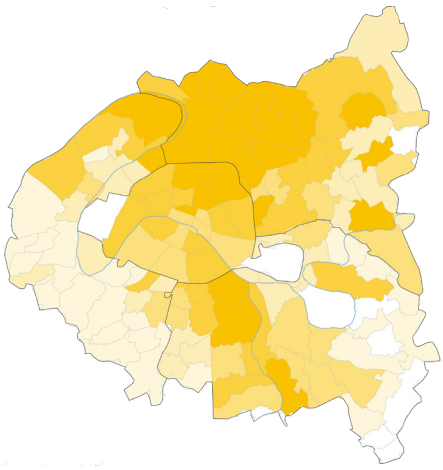
Figures 18-23 present the distribution of amenities in the Métropole du Grand Paris. As can be observed, most of the amenities are situated in the central area: the city of Paris. It is important to consider the fact that the density in the city of Paris is higher than in the surroundings suburbs, and therefore more amenities are situated in the central area. Especially places of education and social interaction are underrepresented in the suburbs.

5.4.2 Characteristics of the living environment

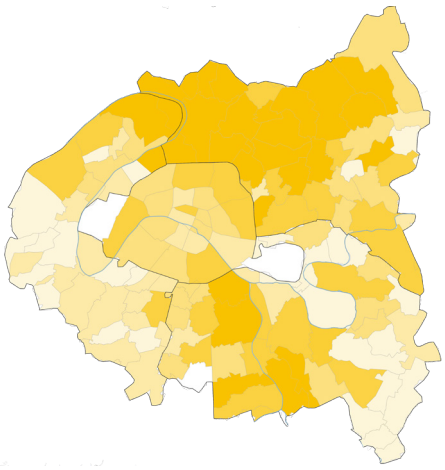
Figures 24-32 show the characteristics of the socio-spatial structure of the Métropole du Grand Paris. These characteristics are: quality of housing, immigration numbers, distance to employment opportunities, accessibility to public transport, income levels, real estate value, amount of cultural amenities, car ownership and level of pollution.



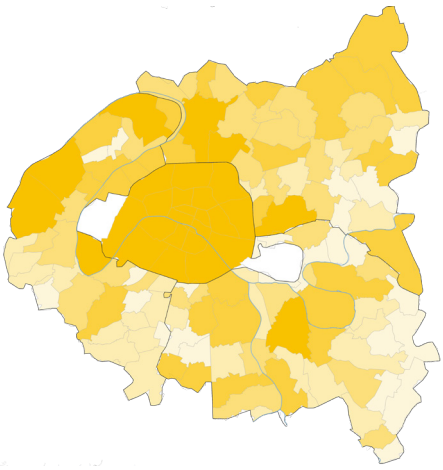
Figures 18-23: Distribution of amenities in the MGP (data: APUR, 2020c-h)



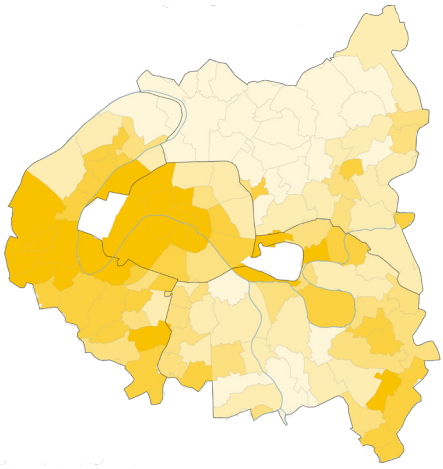
% of the inhabitants living in deteriorated or overpopulated housing



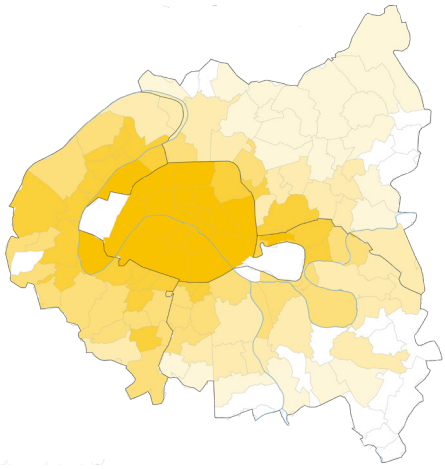
% of immigrants per area



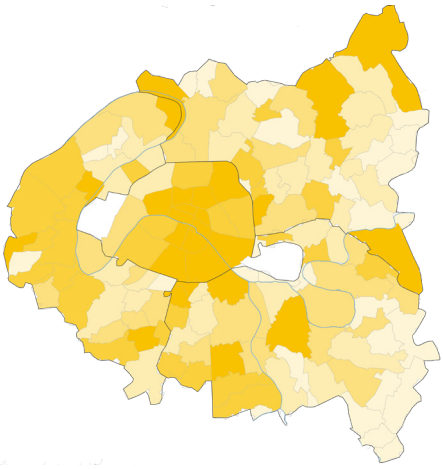
% of inhabitants that work in the same area as they live in



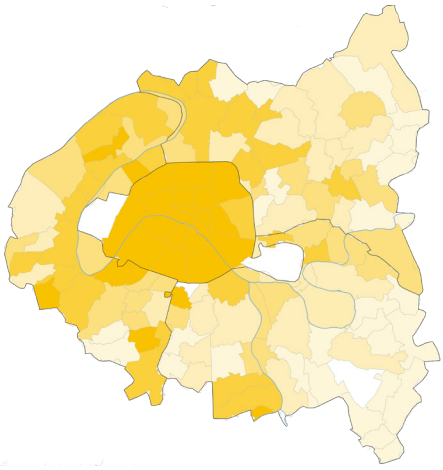
Average income



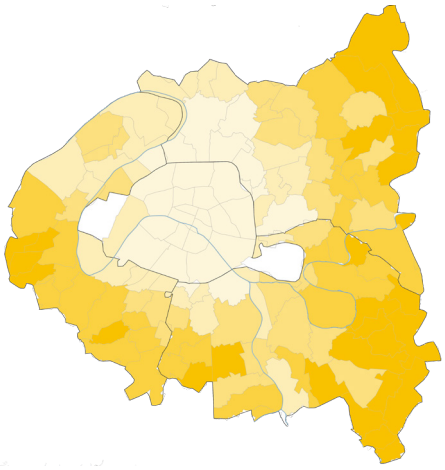
Real estate value: price per m^2



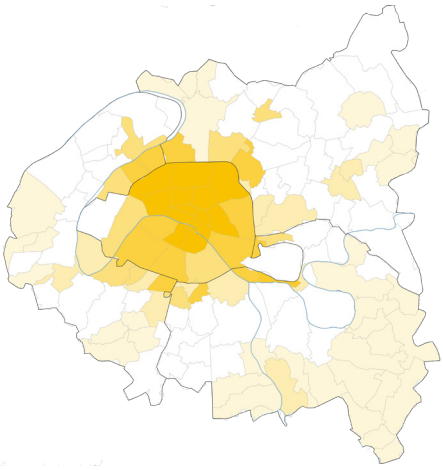
% of cultural amenities per 10.000 inhabitants



accessibility to public transport, given in % [max. = 100%]



% of households with one or more cars



% of the population that is exposed to air pollution (NOx)



Figures 24-32: Characteristics of the socio-spatial structure (data: APUR & INSEE, 2019)

5.5 Policies

5.5.1 The mobility transition

Le Livre Blanc des Mobilités 2030 | Forum Métropolitaine du Grand Paris
This document was established by several important players in the region, such as the Association of Mayors of Île de France, the City of Paris, the Métropole du Grand Paris and urban planning associations such as APUR and IAU-îdf. The challenges that are considered in this document are the future movements of metropolitan inhabitants, the increasing saturation of the traffic networks, environmental- and health issues and the development of a multi-modal network. To increase the capacity and reduce urban discontinuities, current roads have to be redesigned. Existing public space has to be rearranged to create more space for pedestrians and cyclists. By ensuring safety and quality, changes in the attitude towards mobility can be stimulated (Apur, 2018).

Plan Vélo de Paris | Mairie de Paris
While several amenities for cycling are present, a safe, efficient and coherent network is missing. Local authorities are responsible for the implementation of bicycle parking spaces and shared bike stations, but development of the larger network is something that has to happen on a higher level of authority. The biking plan so far aims to construct cycle lanes along the main (circular) boulevards. It presents no concrete plans for crossing major cuts in the urban fabric, such as the Périphérique or the River Seine. The plan focuses primarily on the infrastructure in the city centre and the connectivity to the Bois de Boulogne and Bois de Vincennes (Mairie de Paris, 2021a).

Stratégie Paris Piéton | Mairie de Paris
This strategic plan is aimed to increase space for pedestrians and improve the quality of these spaces. Important goals are the creation of shared spaces, improve pedestrian connectivity over the Boulevard Périphérique, promote the diversity of streets and increased safety. Next to that, the focus is on creating spaces where people want to stay, and that will not just be used for movement (Mairie de Paris, 2017).

5.5.2 Grand Paris development plan

The Grand Paris plan focuses on "metropolitan solidarity, new transportation systems, and streamlined institutions" (Enright, 2016). Upon further study, it seems that the objectives of the overall plan are conflicting with the challenges it expresses to address. Considering the fact that the project is aimed at and built around economic growth and international competitiveness, the currently prevalent socio-spatial inequalities in the region will only be intensified.

Grand Paris Express
The core project of the development plan is the construction of 200 kilometres of new metro lines (JLL Grand Paris, 2016). Because of the current centralized network, most of the inter-suburban travellers need to pass through the city centre of Paris. This intervention will thus relieve the pressure on the city centre and improve inter-suburban connectivity. Still, the objective is to link the main regional (economic) hubs to each other (JLL Grand Paris, 2016) instead of connecting vulnerable neighbourhoods to neighbourhoods of opportunity. Besides connecting existing regional hubs, the development plan proposes the creation of seven 'strategic development centres', each with a specific economic focus (JLL Grand Paris, 2016).

The above-mentioned interventions are aimed at improving the economic competitiveness in these areas, not at combating the socio-spatial challenges for current inhabitants. The project plan states the following (JLL Grand Paris, 2016):

> "The main objective of the Grand Paris project is the sustainable development of the region's economy and employment with a view to maintaining and even strengthening, the Greater Paris Region's position among the most attractive international cities. The Paris market's attractiveness will therefore be strengthened and the city will offer international investors an enhanced level of profile."

Limitations of the plan
Considering that the transportation system is regarded as the backbone for developments, it is particularly interesting that the plan presents no statement about existing, fragmenting car infrastructure.

5.5.3 Socio-economic policies

Consequences of growing inequalities came to the surface already in the past decades in France, through riots and protests. Discrimination, exclusion and polarisation are no longer just social issues, but they currently contain spatial characteristics too.

La Politique de la Ville | Préfet de Paris

Every five years, a document called "La politique de la Ville" represents the socio-economic policy for the city. Three important pillars of the policy are: support the life routes of inhabitants, live the urban life and boost certain neighbourhoods in the city (Ministère de l'Intérieur, 2021).

The policy appoints various focus neighbourhoods in the metropolitan region, but zooms in quite fast to the city of Paris, taking only the neighbourhoods within the Périphérique into account. The majority of the priority zones lay around the Boulevard Périphérique (see figure 33-35).

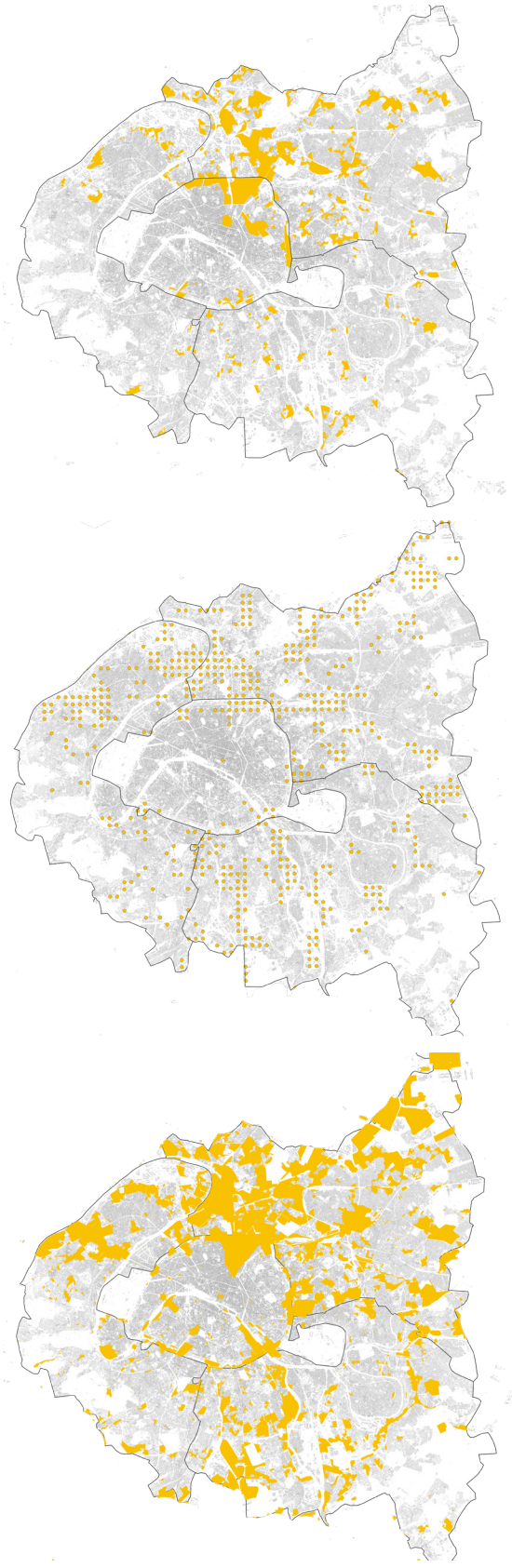


Figure 33: Priority zones for urban policy
Figure 34: Priority zones for urbanisation
Figure 35: Projects of the Grand Paris plan
(data: Agence nationale de la cohésion des territoires, 2018, APUR, 2020, L'institut Paris Region, 2019)

5.5.4 Environmental policies

30 years after the inauguration of the Boulevard, the amount of traffic using the structure has increased six-fold, represented by 1.2 million vehicles per day. 40% of these vehicles facilitate trips of just 7.5 kilometres. And during traffic hours, the average occupation per car is 1.05 persons (Moghaddam, 2019). Daily, millions of Paris breathe a cocktail of NO_x, PM2.5 and PM10. Road traffic is responsible for 65% of the NOx emissions and 50% of the PM10 emissions (Gittus, 2018). The emissions exceed the norms of the World Health Organisation (WHO) by three or four times (Garric, 2013). Together, these toxic particles cause health problems on the respiratory system, blood circulatory system and cause cancer. In the metropolitan region, the emission is ten times higher than in the overall Île de France region, because of the dense urban agglomeration (Gittus, 2018). In 2014, the speed limit for the Boulevard Périphérique was reduced with 10 kilometres per hour. At the same time, the volume of traffic increased, leading to no changes in air quality (Gittus, 2018).

Paris Climate Action Plan | Mairie de Paris
The Paris Climate Action Plan (PCAP) is an action plan for 2030, driven by an ambition for 2050. The goal is to create a carbon-neutral urban area, driven by innovation, resilience and inclusiveness. For the reduction of energy consumption by the transport sector, several interventions have been implemented, among which the development of cycle paths, the creation of the Velib' shared bike system and the Autolib' shared electric car networks. These plans are ambitious and contribute to a more sustainable mobility system, but present no clear statement towards existing infrastructure, such as the ring road. The phasing out of polluting motorized vehicles is necessary for improved air quality and health. Currently, the city-centre transport sector is responsible for 17% of the energy use in the urban agglomeration, primarily the motorized transport modes. Up to 2050, the city aims to move towards an era of "clean, active and shared transport modes". Besides spatial interventions, changes in people's behaviour and lifestyle are necessary to make the transition happening.
(Mairie de Paris, 2018)

Plan Climat-Air-Énergie Métropolitain (PCAEM) | Métropole du Grand Paris
The Plan Climat, Air et Énergie de la Métropole du Grand Paris is a strategic plan for the entire metropolitan region. It focuses on the carbon-neutrality goal of 2050, combatting climate change and improving the urban air quality. The objectives of this plan have to be included in the SCOT (regional development plan).
(Métropole du Grand Paris, 2018)

Paris Respire | Mairie de Paris
Paris Respire is a policy that focuses on closing off certain streets and squares for the benefit of cyclists and pedestrians. Some of these are valid during summer, on a specific day or throughout the whole year. This plan is currently only in place for the city of Paris. Similar to the "15-minute city" idea, it would be beneficial to extend it over the Boulevard Périphérique (Mairie de Paris, 2021b).

5.6 Planning environment

All the mentioned future challenges have to be addressed within a specific planning environment. Cooperation and integration are necessary to address them. The next paragraph provides an overview of the current planning environment in French metropolitan regions.

5.6.1 Spatial planning and planning institutions

Figure 36 depicts the institutional levels, spatial planning fields and related planning documents on each scale. On European and national level, development plans are of strategic nature. These documents present the vision and related goals for a specific region. The regions are responsible for the Schéma directeur, but in the case of Île de France, this document is influenced by state decisions (Geppert, 2015). The departments fulfil a more operational function, namely that of the management of infrastructures. The municipalities and intercommunalities can exchange responsibilities for their urban planning fields, for example urban development, social housing and local policies.



** in other French metropolitan regions, this document is named SRADDT.*

Figure 36: Institutional levels, planning fields and related planning documents (adapted from Geppert, 2015 & Halbert, 2006).

5.6.2 The current decision-making structure

The structure depicted in figure 37 derived from the Loi MAPTAM in 2014. The *Contrats de Plan État-Region* are contracts between State and the region for a period of 5-6 years, concerning investment agreements for spatial planning (Halbert, 2006). The state maintains influence over spatial planning decisions through these agreements and investment responsibilities. Throughout the different decision-making levels, state representatives (*préfets*) ensure that the targets of the state are taken into account in the policy-making and spatial planning. In the new metropolitan organisation, Contrats de développement territorial (CDT), represent the cooperation between the departments and communes in the MGP to deal with transportation, housing and solidarity.

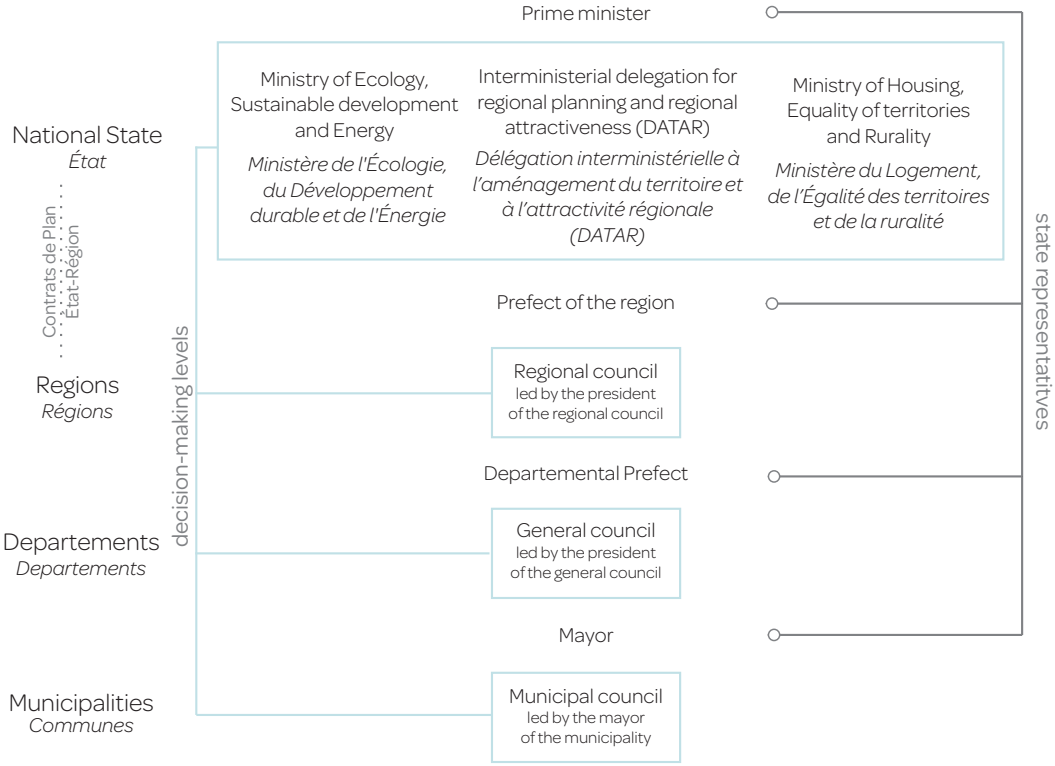


Figure 37: Decision-making structure on different institutional levels (adapted from Geppert, 2015 & 2017).

The information in this paragraph is retrieved from the official legislation documentation of the French state, unless stated otherwise.

5.6.3 The quest for a metropolitan governance system

New laws

The metropolitan region of Paris has always been on a quest for an efficient and suitable metropolitan governance structure. Recent changes have introduced new collaboration possibilities and institutional levels, but integration is still missing. In 2015, the metropolitan structure of France was revised and the former 22 metropolitan regions became 13 regions (Desjardins & Geppert, 2020). The Loi MAPTAM and Loi NOTRe played a major role in this restructuring. Both laws strengthened the intermunicipal level as a cooperation and decision-making level (APUR, 2019).

Loi Maptam | 2014

The Loi MAPTAM creates a new task division between the state, regions, departments and municipalities (figure 36). Next to that, it also put a new decision-making structure in place, named "a pact of territorial governance". A regional, general and municipal council work together, supervised by state representatives (figure 37).

Loi Notre | 2015

The Loi NOTRe strengthens the power and position of the region in the decision-making process. It is the final part of the decentralisation process that started in 1982 (Desjardins & Geppert, 2020). The region gains more responsibility, especially for ensuring economic development. Certain requirements - imposed by the state - are linked to this responsibility. Another important change is the shift from the department being responsible for transport development to the region.

Paris: a special status

Paris is particularly a special case, being a municipality and department at the same time. Social action (which is a responsibility of the department) is developed and implemented at city level in the case of Paris (Escafré-Dublet et al., 2014). This leads to disintegration of policies on the metropolitan level. The state preserves its prominent role in urban planning in the Île de France region, through several institutions: Grand Paris Aménagement (GPA) and the Société du Grand Paris (SGP). Next to that, contracts related to national interest play a role (APUR, 2019). Many operators in the region are related to the state as well, for example the transport companies (RATP, SNCF), landowners (hospitals, universities) and national companies (Desjardins & Geppert, 2020).

Métropole du Grand Paris

The territorial reform law of 2010 redivided metropolitan France. Paris, Lyon and Marseille have a different status in the laws than other metropolitan regions, because of their size and scope. One year after the implementation of the laws, the Métropole du Grand Paris (MGP) was added to the list of metropolitan regions (République Française, 2018). But Paris is not at all comparable to the other metropolitan regions. The size, economic power and amount of inhabitants are far above the other regions.

The Métropole du Grand Paris consists of four departments: the city of Paris and the three surrounding departments. They used to collaborate through an "intermunicipal collaboration agreement" (EPCI). The establishment of this metropolitan region led to an internal redivision as well. Twelve Établissements Public Territoriaux form together the Métropole du Grand Paris (figure 38). These twelve EPTs, forming a large-scale collaboration model, replace the sixteen previous intermunicipal cooperations (EPCIs) in the four departments. Three councils are in charge of the metropolitan region. First, every district (EPT) has a *Conseil de Territoire*, constituted of delegates of the municipalities in that district. Paris is represented by 60 chairs, while the surrounding municipalities have one, two or three chairs. The peripheral municipalities are marginalized in the political system (Le Galès, 2020) and the city of Paris is overrepresented in metropolitan governance. Second, an *Assemblée des maires de la métropole du Grand Paris* is established, with all the Mayors of the municipalities. Third, a *Conseil de développement* consists of the economic, social and cultural partners of the metropolitan region (République Française, 2018).

The focus on the central city throughout history makes it difficult to create a shared ideology between the city and its surroundings. "Mistrust and ignorance" (Enright, 2018, p.170) hinder the possibility to establish a metropolitan agenda. Especially the financial and decision-making aspects play a role in the discussion. Contrary to the other metropolitan regions in France, the Métropole du Grand Paris has several responsibilities, among which the land use planning, economic development, housing and environmental policies (APUR, 2019).

Établissements Publics Territoriaux
T1 – Ville de Paris (not official)
T2 – Vallée Sud Grand Paris (VSGP)
T3 – Grand Paris Seine Ouest (GPSO)
T4 – Paris Ouest La Défense (POLD)
T5 – Boucle Nord de Seine (BNS)
T6 – Plaine Commune (PC)
T7 – Paris Terres d'Envol (PTE)
T8 – Est Ensemble (EE)
T9 – Grand Paris - Grand Est (GPGE)
T10 – Paris-Est-Marne et Bois (PEMB)
T11 – Grand Paris Sud Est Avenir (GPSEA)
T12 – Grand-Orly Seine Bièvre (GOSB)



Figure 38: Organisational units (Établissements publics territoriaux) of the Métropole du Grand Paris (data: APUR, 2020i)

5.6.4 Stakeholders

In order to redevelop a major project such as the Boulevard Périphérique, a strong decision-making environment is necessary, with a clear division in responsibilities and tasks. The stakeholders that play a role in the metropolitan region fall in four categories: government, executive companies, civil society and market parties. They are placed in a Power-Interest matrix in figure 39.

Government

- European Union
- National government of France | the Ministry of Territorial Equality and Housing, the Ministry of Ecology, Sustainable Development and Energy and the Ministry of Finance
- La préfecture de Paris et d'Île de France
  - *DRIEA – Regional department for infrastructure and development*
  - *DRFIP – Regional department for public finances*
  - *DRIEE – Regional department for the environment and energy*
  - *DRJSCS – Regional department for youth, sport and social cohesion*
- Région Île de France
- Départements Île de France
  - *75 Ville de Paris*
  - *92 Hauts-de-Seine*
  - *93 Seine-Saint-Denis*
  - *94 Val-de-Marne*
  - *78 Yvelines*
  - *91 Essonne*
  - *77 Seine-et-Marne*
  - *95 Val d'Oise*
- Société du Grand Paris (SGP) | contracting authority
- Métropole du Grand Paris (MGP) | central governance institution
  - *12 Établissements Publics Territoriaux*
- Mairie de Paris
- AMIF – Regional mayor association
- Municipalities surrounding the BP:
  - *St. Ouen*
  - *St. Denis*
  - *Aubervilliers*
  - *Pantin*
  - *Le Pré St. Gervais*
  - *Les Lilas*
  - *Bagnolet*
  - *Montreuil*
  - *St. Mandé*
  - *Charenton-le-Pont*
  - *Ivry-sur-Seine*
  - *Le Kremlin-Bicêtre*
  - *Gentilly*
  - *Arcueil*
  - *Montrouge*
  - *Malakoff*
  - *Vanves*
  - *Issy-les-Moulineaux*
  - *Boulogne-Billancourt*
  - *St. Cloud*
  - *Suresnes*
  - *Puteaux*
  - *Neuilly-sur-Seine*
  - *Levallois-Perret*
  - *Clichy*

Executive companies

- FMGP – Forum Métropolitain du Grand Paris
- Commissions thématiques du MGP | theme committees
- AIGP – Atelier International du Grand Paris
- APUR – Atelier Parisien d'Urbanisme | research institution for Urbanism & Architecture
- BET – bureau for technical explorations
- AirParif | air quality research
- BruitParif | noise pollution research
- GART | transport association
- RFF | rail transport
- SNCF | rail transport
- IFM | regional transport
- RATP | local public transport

Civil society

- CPC – civil council
- CPJ – civil youth council
- CPE – European civil council
- CGF – civil council for future generations
- CQ – civil council of the different quartiers
- Inhabitants of the MGP
- Future generations

Market parties

- Landowners
- Investors and developers
- Multinational companies
- Local businesses
- Housing associations
- Educational institutions
- Health care institutions
- Tourism offices
- Freight transport companies

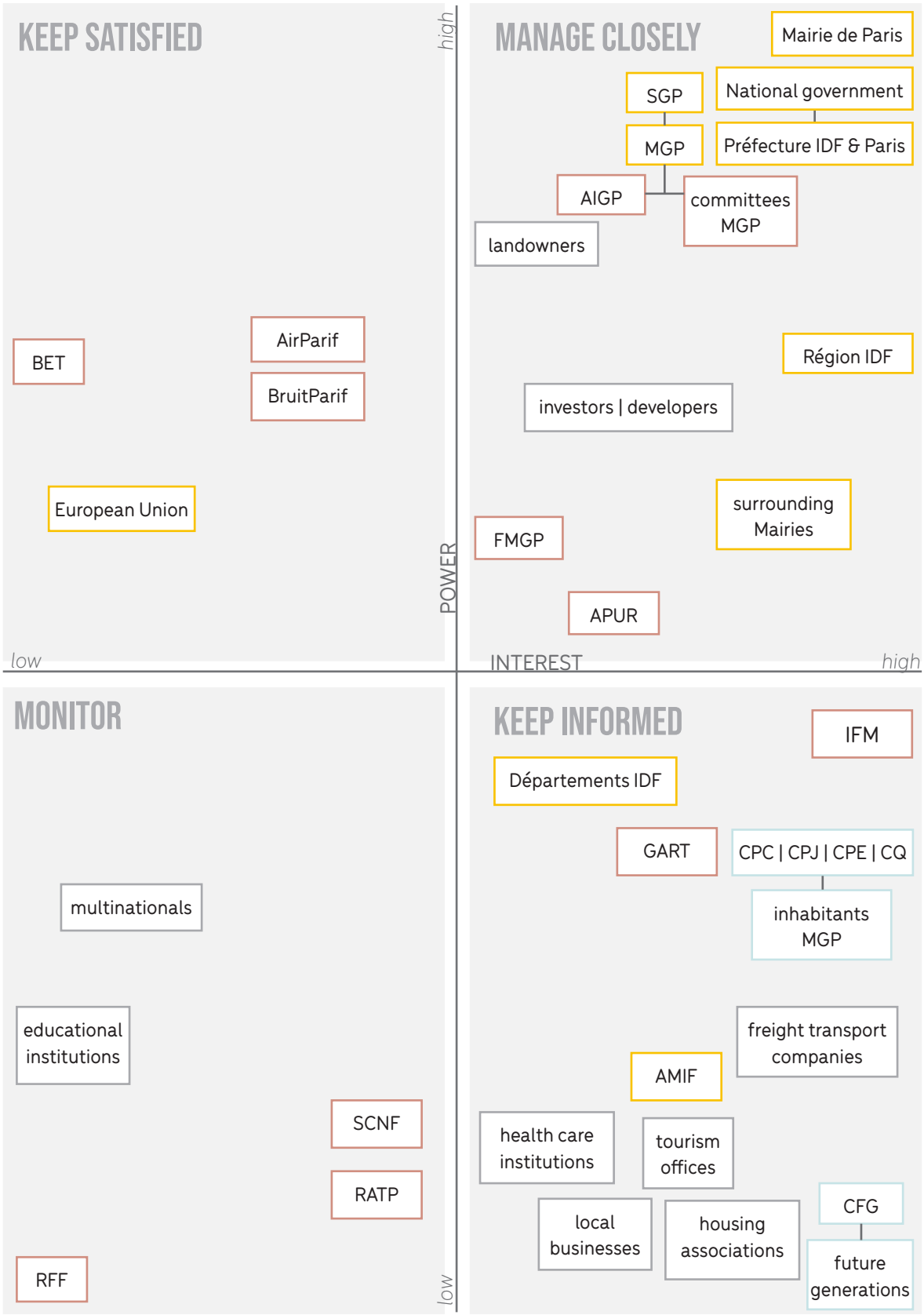


Figure 39: The power-interest chart of involved stakeholders

Types of power
Stakeholders can hold various types of powers, among which voting, economic, political and legal power (Wilson, 2017). Governments mainly hold political and legal power. Investors, developers and market parties have economic power, as they bring capital to the table. The civil society holds voting power, choosing their representatives in a democratic way.

Key players
The key player in the metropolitan region of Paris is the Société du Grand Paris, a governmental institution established for the management of the metropolitan agglomeration. Connected to this institution are the Métropole du Grand Paris, the Atelier International du Grand Paris and several committees with a specific focus.

Who owns the Boulevard Périphérique?
The national government owns the highways throughout the entire country. The Boulevard Périphérique is however under the control of the city of Paris, in close collaboration with the French state (Mairie de Paris, 2019). Non-governmental stakeholders - such as transport associations or constructors - influence developments on or around the ring road. The road- and transport-department of the municipality is responsible for the maintenance of the ring road. This occurs in close collaboration with BET (Bureau for Technical Explorations). Another department takes care of the cleaning of the ring road and its surroundings, which involves removing litter and graffiti. Private companies are hired to take care of the green spaces around the ring road (Mairie de Paris, 2019). The Boulevard Périphérique is thus mainly under the control of the City of Paris. The surrounding municipalities and departments are affected by the ring road, but not in charge of the decision-making process or the management of the ring road.



a diagnosis of the prevalent problems

Image 14: Deprived area close to Porte de Bagnolet (Author, 2020)

06

synthesis

6.1 characterisation of the imbalance
6.2 roles of the Boulevard Périphérique
6.3 problems of current structures

6.1 Characterisation of the imbalance

The synthesis presents the conclusion of the first part of the research. It describes the main issues in the metropolitan agglomeration, and responds to sub-research question one and two.

6.1.1 Prevalent urban inequalities

Residential inequality

Residential inequality refers to the spatial organisation of socio-economic differences in the city. High-income households tend to concentrate in the city centre and the western suburbs, whereas low-income households are concentrated in the north-eastern part of the agglomeration, mainly in high-rise housing estates of the post-war era. A large part of the metropolitan population lives in deteriorated or overpopulated housing. The real estate value (price per m^2) is skyrocketing in the city centre, while only a few hundred meters away, on the other side of the Périphérique, the real estate values are lower.

Uneven access to resources

One of the prevalent problems in the metropolitan region of Paris is the access from the suburban parts to the amenities and services of the city centre. This concerns particularly the components of the city that are necessary for social integration (food provision, health care, sports, education and cultural amenities). Jobs can be found within the suburban neighbourhoods, although these are mostly low-skilled jobs. The cultural- and leisure amenities are densely concentrated in the city centre. Educational facilities are more widely available throughout the agglomeration, but the majority of high-quality institutions are situated in favour of the priviliged. The same accounts for sport- and green facilities. The most significant difference can be observed in places where people interact socially. These are concentrated in the city centre, but other parts of the metropolitan region that are confronted with immigration and integration issues could benefit from more of these resources.

The density of the city centre is higher than that of the surrounding districts, which is an important notion to remember. As a result, it is only natural that the city centre has a higher concentration of amenities.

Unequal quality of life

Several physical structures embedded in the urban fabric, for example large infrastructures, have negative externalities of which the burdens are not distributed equally over the metropolitan society. The suburban neighbourhoods suffer from noise pollution, whereas the city centre is shielded from this noise. Air pollution does not appear to be a problem simply for residents of suburban areas, as the socio-spatial analysis revealed that many inner-city areas are also affected. This is primarily caused by vehicle traffic moving on the ring road and over the main boulevards in the city centre. Overall, the metropolitan agglomeration's high-density area suffers from excessive levels of air pollution.

6.1.2 Socio-spatial structures

The city-periphery division is not the only visible socio-spatial divide (figure 40). The (north)east-(south)west division has characterised Paris since the Industrial era. The historic functional lay-out of the region is largely responsible for this divide. The former royal towns such as Versailles are on the west side of the city and consequently, the factories and lower-class neighbourhoods were constructed on the north- and east side, making sure the smell of the factories drifted away from the centre. Several indicators have been taken into account to define the quality of life, such as housing situation, level of amenities, income levels, connectivity and environmental quality.

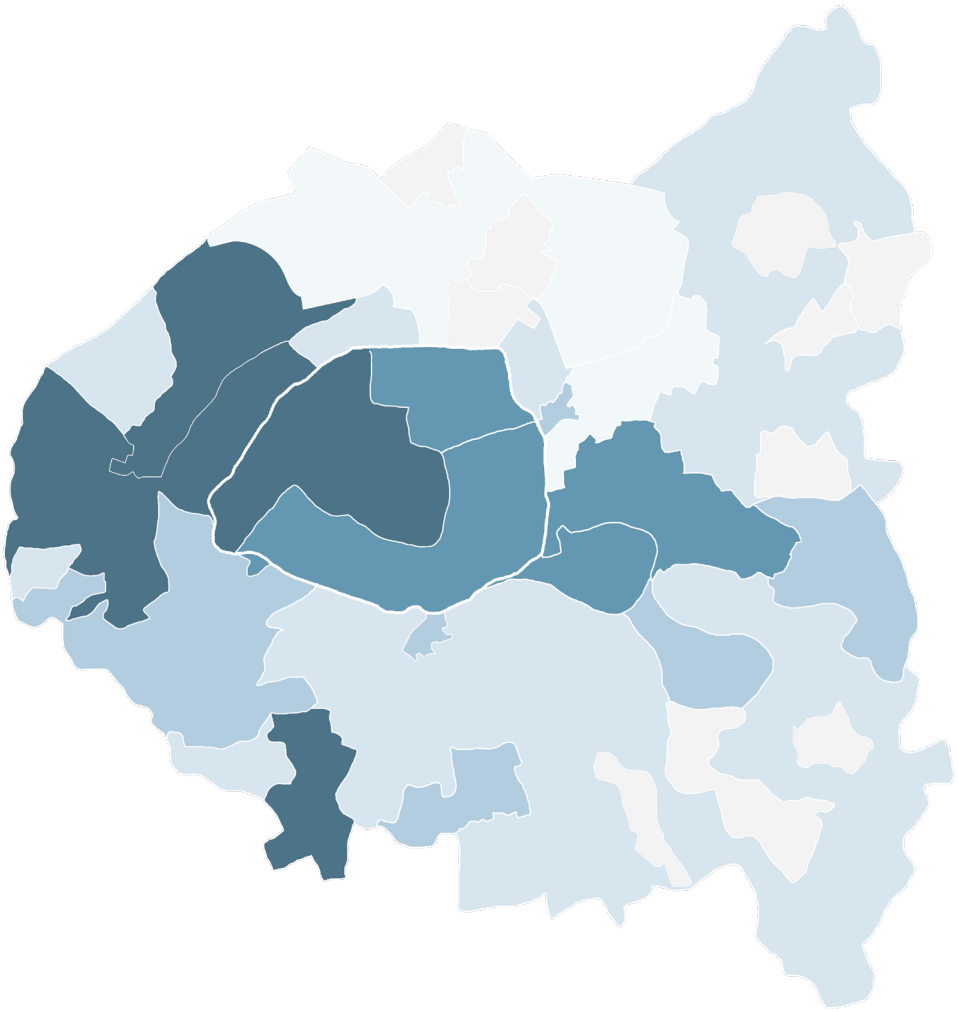


Figure 40:
Socio-spatial structure

6.1.4 The role of transport and connectivity

The city centre is well-equipped with public transport, but this decreases rapidly as one moves away from the centre. The analysis has pointed out that car ownership is mainly prevalent in the outer suburbs, where the density is lower. This means that there are parts in the direct vicinity of the city centre that can neither rely on the public transport system nor have the possibility to own a car. The pedestrian- and cyclist networks end near the Boulevard Périphérique and therefore this structure functions as an obstacle for these transport modes. Some quite central areas are therefore excluded from the urban network and lack possibilities for (personal) movement.

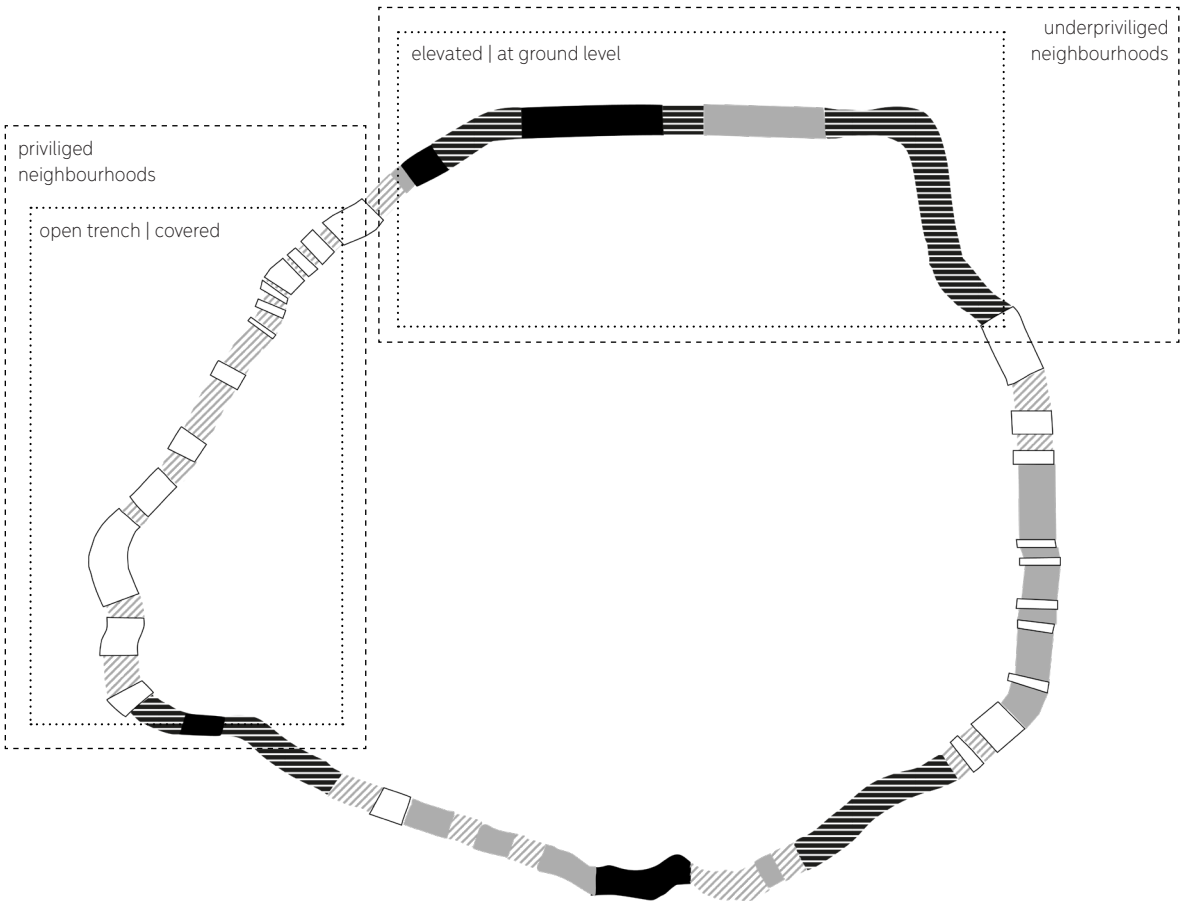
6.1.5 The role of exclusion mechanisms

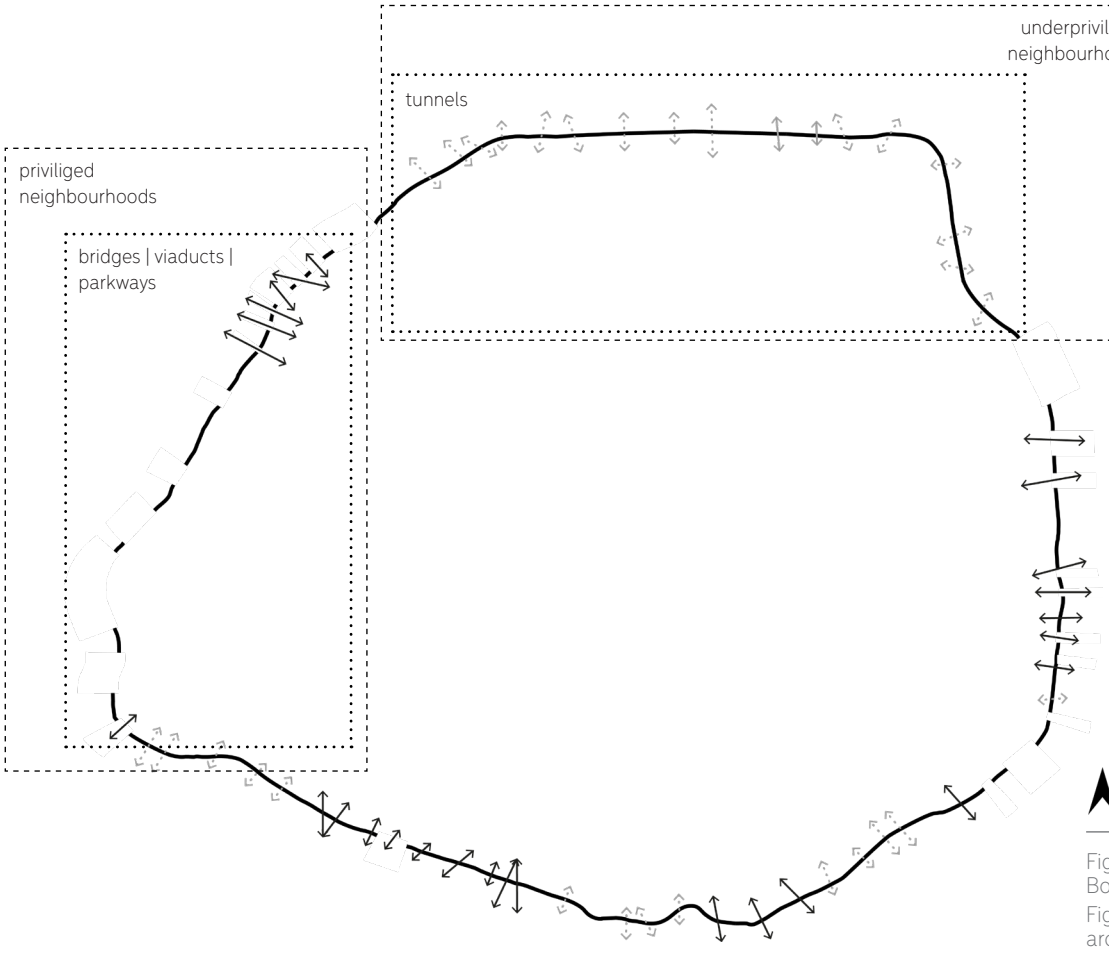
The exclusion mechanisms that play a role in the growth of urban inequalities can be physical and organisational. Physical exclusion mechanisms are spatial elements that function as "walls" or boundaries: they obstruct the possibility of physical movement. The main physical exclusion mechanism in the central area of Paris is the Boulevard Périphérique. The configuration of the ring road and the type of under- and overpassings are related to the types of neighbourhoods that it divides or connects. Whilst the connections and impacts at the western part of the ring road (where the well-off neighbourhoods are situated) are pleasant and minimal, the ring road disrupts the urban fabric on the eastern part, where the deprived neighbourhoods are situated (figures 41-42). In the western part, the ring road is constructed in an open trench or fully covered, leading to less visual disruption and a continuation of the urban fabric. On the north-eastern side, the ring road is constructed as a viaduct, posing an enormous impact on the direct surroundings. Next to physical exclusion mechanisms, organisational exclusion mechanisms are for example financial limitations (expensive public transport system) or the neglect of certain neighbourhoods in urban development plans.

6.1.6 Scales to address the problems

The different problems and increase of inequalities should be addressed on three scales: the metropolitan scale, the urban scale and the local scale.

The metropolitan scale: Métropole du Grand Paris
The urban scale: the high-density heart of the agglomeration
The local scale: the Boulevard Périphérique





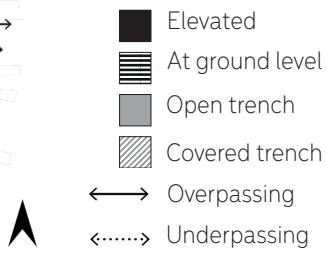


Figure 41: The typologies of the Boulevard Périphérique
Figure 42: The type of crossings around the Boulevard Périphérique



Métropole du Grand Paris

spatial

- major infrastructures in the urban agglomeration
- several areas in need of redevelopment and restructuring
- physical exclusion mechanisms
- increasing pressure on urban structures

social

- lack of a shared metropolitan identity
- a clear socio-spatial structure
- unfair distribution of (high-quality) resources
- growing inequalities

planning

- focus on the central city
- unclear distribution of responsibilities and tasks between MGP and region IDF
- complex decision-making environment
- uneven spread of capital and resources
- mismatch between public and private organisations
- the presence of organisational exclusion mechanisms, through decision-making and spatial planning



Boulevard Périphérique

spatial

- fragmenting infrastructure: a barrier
- focused on motorized vehicles only
- outdated ring road: not able to handle contemporary traffic demands
- lack of small-scale connections
- environmental issues: air- and noise pollution, urban heat island effect
  safety issues

social

- cultural belief of belonging/not belonging
- accessibility options to the city are related to the socio-spatial status of the neighbourhoods
- private cars are putting pressure on public space: how public is a space when it is filled with private vehicles?

planning

- boundary of city governance

6.2 The roles of the Boulevard Périphérique

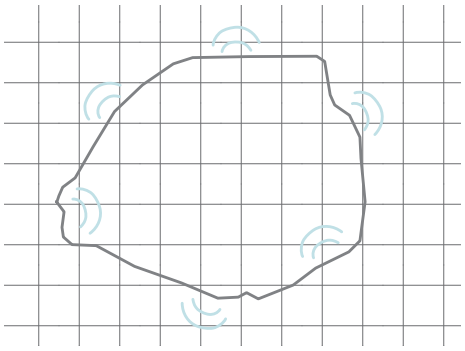
6.2.1 The physical and symbolic structure of the Boulevard Périphérique

As presented before, the Boulevard Périphérique functions as a socio-spatial divider, characterising the imbalance between the city and the periphery. The structure is not only a spatial divider embedded in the urban fabric, but also a divider in the institutional landscape. Therefore, both the physical structure and the symbolic load maintain or even stimulate the growth of urban inequalities.

6.2.2 The roles and impacts of the ring road

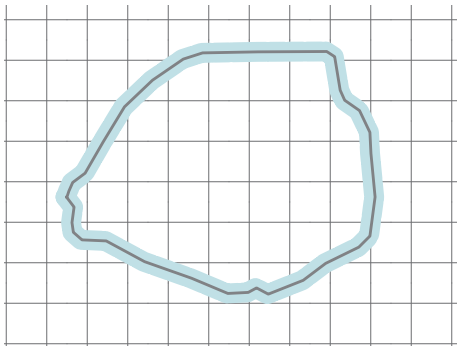
The ring road has multiple roles and several impacts. Direct impacts are related to spatial and environmental issues, whereas indirect impacts are related to its social and symbolic roles.

First of all, the ring road fulfils a spatial role. Its presence is a constraint to the quality of space. Traffic jams and accidents put pressure on urban structures and the surrounding area is infected with the noise- and air pollution of the ring road. Second, it has a functional role, because it is a space-taker that claims a 35 kilometre long, 100 meter wide strip in the middle of a high-density urban area. The ring road functions as a local disruptor, being part of the larger traffic network and neglecting local values. Socially, the porosity of the ring road relates to the socio-spatial structure of the metropolitan agglomeration and this spatial lay-out further strengthens the differences between urban parts. And lastly, a symbolic role. The Périphérique functions as a mechanism to decide who belongs and who doesn't. This perception obstructs the possibility to establish a metropolitan identity. This is also caused by the fact that the Périphérique is the official boundary of city governance.



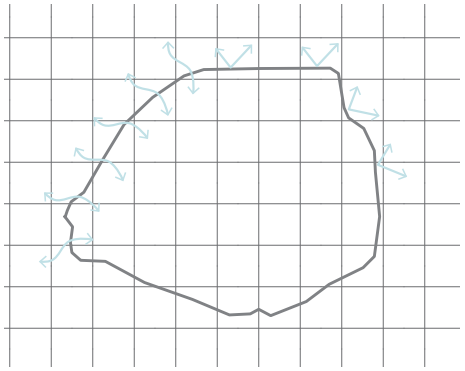
spatial role | constraint to the quality of space

the pressure on the urban structure is increasing and that leads to a larger spatial and environmental impact on the direct surroundings



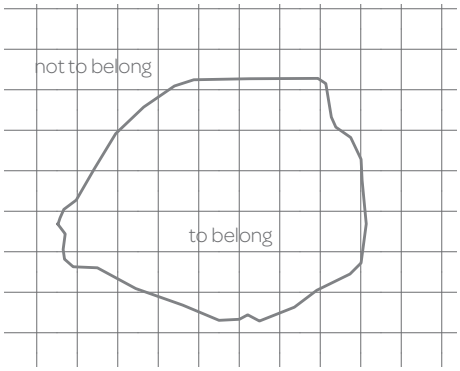
functional role | space-taker

a strip of 100-150 meter width in the midst of a high-density urban area is dedicated to the ring road



social role | social indicator

the porosity of the ring road is related to the socio-spatial structure



symbolic role | city wall

the current structure functions as a city wall, proposing a divide between belonging and not belonging

6.3 Problems within current structures

6.3.1 The relation between policy-making and spatial development

Throughout history, Paris has always been the showpiece of France. Up to the Second World War, local laws determined (spatial) developments in the city. After the war, an era of "grand strategic planning" followed, aimed at pushing France to the forefront on the economic and international stage (Flockton, 1982). There was never a shortage of plans and policies in Parisian spatial planning, but the practicality of the plans leaves much to be desired. Rivalries, unclear hierarchies, vagueness and "a lack of geographical integration" play a role in the weaknesses of the French planning system (Flockton, 1982, p.207). Large-scale plans focused on creating an economic strong metropolitan region, leading to a neglect of social and environmental values. Transportation policies have been structured around financial limitations and the challenge of congestion in and around the central core (Flockton, 1982). In fact, these policies did not fit in the wider regional strategy and its objectives. An underachievement of objectives resulted in an increased imbalance between both the city-periphery and east-west structures in the metropolitan region of Paris. The lack of control of social development and processes has led to an increase in segregation and urban inequalities.

Currently, the amount of (public) institutions and stakeholders leads to possible "vertical and horizontal disintegration in public action" (Halbert, 2006, p.186). Even after the recent reforms in the planning structure, the hierarchy between the different institutions and the distribution of responsibilities between sectors is not clear. A dependency of the peripheral areas on the central city is clearly visible in the governance structure. In European cities, the institutional structure is often based on ownership patterns of the past and of the radial urban model in which the core city plays a central role (Salet et al., 2015). In practice, the asymmetry between metropolitan jurisdictions - that are based on past power-relations - is a barrier for implementing metropolitan planning and governance (Salet et al., 2015). The fast urbanization in the twentieth century has constantly shifted the boundaries of urban areas, while some institutional boundaries remained the same. For a long time, these jurisdictions have only represented their own interests, without taking the larger picture into account. The traces of these approaches and decisions are still visible in today's metropolitan planning environment. The challenges that lie ahead cannot be solved within these fragmented and incoherent governance structures. In the case of Paris, administrative fragmentation and a dominant role of the central city, based on economic and political circumstances, characterise the obstacles for metropolitan governance (Savini, 2012).

6.3.2 Prioritized objectives in policy-making and spatial development

The environment in which decisions are made and plans are designed is crucial to the success of the plan. This environment consists of the institutions, power relations, sectors and financial circumstances (Flockton, 1982). Currently, economic objectives play a decisive role in current policy-making and spatial development. The contemporary "Grand Paris plan", introduced by Nicolas Sarkozy, is a clear example of this. Infrastructure investments are directed at connecting major regional hubs, and not low-income neighbourhoods to neighbourhoods of opportunity. Environmental objectives are becoming increasingly significant, also under pressure from larger institutions such as the European Union and the United Nations. Policies for social cohesion and socio-economic equality are created per municipality, without metropolitan integration. These policies therefore lack resources and a large-scale approach and as a consequence, the local social policies cannot compete with the larger economic strategy.

6.3.3 Future challenges for the region

Several challenges lie ahead for the metropolitan region. Some of them are universal, such as climate change and globalization, while others are place-specific, such as the quest for a suitable decision-making environment. The trends that are most relevant to this project are the mobility transition, environmental issues, growing inequalities and governance issues. The mobility transition has to be implemented in order to create a sustainable and future-proof metropolitan agglomeration. The environmental issues that are caused by large infrastructures and unsustainable land uses have (negative) effects that will influence the health of the urban population in the population. The growing inequalities are clearly visible on the map, represented by the socio-spatial structure and the increasing differences between urban parts. The prevalent governance issues prevent these issues from being solved, as disintegration and complexity characterise the current decision-making environment.

layer 01

typologies | structural conditions

The first layer of the redevelopment approach consists of the typologies that the Boulevard Périphérique is constructed of.

The spatial configuration of the ring road relates to the socio-spatial structure in the metropolitan agglomeration. This finding has proved the importance of taking the structural conditions of the ring road into account in the redevelopment approach. Five typologies are identified: an open viaduct, a closed viaduct, on ground level, in an open trench and fully covered.

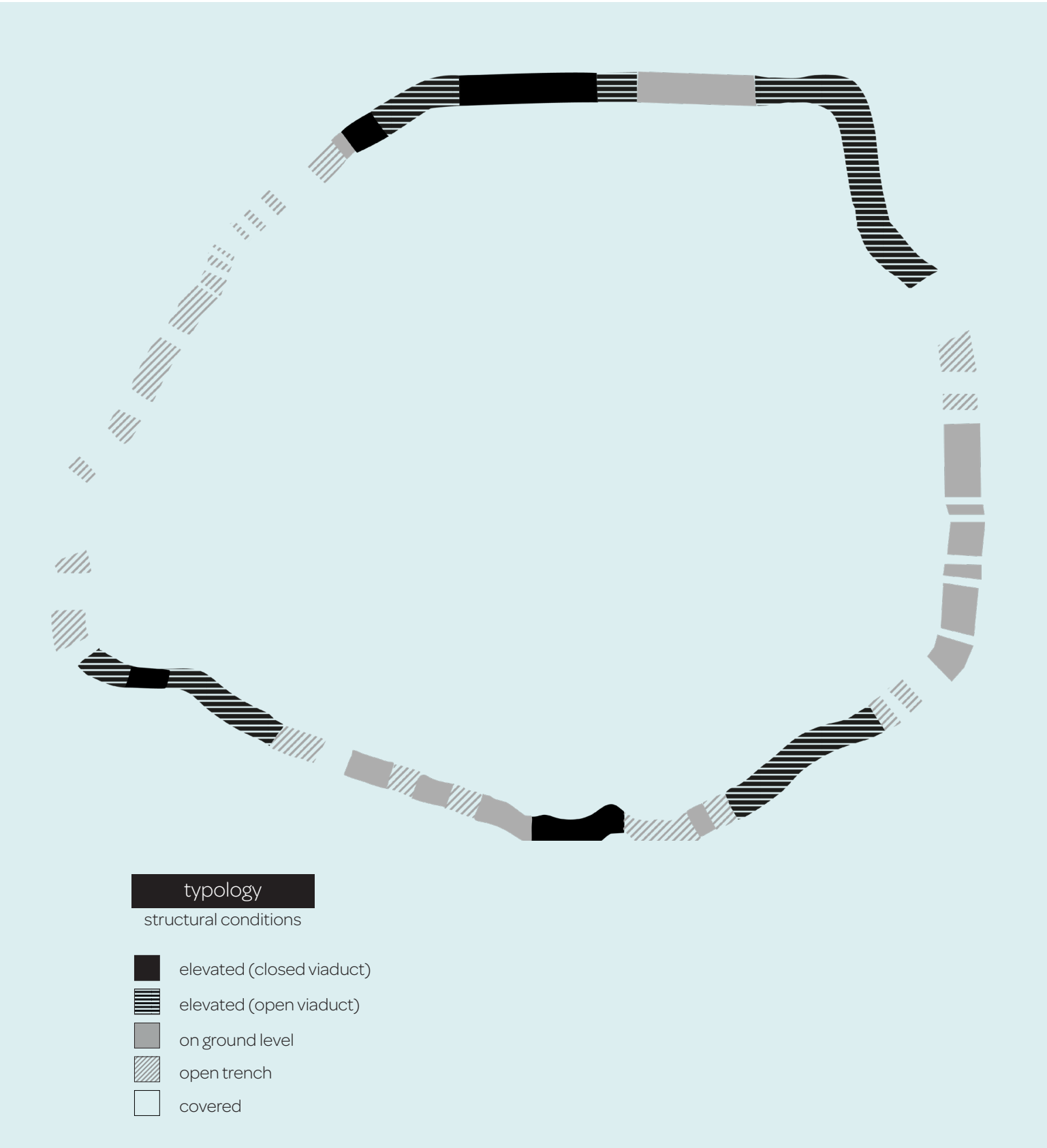


Figure 43: Layer I of the redevelopment approach



Image 15: an open door in the Marais (Author, 2020)

07

exploration

7.1 the location
7.2 perception of users
7.3 map of the problematique

Introduction

The location is explored through fieldwork, carried out during two trips to the site. The perception of the ones that are confronted with the ring road on a daily basis is brought forward through a survey. A "map of the problematique" summarizes the main challenges and opportunities for the redevelopment of the ring road.

7.1 The location

The fieldwork functions to explore the conditions, get a grip on the scale and identify the main spatial problems. Based upon the first analysis, a specific transect was chosen to conduct the fieldwork for. This transect exposes the most problematic part of the ring road: from Porte de la Chapelle to Porte d'Italie.

A log of the fieldwork trip is added in Appendix I.

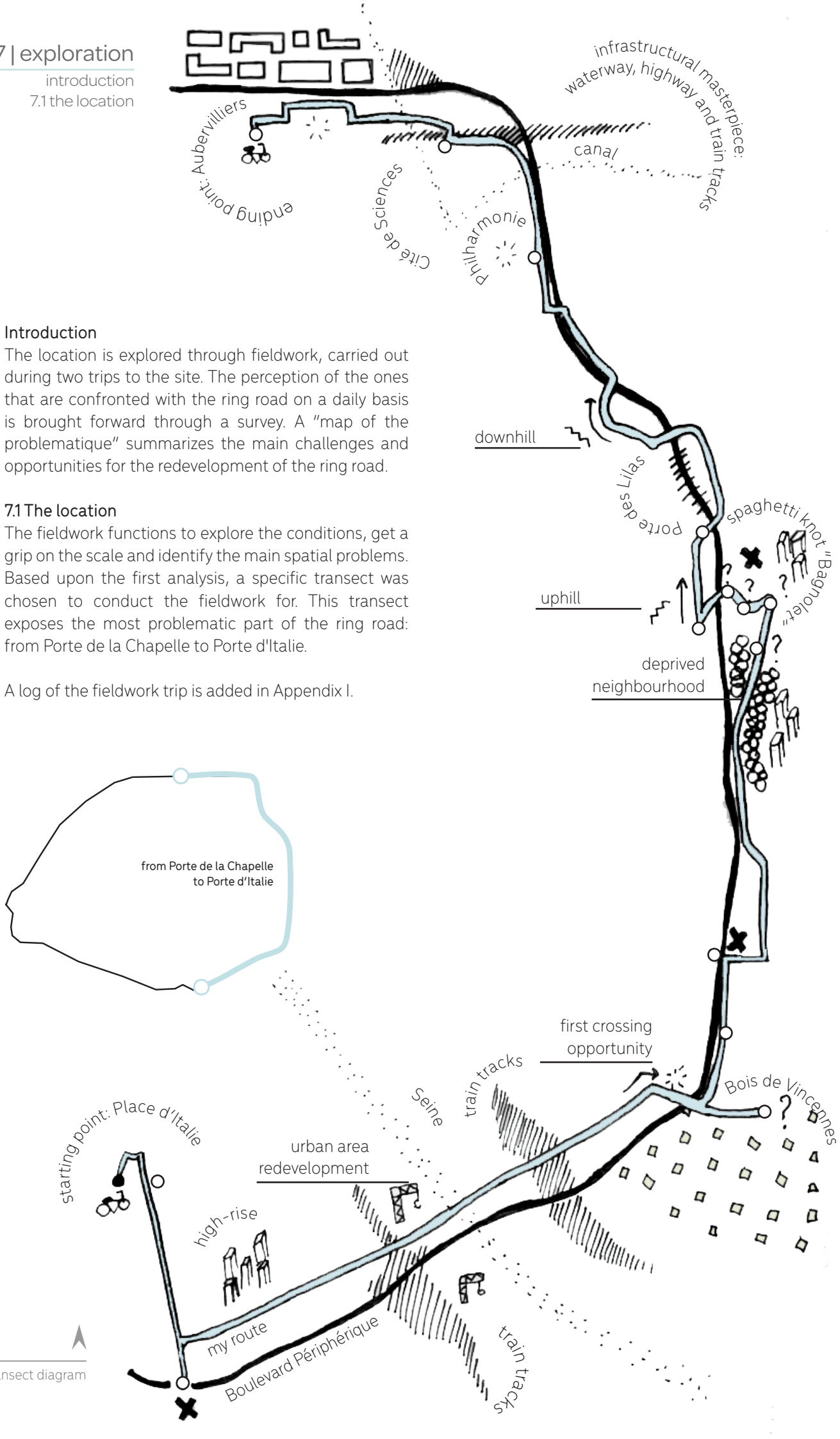


Figure 44: Transect diagram

7.1.1 On-site

In order to acquire a complete overview, the fieldwork consists of two parts: driving over the chosen transect in a motorized vehicle and cycling along the chosen transect on a bike. Five questions guide the fieldwork:

- What are the (spatial) characteristics and important features along the route?
- Who are the users of the area?
- What are accessibility options for cyclists and pedestrians to enter the city centre from the periphery?
- What is the spatial quality of the area around the BP?
- What are the bottlenecks and obstacles around the BP?

7.1.2 Characteristics

Surroundings

There is a large variety in buildings: from large offices to apartment blocks. Deteriorated and outdated buildings alternate with new buildings (image 16). The buildings in the city are more protected from the noise than the buildings in the periphery.

Infrastructural 'masterpieces'

At multiple points, the Boulevard Périphérique crosses other large infrastructure, such as the river Seine, the canal or train tracks. Near the train tracks approaching Gare du Lyon, the Boulevard is hung up by a major bridge construction. At the Périphérique's largest infrastructure knot, the Porte de Bagnolet, several highways on several levels come together (image 17). This is a severe bottleneck for both motorized vehicles as well as other transportation modes. The civil engineering masterpiece functions currently as one of the most disrupting parts of the ring road.

Travel experience

The travel experience as a driver on the Boulevard is stressful, chaotic and dangerous (image 18). Communication signs are unclear and there is no clear sense of direction or coordination. As a car driver, you have to focus on the dangerous traffic situation constantly. Even when there is time to look around, the city is shielded from the highway in every possible way. Entrances to the city are anonymous and structures obstruct a view on the city. Dark tunnels alternate with open parts. Graffiti, deterioration of materials and a lack of colour define the outlook on the surroundings.

Informal urbanism

One of the prevalent problems around the BP are the informal urban settlements by refugees and homeless people (image 19). This problem has been going on for many years, but is still increasing. Some of the settlements are quite advanced: built out of wooden plates, some even with chimneys (image 20). The dark spots around the large infrastructure are used for these settlements. Sometimes, the Parisian authorities swipe them away and clean the area up, but within a few days, the settlements appear again.











Image 16: deteriorated building
Image 17: spaghetti knot "Porte de Bagnolet" (Google Maps, 2020b)
Image 18: crowded and dark tunnels
Image 19: informal settlements
Image 20: an advanced camp along the noise barrier



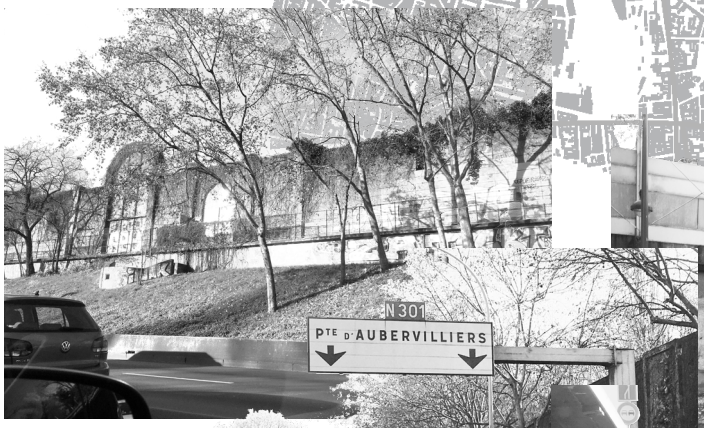
















Figure 45: A representation of the Boulevard Périphérique during the fieldwork


ATTENTION
RALENTIR
ÉCOLE
HOTEL









Image 21: sign indicating a pedestrian underpassing
Image 22: outdated pedestrian underpassing
Image 23: bunker structure
Image 24: deteriorated materials

7.1.3 Accessibility and connectivity

Tunnels are the most common way for pedestrians and cyclists to enter the city. A viaduct is another sort of overpass where buses, vehicles, bikers, and pedestrians all share the same space. The cyclist structure on both sides of the ring road is quite good, but the connections are missing and/or unclear. Pedestrian underpassings are outdated and deteriorated (images 21-22).

7.1.4 Quality of space

Safety

The quality of the under- and overpassings is substandard. They can be perceived as dark and dangerous. In addition, the traffic situation is frequently ambiguous, resulting in an inadvertent "modal mix" at crossings. Cyclists and pedestrians are particularly vulnerable.

Environmental quality

At some spots, the ring road is separated from the urban area by a fence. In these places, the local environmental impact of the traffic becomes clear: noise pollution and air pollution are the main environmental consequences of the ring road.

Visual quality

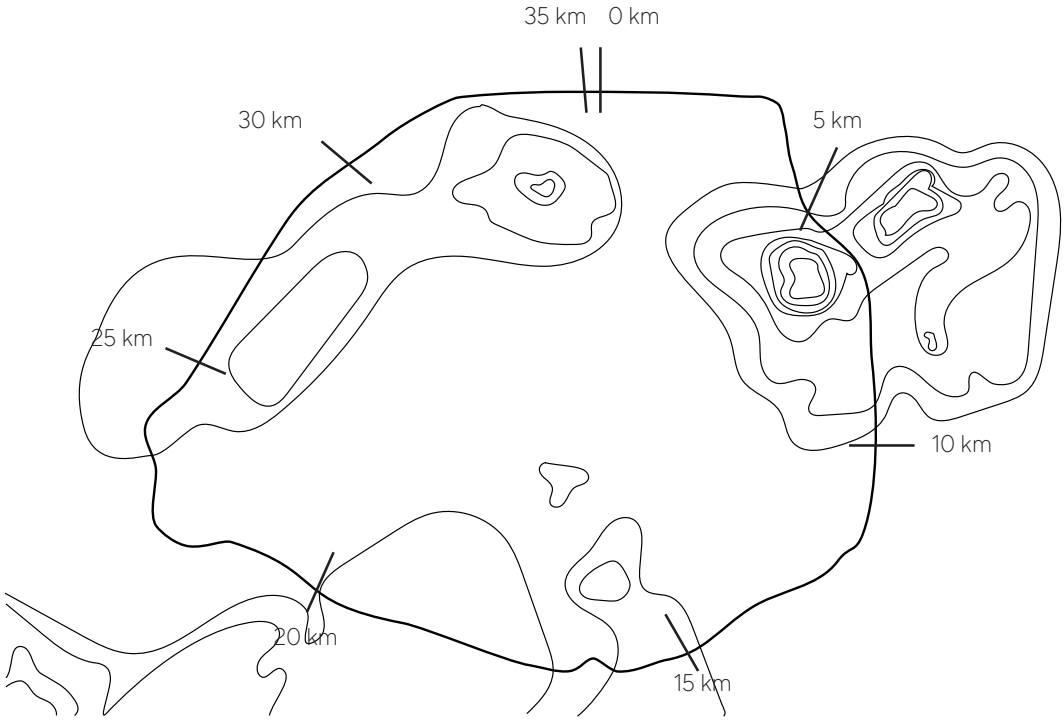
The areas along the ring road are deteriorated and not maintained well. Some noise barriers are covered by vegetation, but the lack of maintenance gives the impression that they are outdated.

Materials and maintenance

In the ring road's immediate vicinity, concrete is the most common building material. Driving on the Périphérique can feel like driving in a bunker at times (image 23). Concrete walls have apparent cracks, and the materials and structures appear to be old (image 24).

Height differences

The segments of the 35-kilometer long ring road are constructed on different heights, revealing the original topography (figure 46). The highest point of the structure is constructed near the Porte de Lilas, reaching almost 130 meters. It is remarkable that in this spot, the ring road is covered by a recent project.



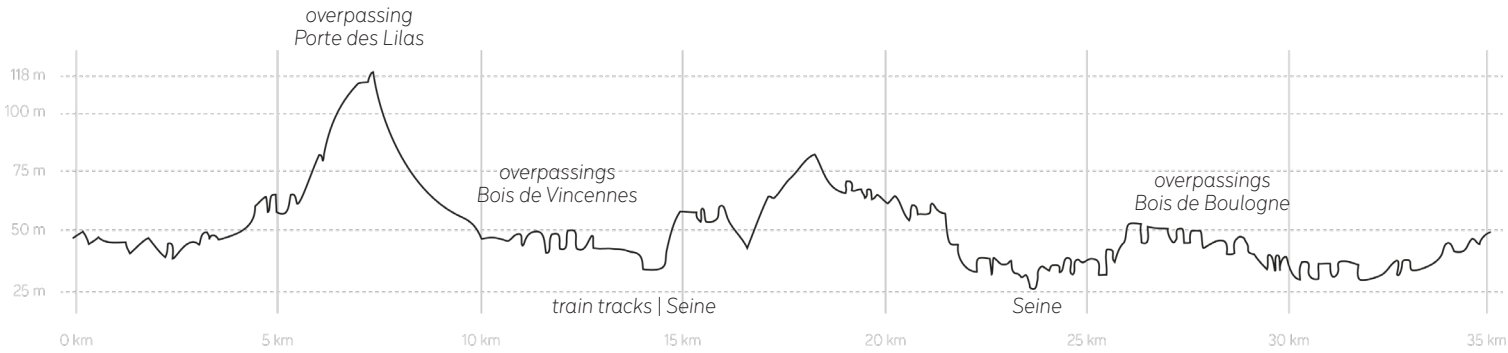


Figure 46: Height map and -section
(data: Google Maps, 2021)

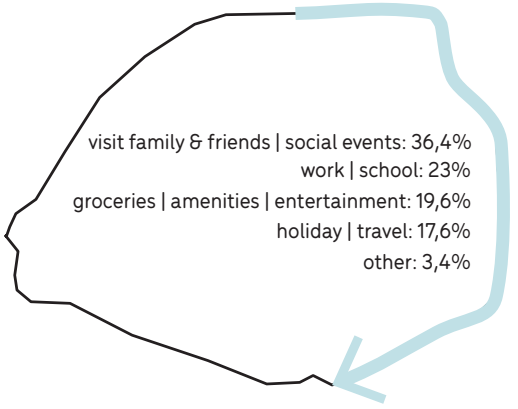
7.2 Perception of users

7.2.1 Set-up of the survey

Because of the COVID-19 circumstances and the limited possibilities for fieldwork, the survey is used to get a grip on the different perceptions towards the Boulevard and an insight in the things that only the locals know. This data is necessary to explore possibilities for change, taking the local needs and perceptions into account. The survey will serve as a tool for inspiration and discussion about the Boulevard rather than a quantitative research approach.

7.2.2 Movements on and over the BP

Visiting relatives and friends, as well as attending social events, are the most common reasons for travelling on and across the Boulevard Périphérique. It can be concluded that residents of the Métropole du Grand Paris have wider social networks than those in their direct neighbourhoods, as they travel between urban districts to attend social gatherings. Over 50% of the movements over the Périphérique are aimed at reaching daily destinations such as work, school, groceries or other important amenities (figures 47-48). These movements are not corresponding with the "15-minute-city" concept.



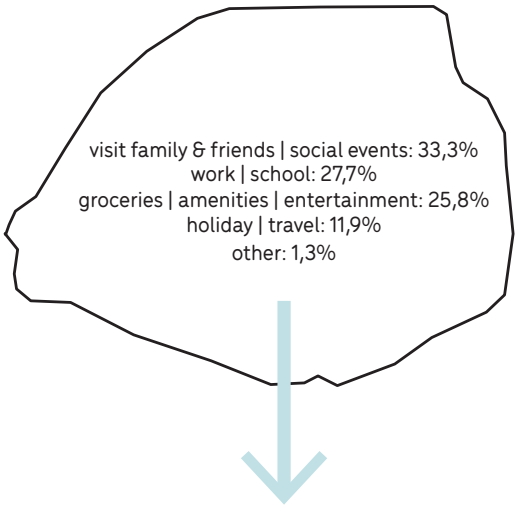


Figure 47: reasons to drive over the Boulevard Périphérique
Figure 48: reasons to cross the Boulevard Périphérique

7.2.3 Used and preferred transportation modes

Another part of the survey focused on the used and preferred transport modes for crossing the ring road. Currently, motorized vehicles account for 37.1% of these movements, with private cars accounting for 25.8%. When the respondents were asked to choose their preferred form of transportation, several differences could be observed. The willingness to move by private car dropped significantly, as other transport modes came to the surface, such as the tram and cycling (figure 49).

Transport mode	Current	Preferred	Difference
private car	25.8%	13.4%	-12.4%
taxi | shared car	9.4%	6.4%	-3.0%
motor | scooter	1.9%	2.1%	+0.2%
train	14.5%	13.4%	-1.1%
tram	3.8%	10.6%	+6.8%
bus	6.9%	6.3%	-0.6%
metro	22.0%	26.0%	+4.0%
(electric) bicycle	7.5%	15.5%	+8.0%
walking	8.2%	6.3%	-1.9%

Figure 49: the current and preferred transportation modes for crossing the ring road

7.2.4 Valuation of the BP

To grasp the perception towards the Périphérique, respondents were asked to write down the first three words that come to mind when thinking about the ring road. The word cloud in figure 50 presents the outcomes of this brainstorm.



Figure 50: the perceptions towards the Boulevard Périphérique by its users

The indicators that characterise the ring road, such as safety, environmental quality, visual quality and the level of obstacle in the movement pattern of its users have pointed out that the experience with the ring road is rather negative. Figure 51 shows that on all four indicators, the Boulevard scores below average.

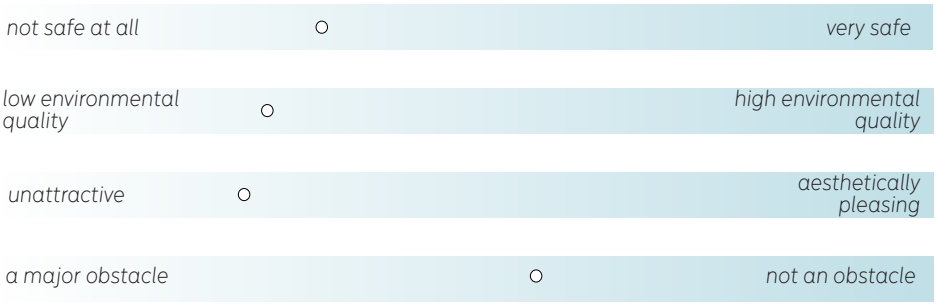


Figure 51: Valuation of the Boulevard Périphérique by its users

The users who have to deal with the ring road on a regular basis desire several changes. The main outcomes are:

Traffic situation
- less busy and less congestion
- more efficiency in the system: create a fluid flow
- improve safety measures
- more carpooling
- transform it into an urban boulevard
- fully automated
- lower maximum speed
- separation of lanes (for example a fast lane)
- secured access to the ring road
- improve the 'portes' of Paris

Transport modes
- make it a multimodal connector
- more and safer crossings for active modes
- a fast peripheral public transport mode
- no more two-wheel motorized vehicles
- charge transport modes that do not necessarily have to be on the ring road
- add cycle lanes and bus lanes

Obstacle
- better integration in the city
- turn the border into a bridge
- involve the suburbs
- improve the neglected parts
- resolve the symbolic border between the centre and its suburbs
- transform the ring road into different segments to make it part of the local
- remove the ring road completely
- put it underground

Clean-up
- more cleanliness
- less dirty walls
- less trash on the edges

Aesthetics
- more greenery
- more colorful (street art)
- better management of vegetation
- trees between the inner and outer part of the ring road
- illuminated cover

Noise pollution
- add more noise barriers
- cover the ring road and plant gardens on top of it

Figure 52: Desired changes by the users of the ring road

7.3 Map of the problematique

The exploration chapter brought together data-based research (from the analysis phase) and emotion-based research (via the fieldwork and survey). The alternation between data-based and emotion-based research has led to a solid foundation for the strategic phase.

The current lay-out of the city does not allow for easy movement and access throughout the area. Several obstacles obstruct the possibility to access resources in the city centre and around major intersections, cyclists and pedestrians are left out of the picture. The survey has revealed that inhabitants of the metropolitan region move through several urban parts to access amenities that are necessary for their daily life. In order to comply with the 15-minute-city concept and to provide inhabitants with all that they need to live a full urban life, the main obstacles should be removed from the urban system. The valuation of the ring road by its daily users is rather negative. The structure is regarded as a dangerous, neglected and grey border in the city.

The main challenges and needed changes are summarized in the *map of the problematique* (figure 53). This map will serve as a basis for the development strategy.

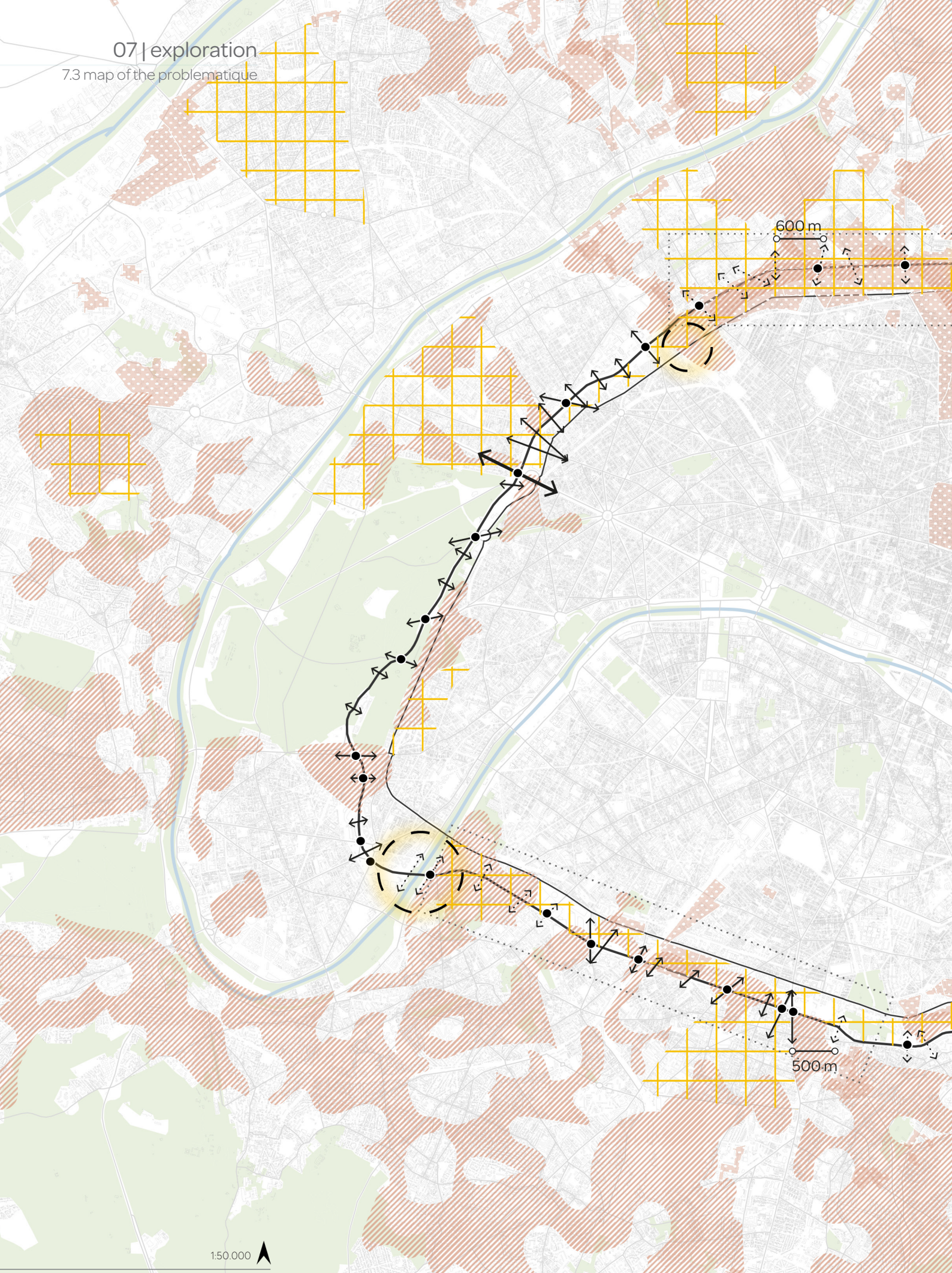
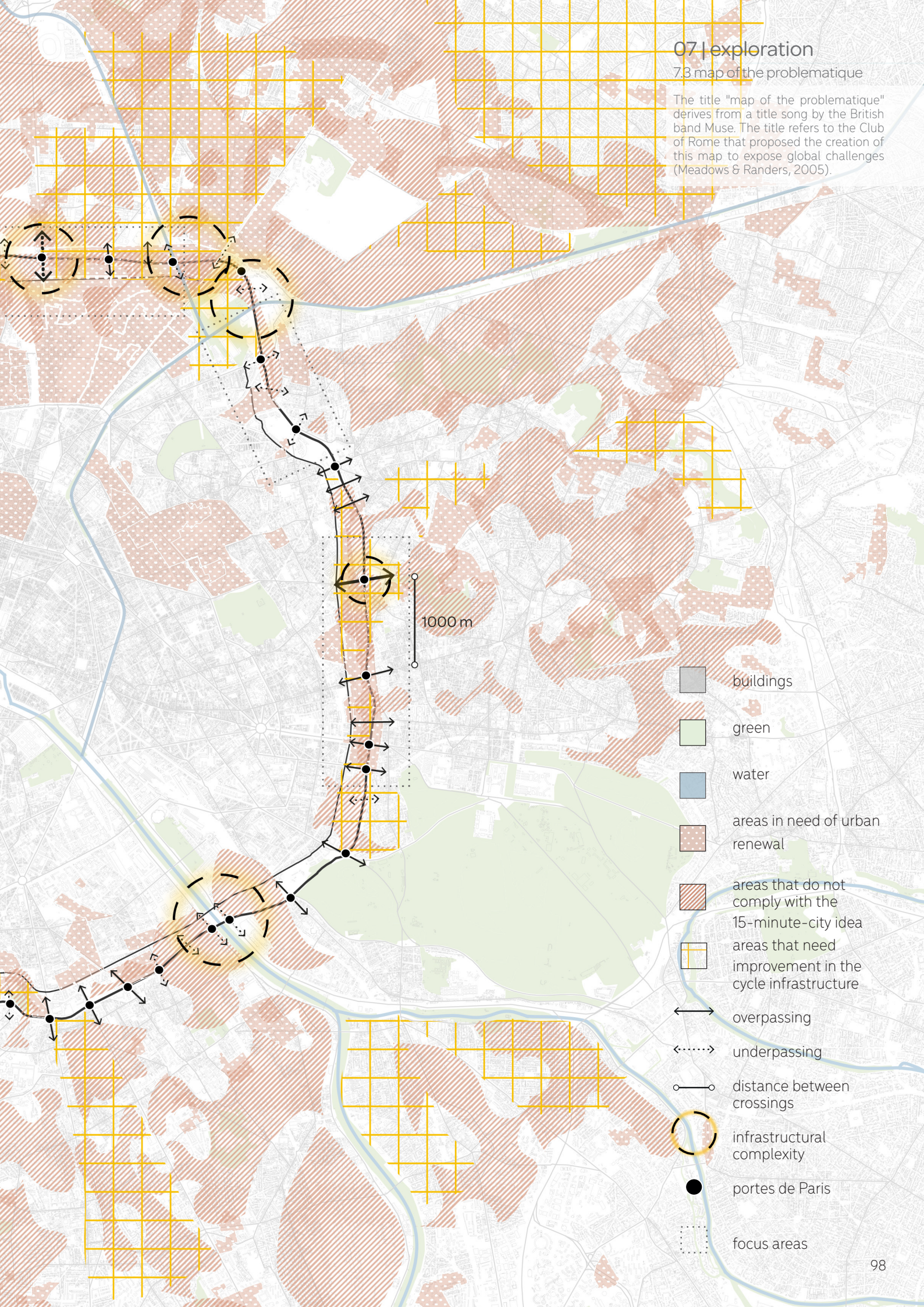


Figure 53: Map of the problematique

7.3 map of the problematique

The title "map of the problematique" derives from a title song by the British band Muse. The title refers to the Club of Rome that proposed the creation of this map to expose global challenges (Meadows & Randers, 2005).



layer 02
context | redevelopment needs

The second layer of the redevelopment approach consists of the redevelopment needs that derive from the context.

The findings of the fieldwork and survey are used to create this layer. These factors have revealed the primary spatial issues, as well as the public's opinion of the ring road and the needed adjustments. There is a link between current typologies and redevelopment requirements.

Change
The spatial and environmental impact of the ring road in these sections is excessive. The structure should be restructured and propose major change for the existing situation.

Improve
In these sections, the ring road functions as a local disruptor, with a lack of connectivity between both sides of the ring road. Therefore, the existing structure needs to be improved and interventions should aim at reconnecting the urban areas that are separated by the structure.

Soften
Restructuring these sections is complex, as they contain large civil infrastructure, such as highway intersections or infrastructure knots. However, the impact of the structure in these locations should be reduced.

Use
In the past years, several sections of the ring road have been transformed or improved. These projects can fulfil an exemplary role.

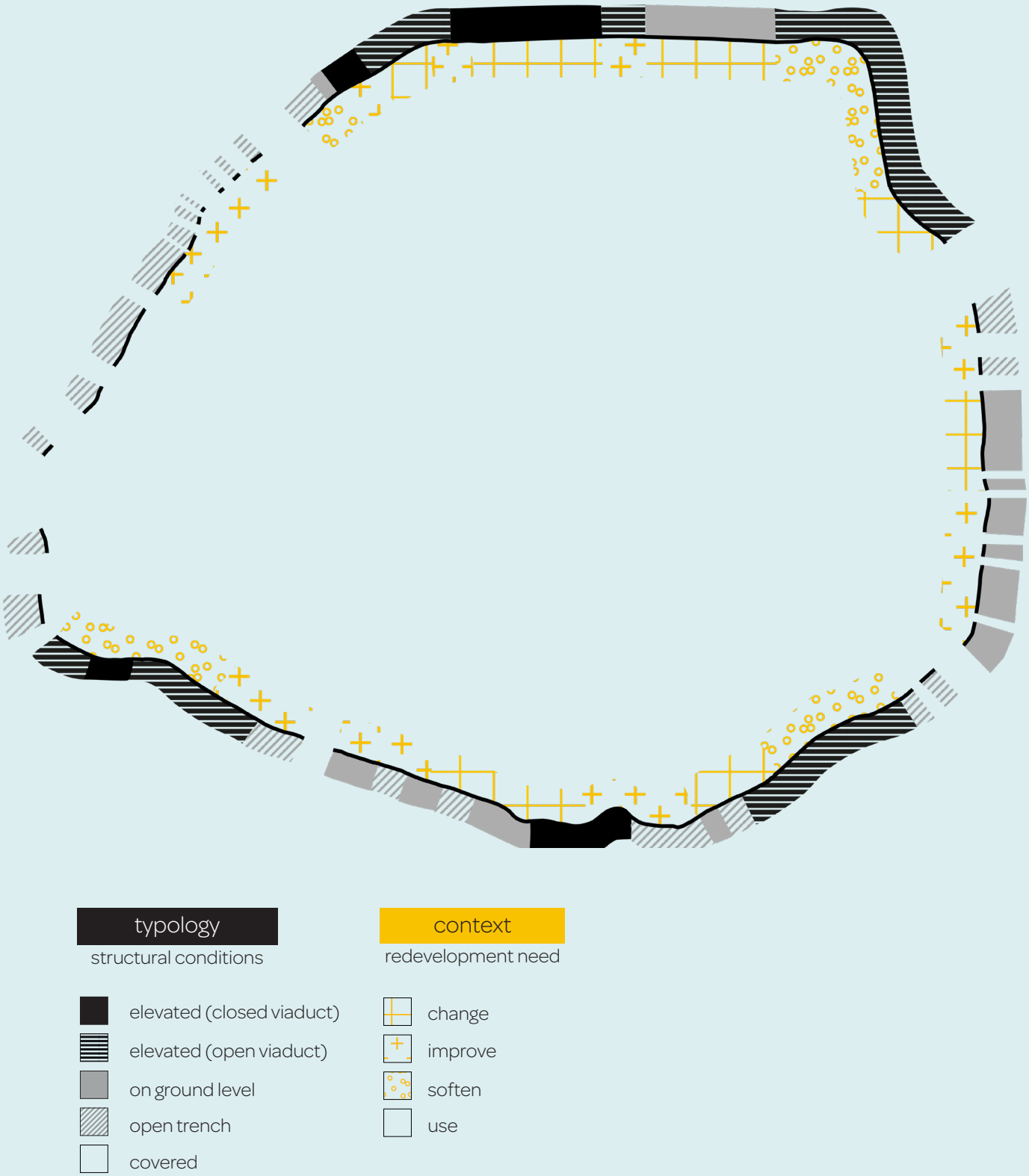


Figure 54: Layer 1 and 2 of the redevelopment approach

the road towards change



Image 25: Rue le Vau
(Author, 2020)

08

development strategy

8.1 strategic framework
8.2 spatial principles
8.3 spatial strategies
8.4 spatial framework
8.5 pioneer projects

The previous chapters have shown how the Boulevard Périphérique functions as an obstacle in the urban fabric. To establish an equal and well-connected metropolitan agglomeration with a high quality of life, a development strategy is necessary. It is founded by three pillars: urban equity, intra-urban connectivity and a high quality of life. The Boulevard Périphérique has a crucial role in this strategy.

The strategic framework delivers eight spatial principles, that are implemented in the context through three studied locations. The outcomes of these studies are organised in a spatial framework.

	reclaim	reconnect	reduce
action	*organizing and gathering*	*moving and connecting*	*being and enjoying*
objective	urban equity	intra-urban connectivity	high quality of life
description	Inhabitants of the metropolitan area enjoy a similar level of access to resources, integration in the urban network and possibilities for movement. Areas that need it are equipped with extra support.	Small-scale connections overcome the physical barriers in the current urban network. Active transport modes have a more prominent role in the urban transport system.	Elements and structures that decrease the quality of life in the urban area are dissolved. Green and blue networks are reintroduced in the urban fabric.
values	justice prosperity freedom of choice economic sustainability	flexibility accessibility proximity social sustainability	health safety liveability environmental sustainability
spatial principles	1 reclaim the space that is used by the BP for urban functions 2 create spaces that function as connectors and assemblers 3 address urban renewal and infrastructure development together	4 reduce the role of the Portes de Paris 5 create a porous interface instead of a barrier 6 improve the circumstances for cyclists and pedestrians	7 reduce the environmental impact of the ring road 8 use green-blue networks to (re-)connect city parts and to improve the urban climate

1 Reclaim the space

As described before, the Mayor of Paris has proposed the "15-minute-city" idea for the centre of Paris. The emphasis is on equipping each neighbourhood with the amenities that support full participation in urban life, within reach of home (Sisson, 2020). Therefore, it is necessary to revise the space in the city that is dedicated to 'non-urban' functions, such as thorough-faring traffic. For some areas, transforming these spaces could improve the accessibility to existing amenities. In other areas, the space that becomes available through the restructuring should be complemented with missing amenities.

2 Connectors and assemblers

"Connectors" on and around the BP will function as central places where people come together and undertake activities. The connectors will fulfil a role on the larger metropolitan scale as well, because they are magnets for activity and people. The designed spaces should be inclusive, collective and open to all.

3 Urban renewal and infrastructure

Several neighbourhoods near the ring road are in need of urban revitalization and infrastructure (re)development for active transportation modes. The ring road's reconstruction provides a chance to address both urban renewal issues and the need for new infrastructure. As a result, these two should complement each other.

4 Portes de Paris

The portes have had an important role and function throughout the history of the city. The layout of the portes should be modified to eliminate the idea of a city wall. These points should be transformed into transition zones instead of linear connections.

5 Porous interface

The barrier should be resolved and replaced by a porous interface. The porosity can be achieved through minimising the amount of obstacles around the ring road and increasing the number of options for crossing it. The existing visual and physical disruption will be mitigated using this principle.

6 Cyclists and pedestrians

The presence and status of the current networks for active transport modes are insufficient. Existing networks will be upgraded with more connections and better infrastructure. A network of cycle highways will increase cycle connectivity on the metropolitan scale.

7 Environmental impact

During the redevelopment of the ring road, attention should be given to the environmental impacts of the current structure, such as noise pollution, air pollution and lack of green. The environmental impact should be reduced by the interventions in order to create a healthy and liveable urban area.

8 Green-blue networks

Existing green- and blue structures are not used to their full potential. Waterways should be deindustrialised and reintroduced in the urban fabric. When green areas are connected, they can function as networks for humans and animals. The optimalisation of the green-blue networks in the metropolitan agglomeration can contribute to improving the circumstances for cyclists and pedestrians.

8.3 Spatial strategies

8.3.1 Three segments

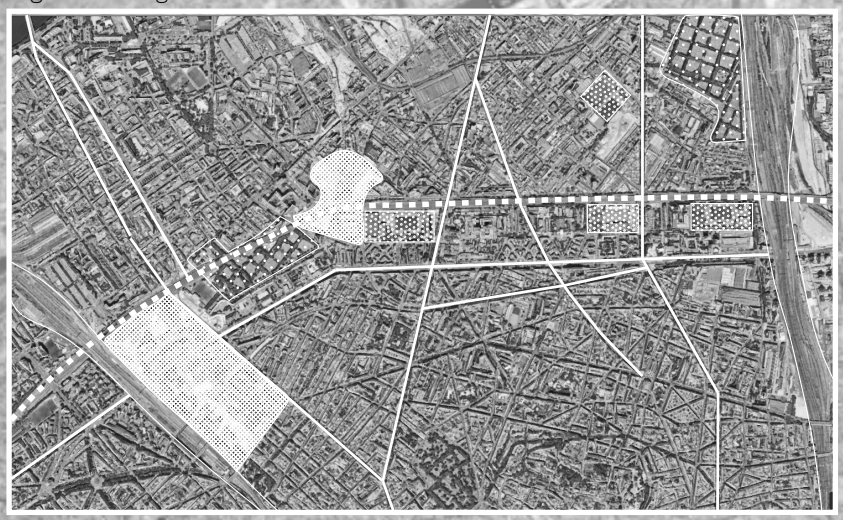
To translate the spatial principles of the development strategy and make them land in the location, three segments have been identified based on the *map of the problematique*. In these segments, the defined roles of the Boulevard Périphérique stand out most in comparison to other segments. Individually, they differ, but together they complete the bigger picture. For example, the segments have a maximum difference in typologies and redevelopment needs, but together they form a representative whole for all typologies and needs.

In these locations, the spatial principles from the development strategy are translated into concrete spatial interventions. The findings lead to several redevelopment concepts, presented in the spatial framework.

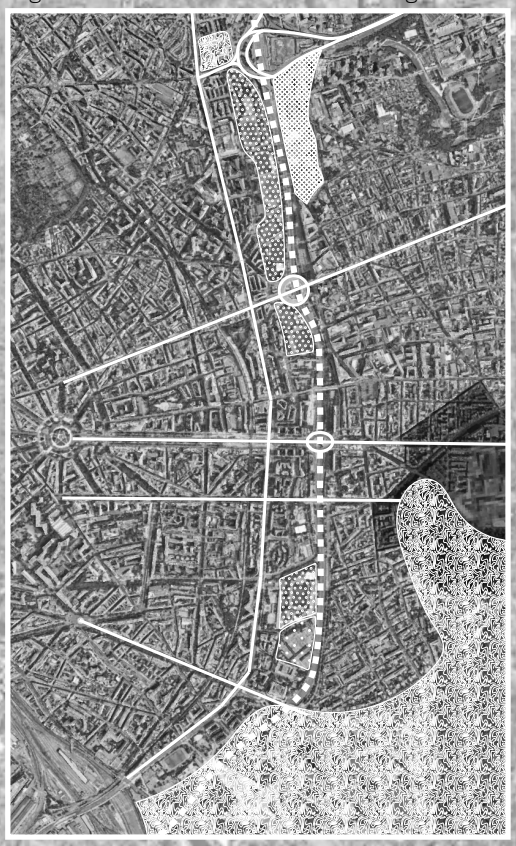
8.3.2 Method for designing the spatial strategies

A design method has been developed to approach the spatial strategy. First, the key guiding elements are the principles deriving from the development strategy: these should come back in the strategies. Second, a thorough analysis of the status of the 15-minute-city concept has revealed the locations to intervene, through circle drawings: the location of amenities and their accessibility radius. These drawings identified areas with a lack of access to urban functions. Third, the existing connections and dead ends are taken into consideration, in order to identify 'missing links' that should be reconnected.

segment 1: Batignolles - Porte des Poissoniers



segment 3: Bois de Vincennes - Porte Bagnolet



segment 2: Porte de Gentilly - Pont de la Vallée



Image 26: the three segments on the map (data: Google Earth, 2021b)

8.3.3 Rules of the game

The chosen segments show that the possibility to live a full urban life ends near the Boulevard Périphérique (figures 55-57). In these segments, areas that do not have access to food provision or green space within a 5-minute-walk can be identified. Most studies have found that 400-500 m walks are acceptable walking distances for daily amenities (Gehl, 2011). For the spatial strategies, the following distances have been defined in order to comply with the 15-minute-city:

- Basic amenities (supermarket/boulangerie) should be available within a 5-minute-walk resp. at a distance of 400-500 m from the home
- Green areas should be available within a 5-minute walk resp. at a distance of 400-500 m from the home
- Places of high urbanity (high streets, lively districts) should be available within a 15-minute-walk or 5-minute-bike ride resp. at a distance of 1000 m from the home
- Large occasional amenities (health care, sports centre, education) should be available within a 20-minute-walk or 10-minute-bike ride resp. resp. at a distance of 1500 m from the home

Areas outside of the circles have limited access to urban functions. Some places are even devoid of basic services such as food and/or green space.

Opportunities

- A convincing approach to redevelopment is making use of existing opportunities, instead of starting from scratch. Wherever possible, spaces should get more than just one function.
- Green that is used to reduce the environmental impact of the ring road (such as green strips) should get a recreational function as well.
- Another rule is opening up semi-private functions during day-time to increase the porosity of the ring road, for example, fenced cemeteries under the ring road as public parks and private sport areas as recreational areas.

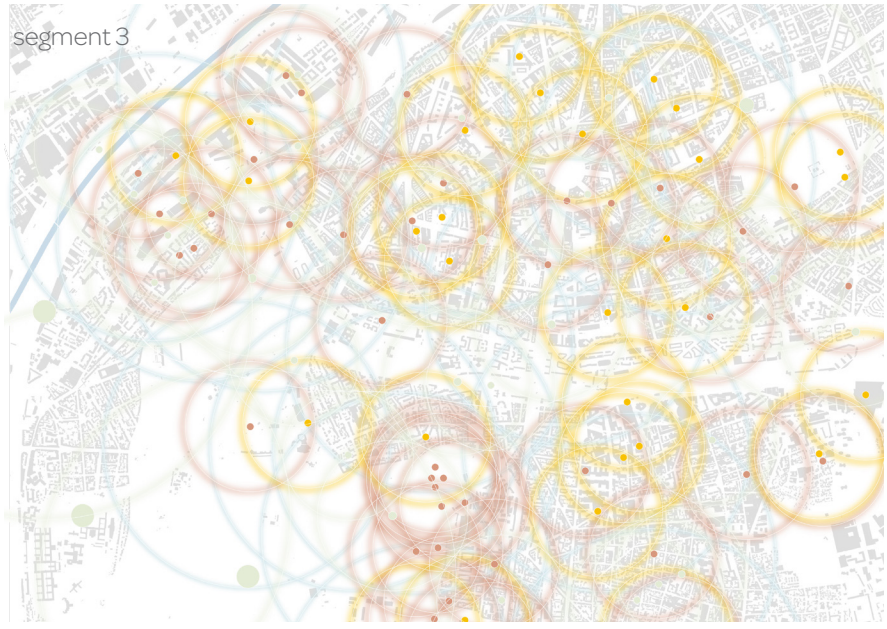
Connectivity

- Connectivity between urban parts should not just be focused on human movement, but also on the natural system.
- Instead of linear connections, the portes of Paris should become nodes with increased options for transport modes and directions.
- Connections should have a maximum distance of 400 m to each other.

These rules are taken into account when developing the spatial strategies.







boulangerie

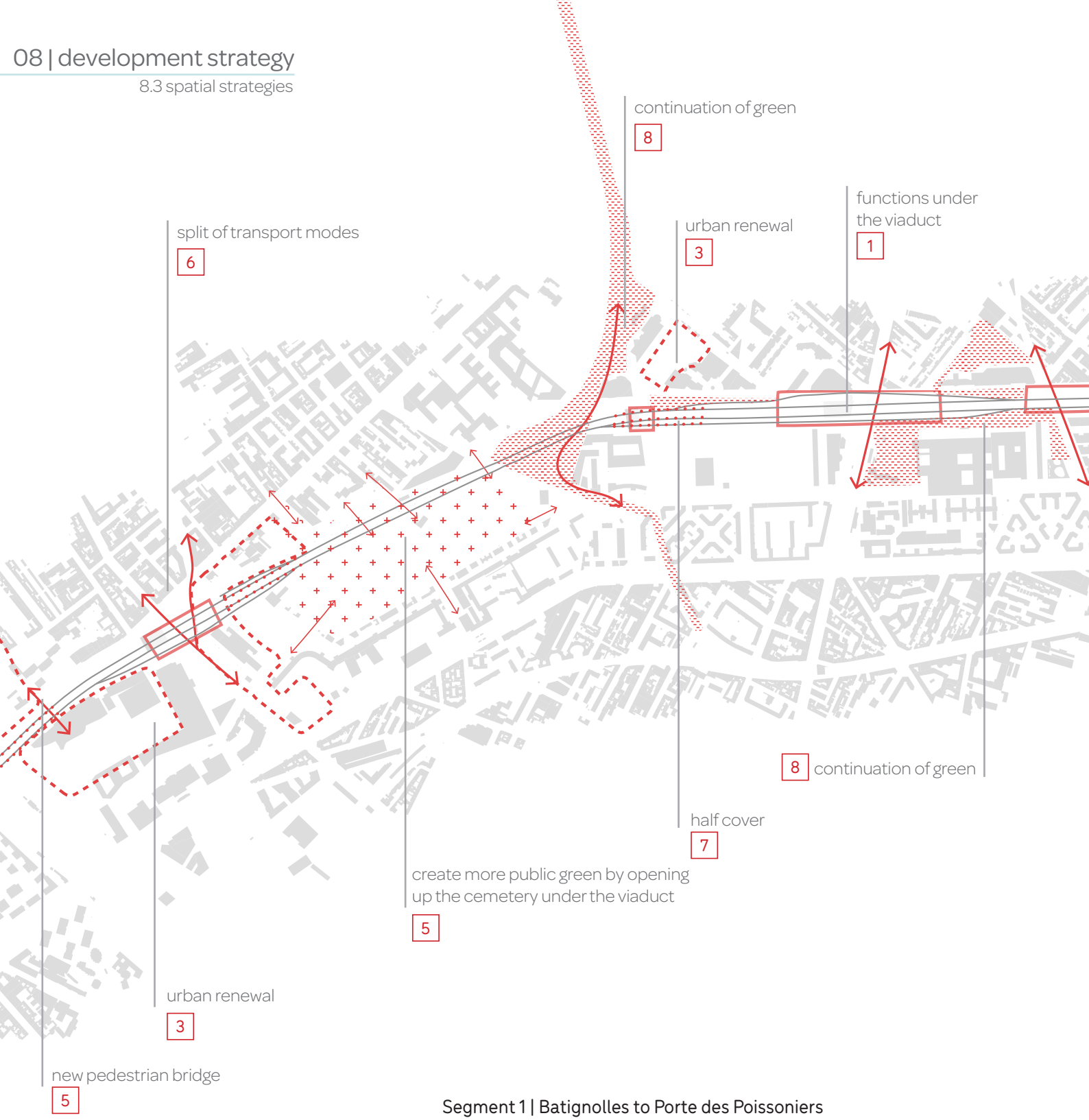
supermarket

green space

high street

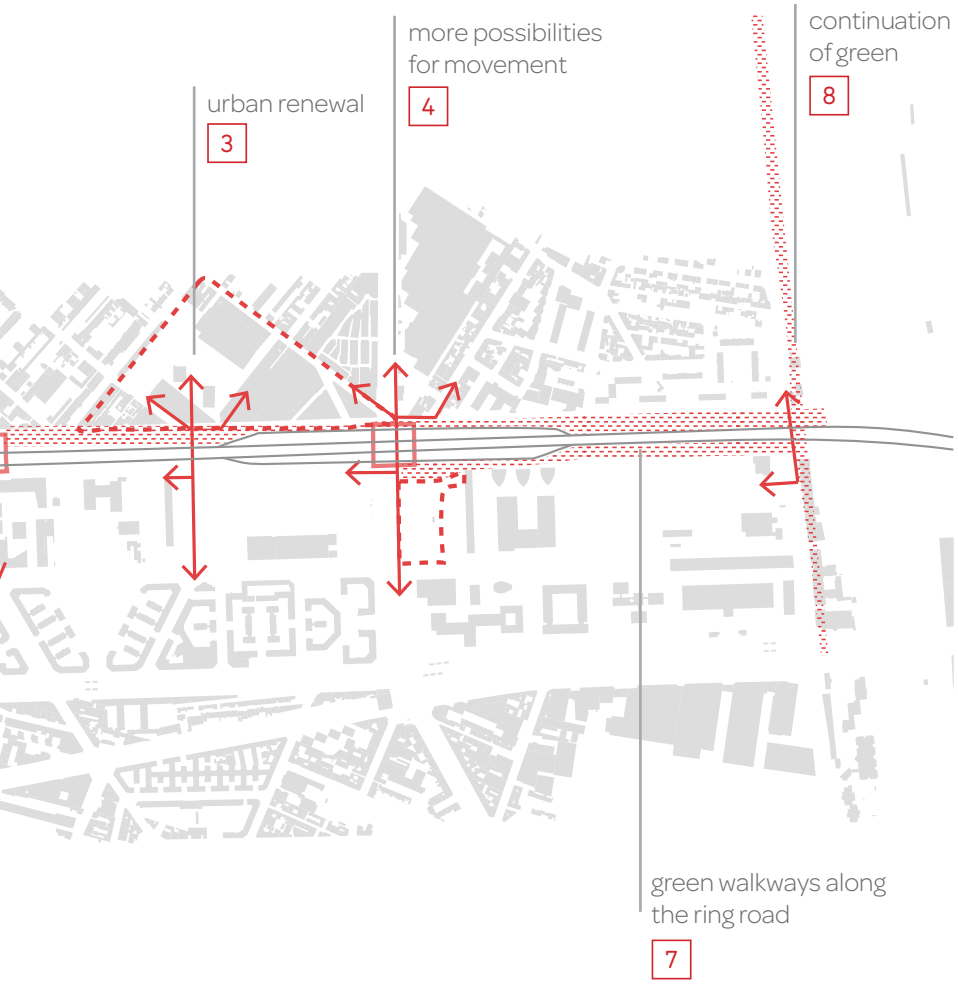
place with a high level of urbanity

Figures 55-57: basic amenities and their radius



Segment 1 | Batignolles to Porte des Poissoniers

In the first segment, the highway is constructed on an elevated level. Open and closed viaduct constructions alternate. The viaduct can be opened up by placing functions underneath it and generate permeability in previously enclosed areas, such as cemeteries. Several urban renewal projects are planned for this area. This should go hand-in-hand with interventions on the ring road. Existing green strips along the ring road can be converted into walkways to provide a dual use in these zones while also reclaiming area that the ring road requires.



1:10.000

urban renewal

functions under viaduct

green space

cemetery

(half) cover of the ring road

connection

principles of the strategy:

1 reclaim the space

2 connectors & assemblers

3 urban renewal + infrastructure

4 reduce the role of the portes

5 create a porous interface

6 improvement active infrastructure

7 reduce environmental impact

8 green-blue networks

** the interventions have a main connection to one of the principles from the development strategy, but they can contribute to others principles as well.*

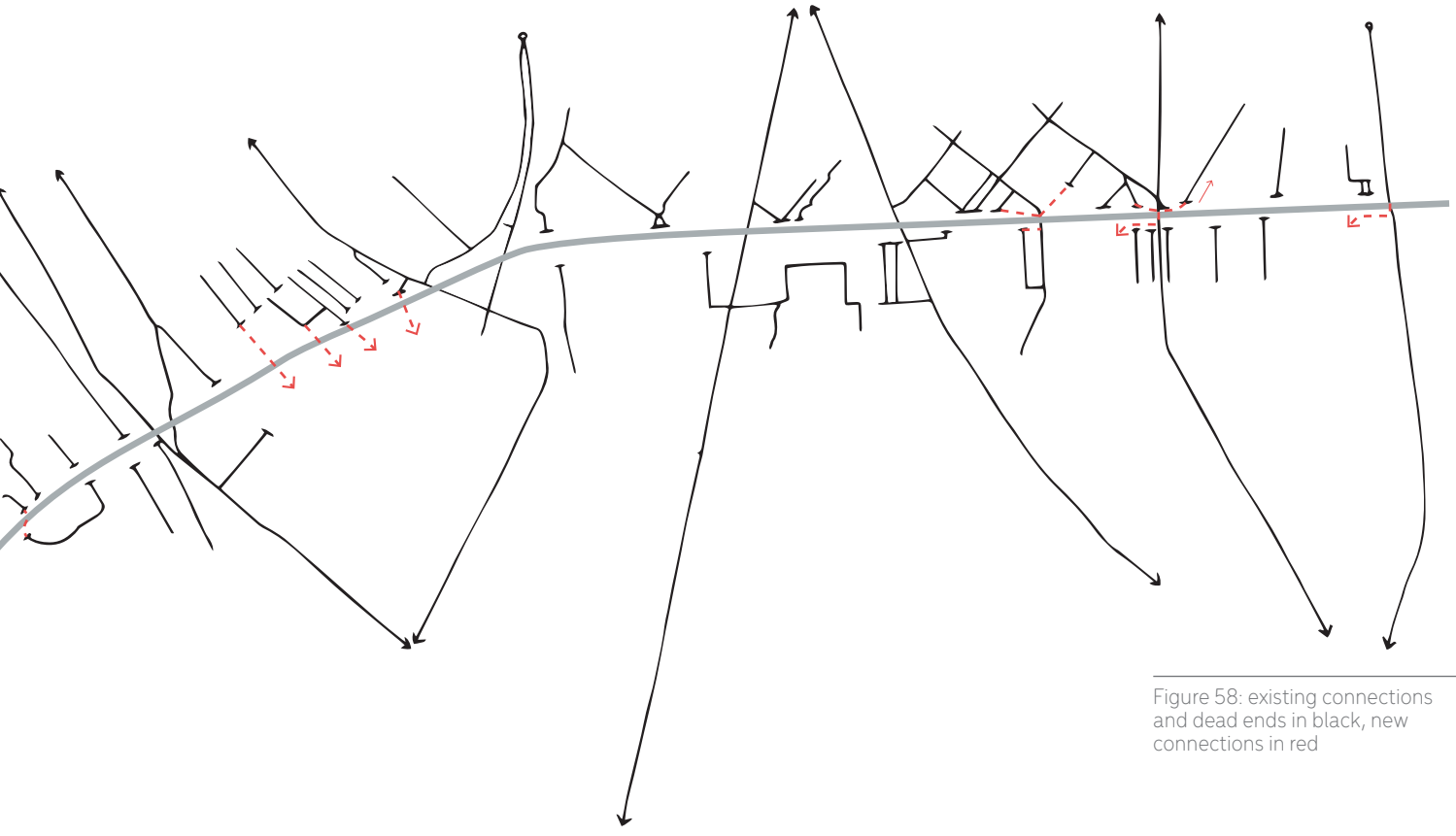


Figure 58: existing connections and dead ends in black, new connections in red

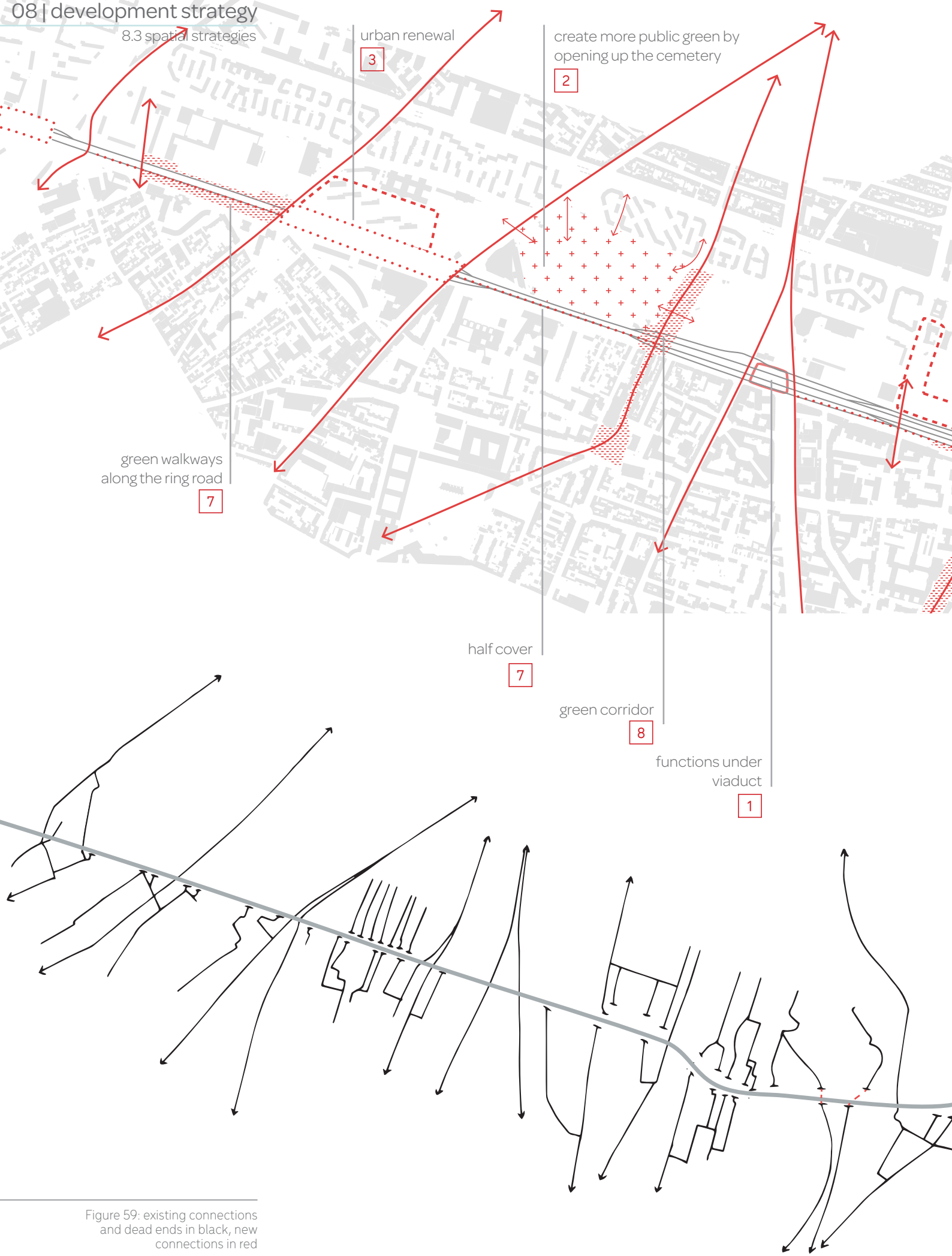
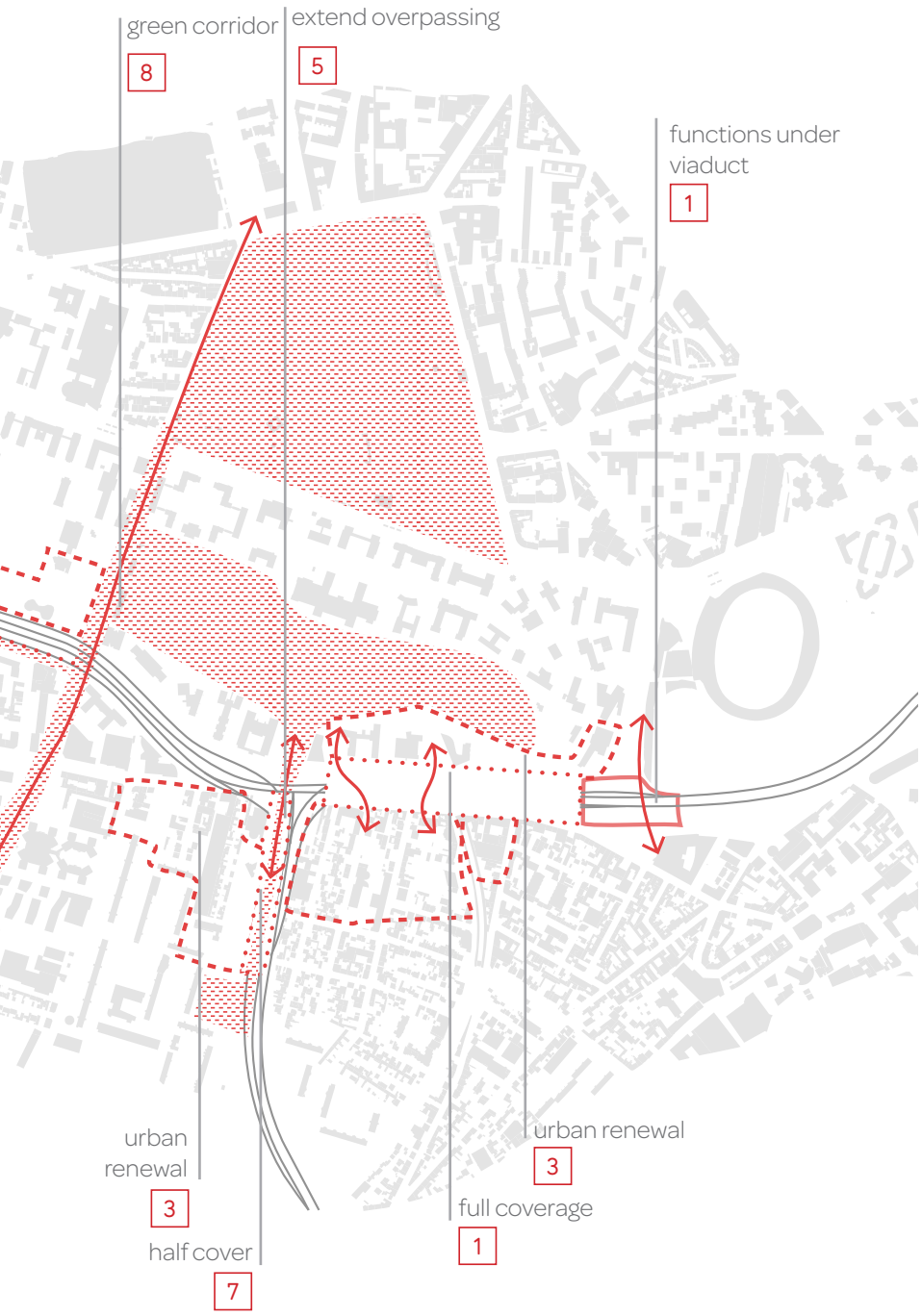


Figure 59: existing connections and dead ends in black, new connections in red



1:10.000

urban renewal

functions under viaduct

green space

cemetery

(half) cover of the ring road

connection

principles of the strategy:

1 reclaim the space
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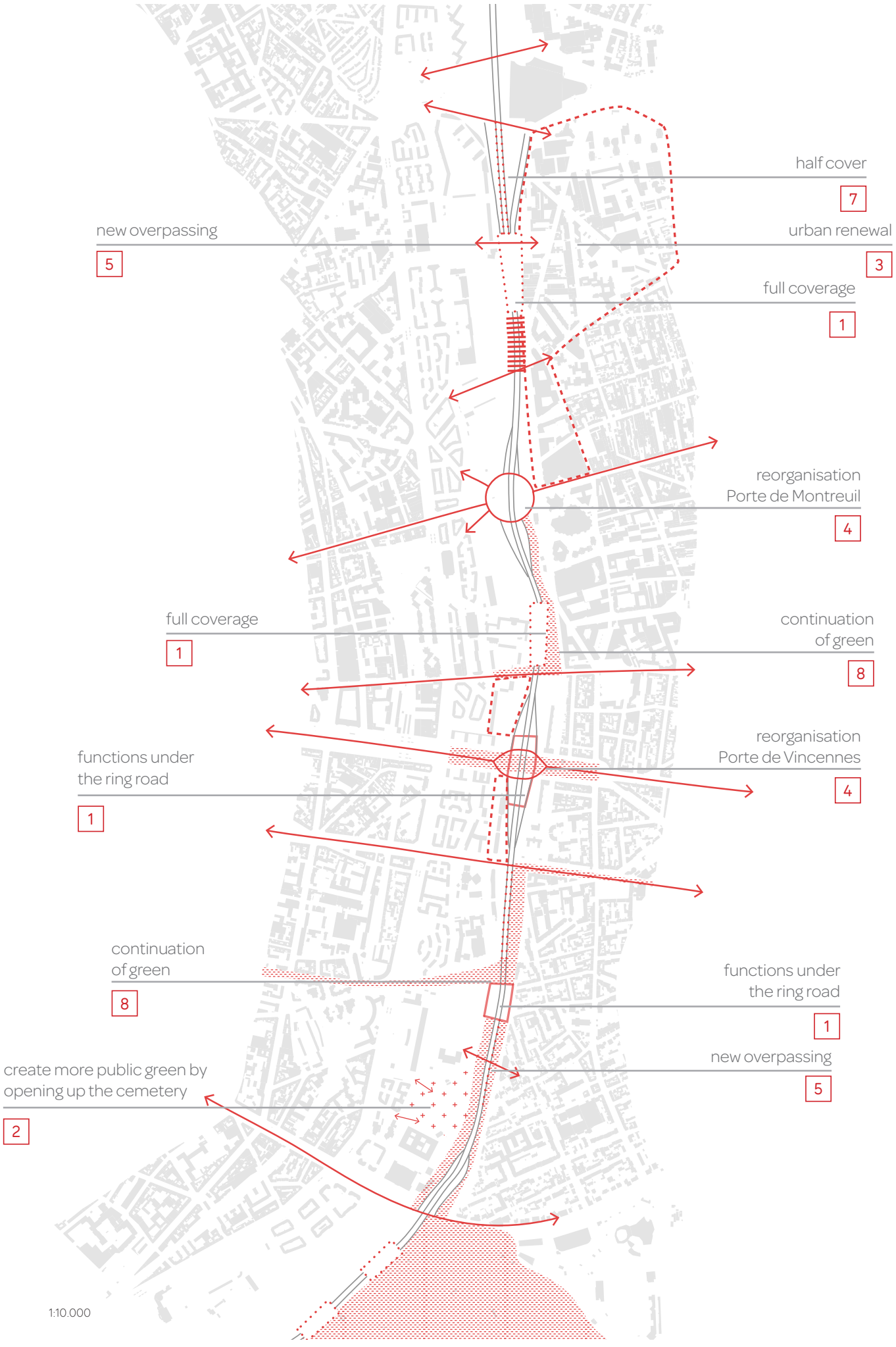
5 create a porous interface
6 improvement active infrastructure
7 reduce environmental impact
8 green-blue networks

** the interventions have a main connection to one of the principles from the development strategy, but they can contribute to others principles as well.*

Segment 2 | Porte de Gentilly to Pont de la Vallée

In the second segment, the highway is constructed in an open trench and on ground level. The width of the highway is relatively narrow: buildings are constructed directly next to the highway without a transition zone. On the city side, several high-quality green spaces are present. The connection to these spaces should be improved through green overpassings for pedestrians and cyclists. Some areas, that are designated for urban renewal, present the opportunity for full coverage of the ring road. This could deliver high-quality overpassings and a new neighbourhood on top of the ring road.


half cover
7
new overpassing
5
urban renewal
3
full coverage
1
reorganisation
Porte de Montreuil
4
full coverage
1
continuation
of green
8
functions under
the ring road
1
reorganisation
Porte de Vincennes
4
continuation
of green
8
functions under
the ring road
1
new overpassing
5
create more public green by
opening up the cemetery
2

1:10.000

urban renewal

functions under viaduct

green space

cemetery

(half) cover of the ring road

connection

principles of the strategy:

1 reclaim the space

2 connectors & assemblers

3 urban renewal + infrastructure

4 reduce the role of the portes

5 create a porous interface

6 improvement active infrastructure

7 reduce environmental impact

8 green-blue networks

** the interventions have a main connection to one of the principles from the development strategy, but they can contribute to others principles as well.*

Segment 3 | Bois de Vincennes to Porte Bagnolet

In the third segment, the highway is constructed mainly on ground level. At the city side, a transition zone of sports fields and cemeteries separates the urban area from the ring road, while at the periphery-side, the buildings are constructed immediately next to the ring road. This segment contains some large-scale overpassings that are in need of restructuring. A large urban renewal will take place just south of the Porte de Bagnolet, especially focused on densification. This can be paired with full coverage of the ring road to increase the connectivity between two high-density urban parts.

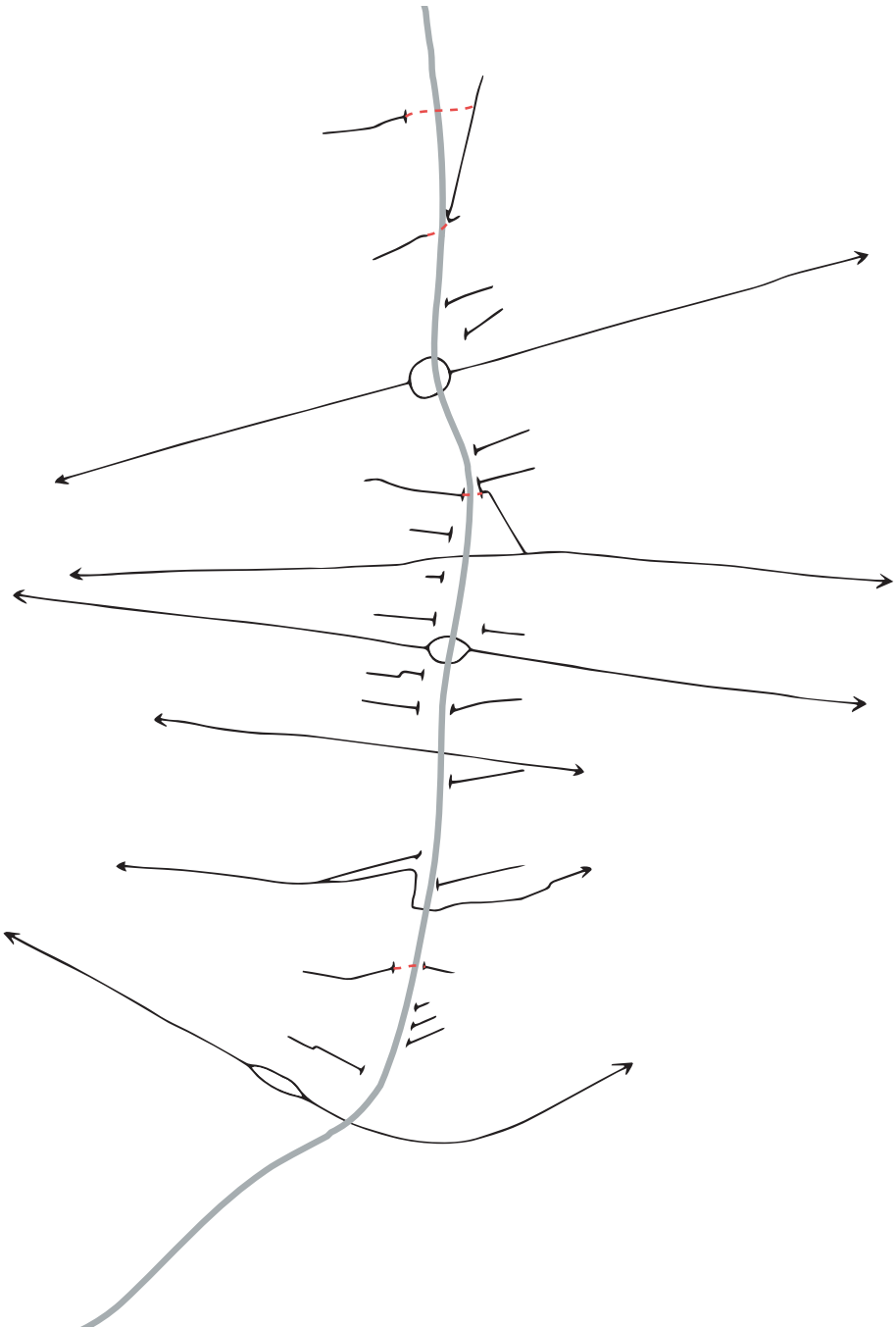
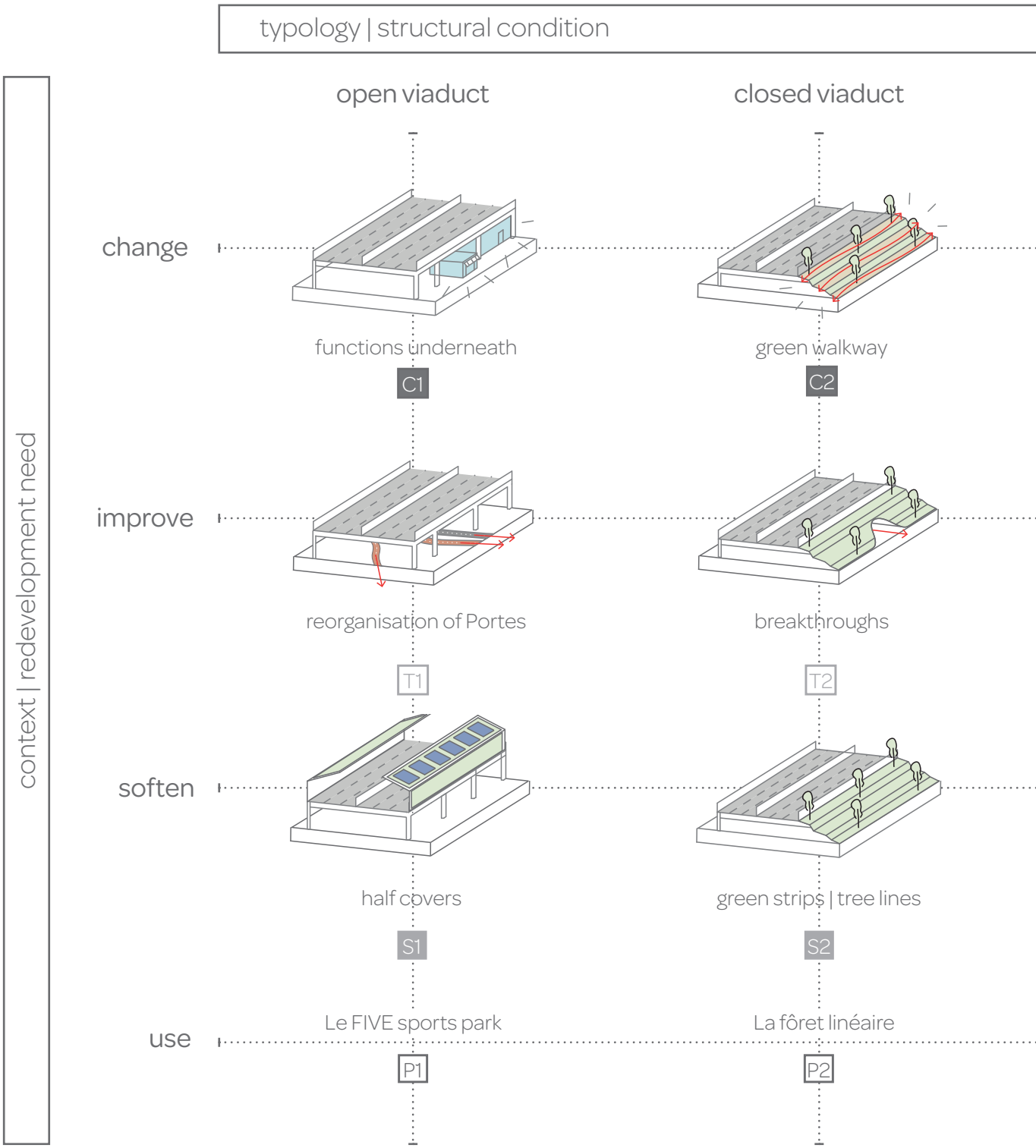


Figure 60: existing connections and dead ends in black, new connections in red

8.4 Spatial framework

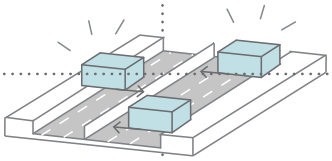
The spatial strategies have revealed several redevelopment concepts, that are organised in the spatial framework. The framework is constructed by the structural conditions (layer 01) on the horizontal axis and the redevelopment needs (layer 02) on the vertical axis. It adds a third vertical component: the outcome on the surroundings. The concepts function as creators, transformers, softeners and pioneers. The concepts all have a specific code to identify them and together they form the third layer of the approach: the intervention possibilities.



outcome

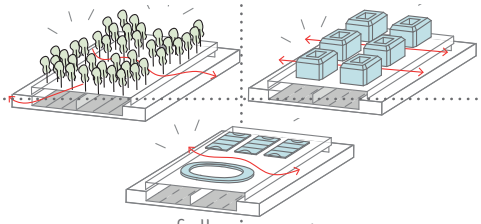
open trench

on ground level



functions overhead

C3

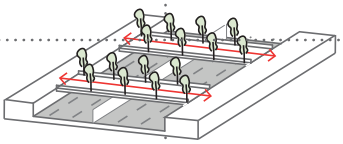


full coverage

C4

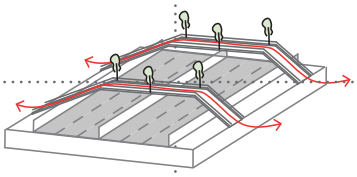
increase the level of **activity** and **urbanity** around the ring road

creators of a new urban environment



continuation of public space

T3

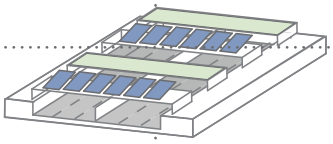


cyclist- and pedestrian bridges

T4

increase the level of **connectivity** between urban parts

transformers of the existing urban environment

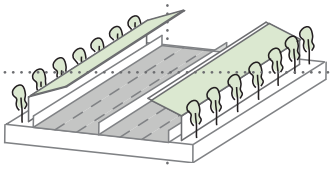


CO:CO
(closed-open:closed-open)

S3

Pelouse de Reuilly
Parc des Princes
Porte des Lilas

P3 P4 P5



half covers | tree lines

S4

Porte de Champerret
Claude Bernard bridge

P6 P7

reduce the **environmental impact** of the ring road

softeners of the existing urban environment

show the **quality of space** that should be achieved

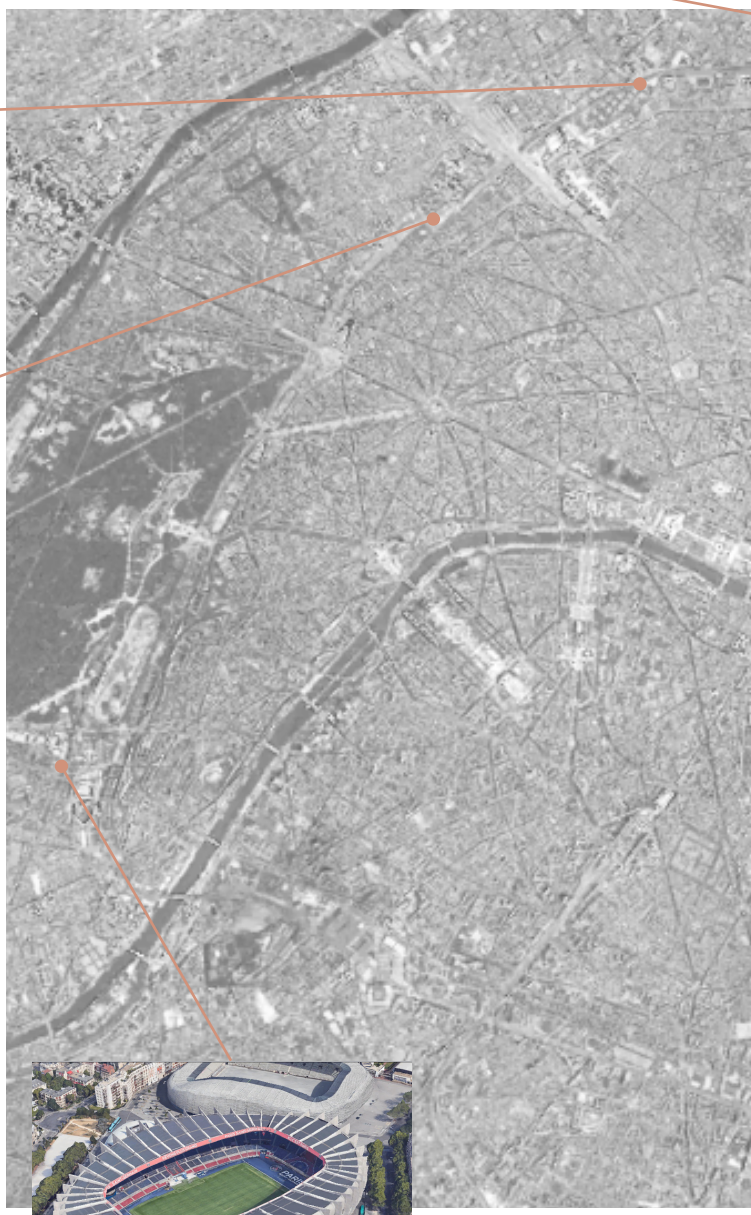
pioneers of the urban environment

P6 Claude Bernard bridge





P1 Le FIVE sports park





P7 Porte de Champerret



P4 Parc des Princes

Images 27-33: existing pioneer projects around the BP
(Le Five Paris 17, 2020
Boegly, 2016
Samborska & Rieusset, 2014
Google Earth, 2021c-e
Mairie de Paris, 2020)

P2 La fôret linéaire







P5 Porte des Lilas



P3 Pelouse de Reuilly

layer 03

concept | intervention possibilities

The third layer of the redevelopment approach consists of the intervention possibilities that relate to the redevelopment needs and structural conditions.

This layer is based upon the findings of the design process, through exploring three locations around the ring road. This has led to four categories of intervention types:

Creators of a new urban environment
increase the level of activity and urbanity around the ring road

Transformers of the existing urban environment
increase the level of connectivity between urban parts

Softeners of the existing urban environment
reduce the environmental impact of the ring road

Pioneers of the urban environment
show the quality of space that should be achieved

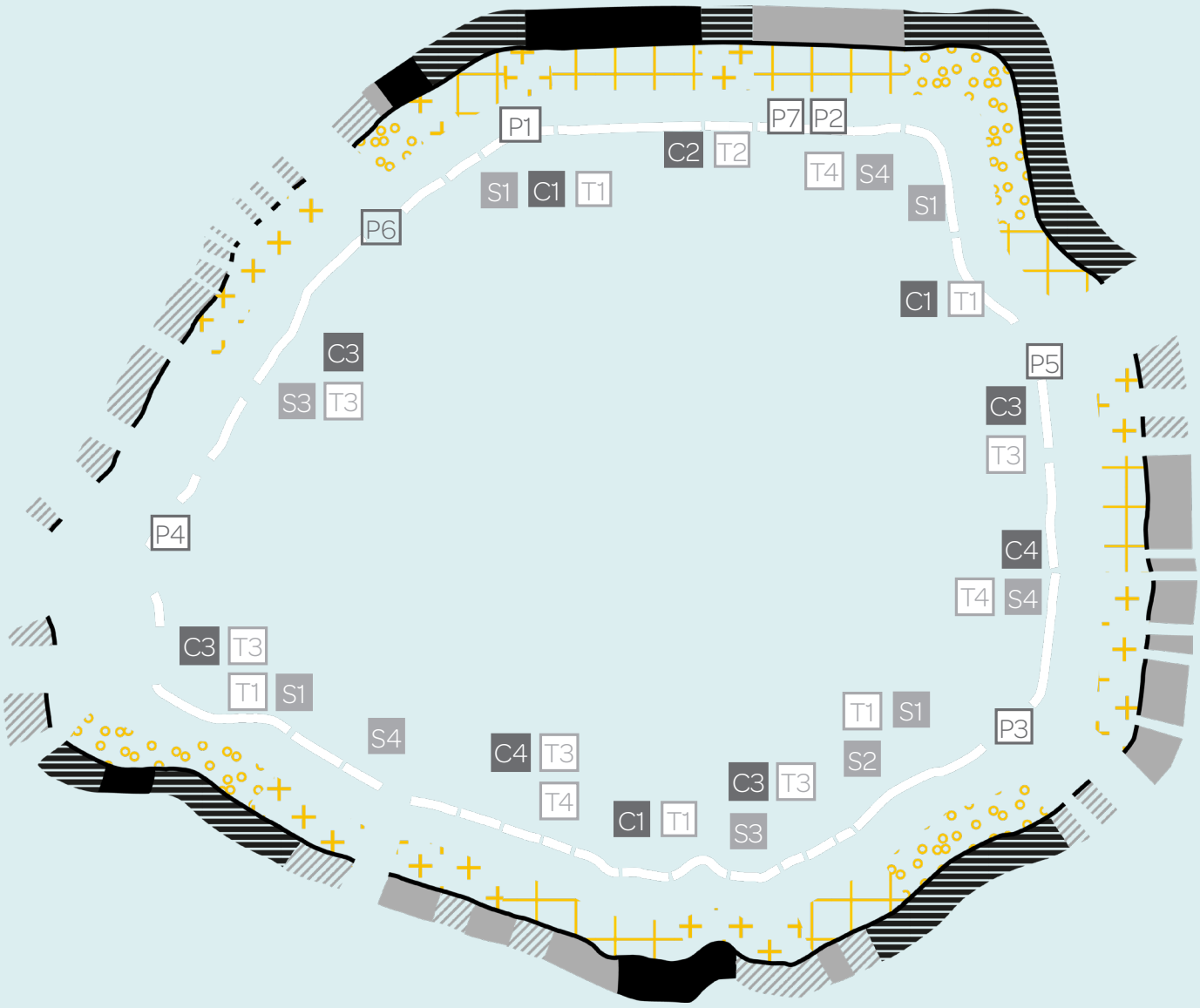


Figure 61: Layer 1, 2 and 3 of the redevelopment approach

proof of concept



Image 34: A playground in a well-off neighbourhood of the city (Author, 2019)

09

demonstration

9.1 Porte de Clichy
9.2 Gentilly
9.3 Porte de Vincennes
9.4 final result

In the demonstration chapter, three pilot projects related to the spatial strategy are presented. The emphasis is on the embedding in the location and the possible benefits for the city. The demonstration highlights the relevance and importance of the proposed interventions. Each pilot project connects mainly to one of the pillars of the development strategy, but they incorporate the principles of all three pillars.

Pilot project 1 concerns the redevelopment of an unsafe underpassing in the north of Paris, focused on the need to reconnect. Pilot project 2 reveals how square meters of valuable urban land can be reclaimed on the border between Paris and Gentilly, one of the southern suburbs. Pilot project 3 reveals how a former barrier for both humans and ecology can be transformed into a green overpassing, to reduce the spatial and environmental impact of the ring road.

pilot project 1 | Porte de Clichy



pilot project 2 | Gentilly



pilot project 3 | Porte de Vincennes

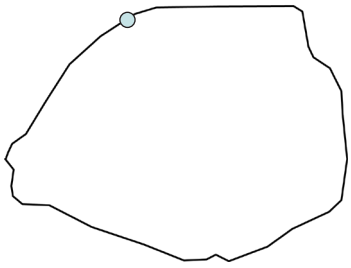


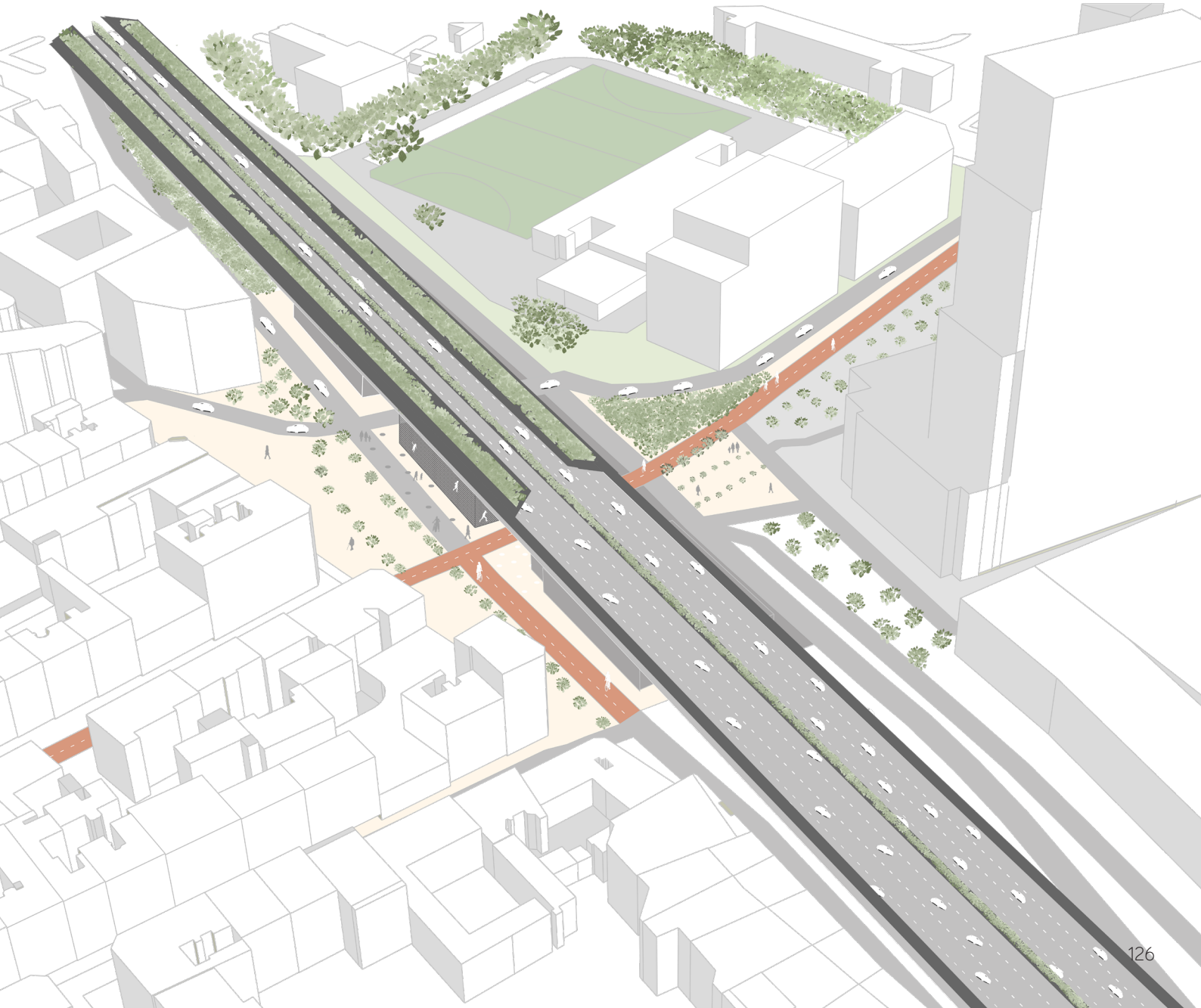
Images 35-37: aerial images of the pilot project locations (Google Earth, 2021)

PORTE DE CLICHY

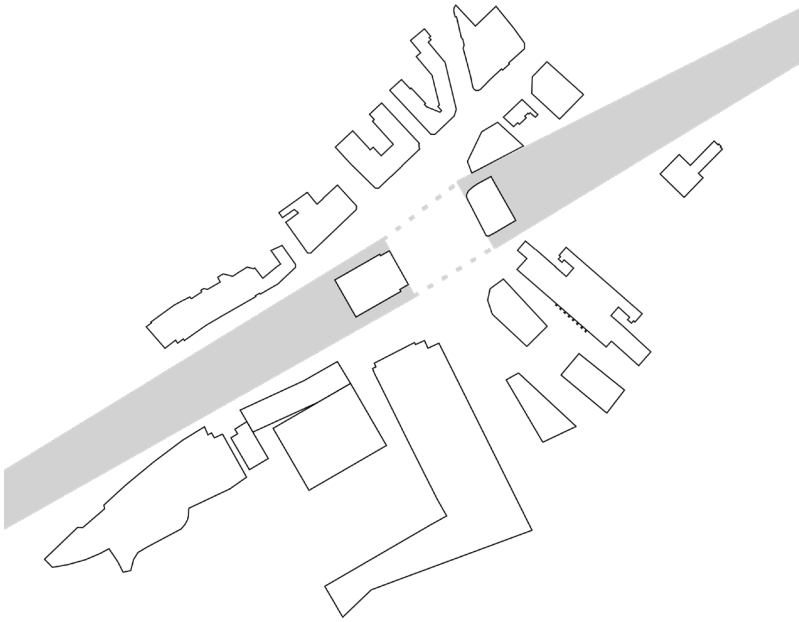
work out | meet | connect

reclaim: functions under the ring road
reconnect: a safe underpassing for all transport modes
reduce: green corridors and new buildings with sound-proof façades





In the urban fabric, the closed viaduct serves as a fixed element and a barrier. High-rise buildings are the result of urban renewal projects in the surroundings. To contrast these massive quantities, open urban spaces are very vital. Therefore, open space is created around the underpassing.



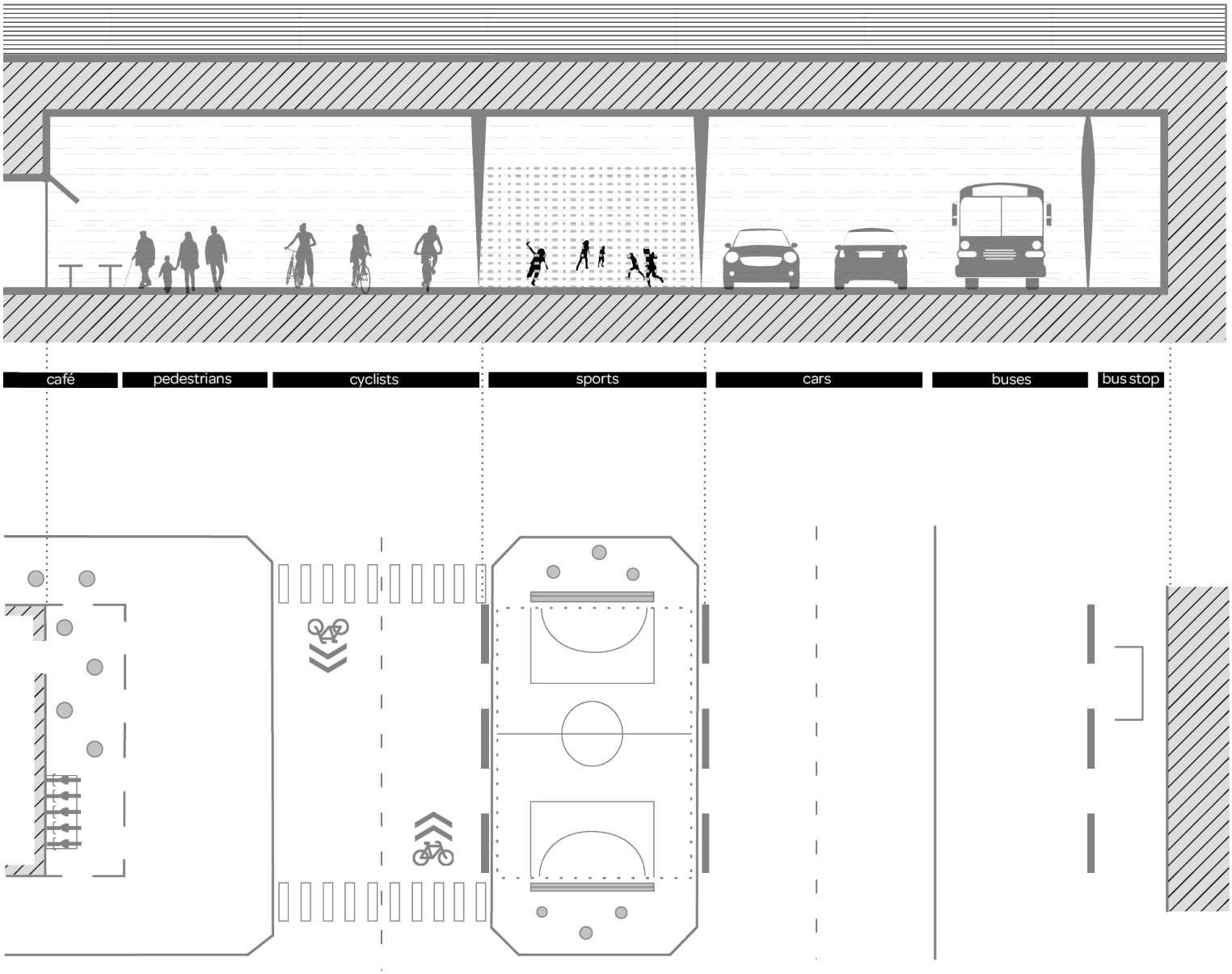
The underused space beneath the viaduct can be reclaimed for urban functions. Although not all functions are suitable to place under a viaduct, reference projects have revealed the potential of sports areas, cafés and gyms. Several important office buildings are situated around the Porte de Clichy. A green corridor will directly connect to the sports area.



To improve safety and convenience, the means of transportation will be separated. The Porte has two passages, one for motorized vehicles and the other for active modes of transportation (figure 63). A broad sidewalk will be built along the café's perimeter, allowing for terrace tables. The city of Paris and the northern suburbs will be connected by two bike highways.



Figure 62: layers of the proposal: space, program and movement



1:1000

Figure 63: section Porte de Clichy



AFTER



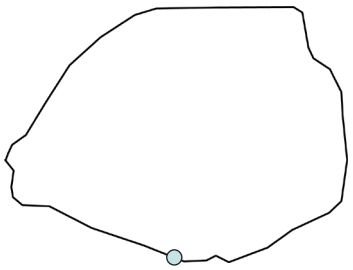


BEFORE

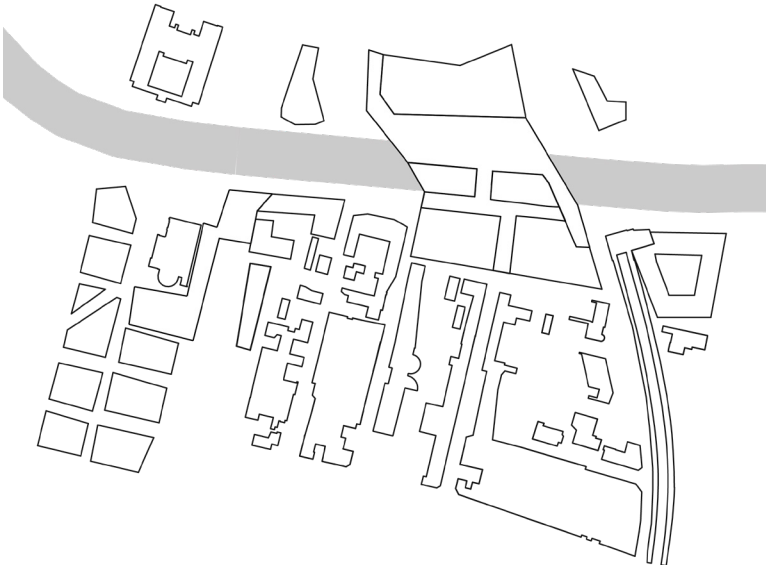


GENTILLY

densify | cross | live



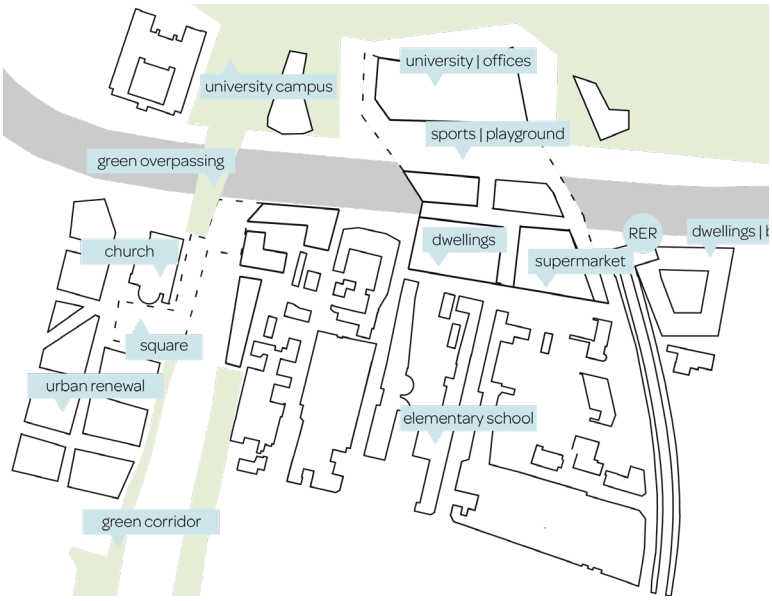
reclaim: new neighbourhood on top of the ring road
reconnect: expand existing crossings and create new overpassings
reduce: full coverage to filter the polluted air



By removing only one exit of the Autoroute du Soleil, a coverage project could deliver up to 30.000 m^2 worth of valuable urban space. Closing the exit is possible because there is another intersection between the Autoroute du Soleil and the Boulevard Périphérique close by (near the Porte d'Italie) and because the exit towards the west will remain. This is required in order to construct the covering platform's bearing structure.

space

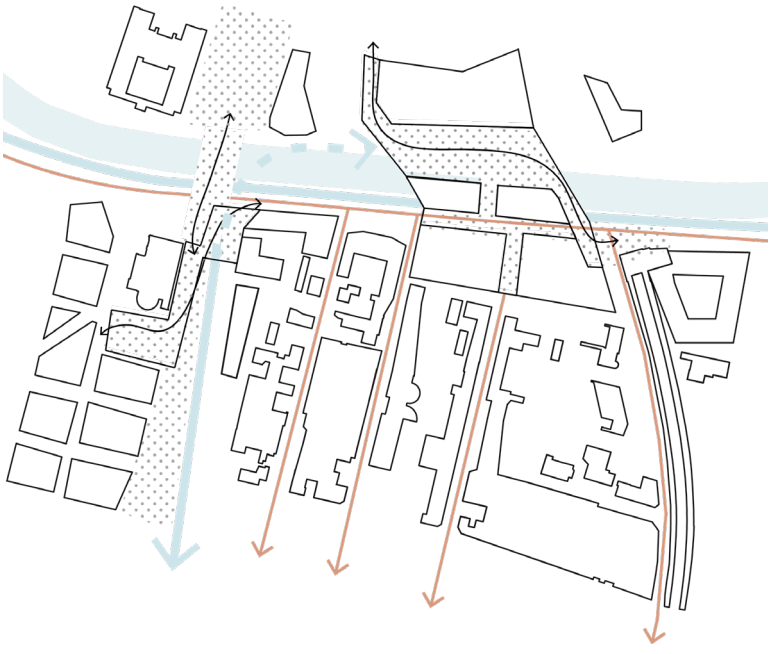
- Boulevard structure
- buildings



This area could be used for a variety of purposes, including housing, education, offices, and retail. This proposed neighbourhood will be connected to the neighbouring metropolitan area by an existing RER (regional train) station. Facilities for active forms of transportation, such as bicycle parking, are available in the station vicinity.

program

- Boulevard structure
- buildings
- sport fields
- green
- functions



The intervention will create a high-quality overpassing from the city of Paris to Gentilly. Another semi-coverage project over the Autoroute du Soleil will extend the existing green overpass towards the south and create a square next to the Sacré-Coeur de Gentilly. The former road along the highway will be transformed in a cycle highway, serving connected streets.

movement

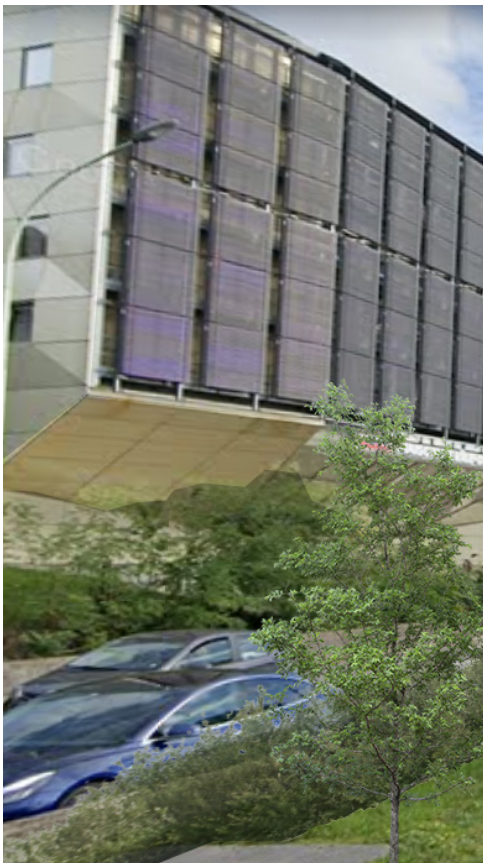
- motorized vehicle flow
- dead end
- cyclist flow
- pedestrian areas

1:5000

Figure 64: layers of the proposal: space, program and movement



AFTER





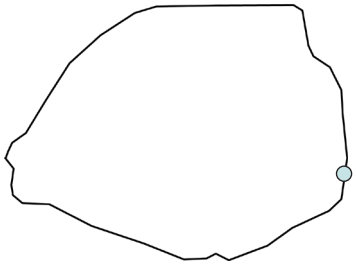
BEFORE

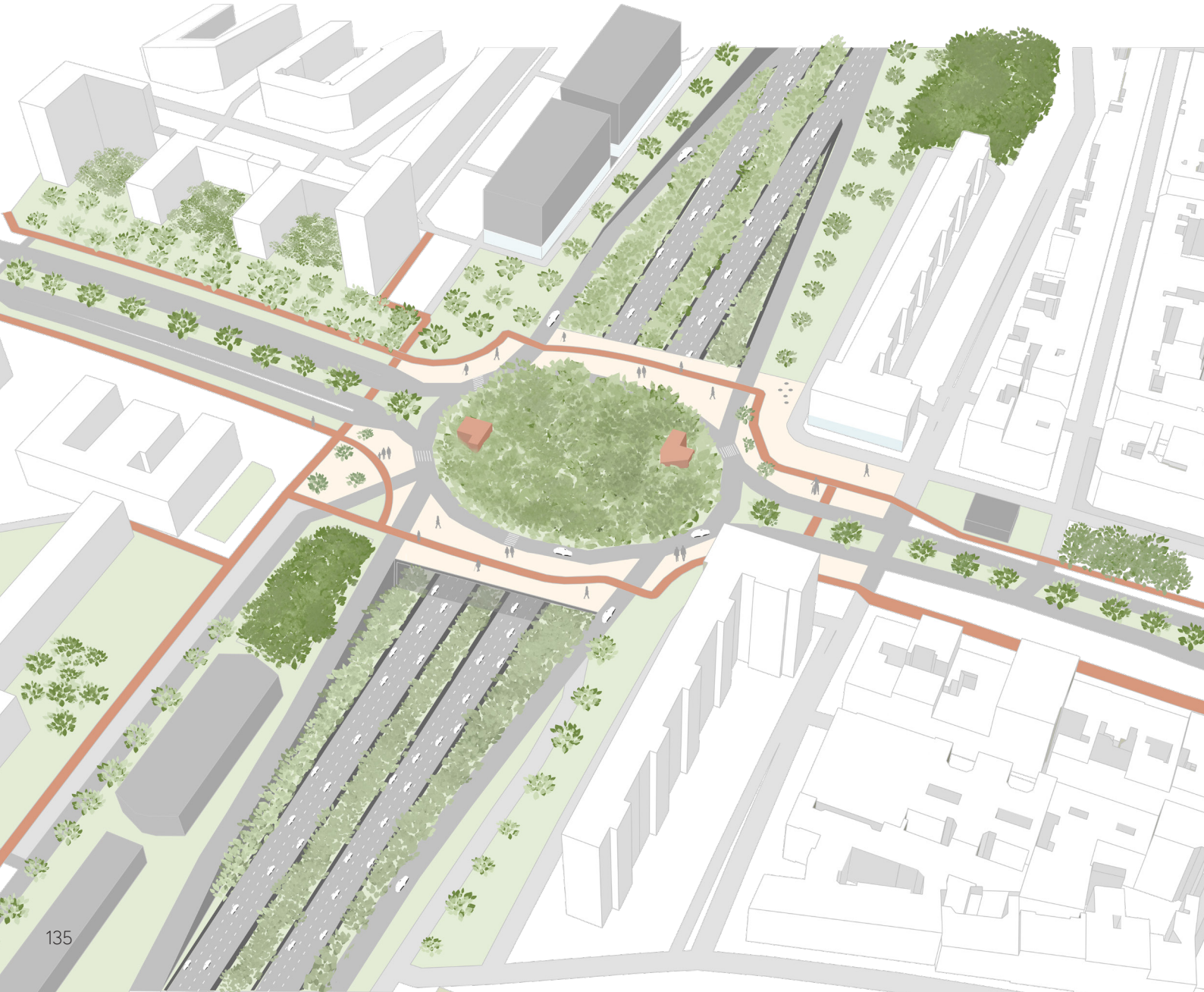


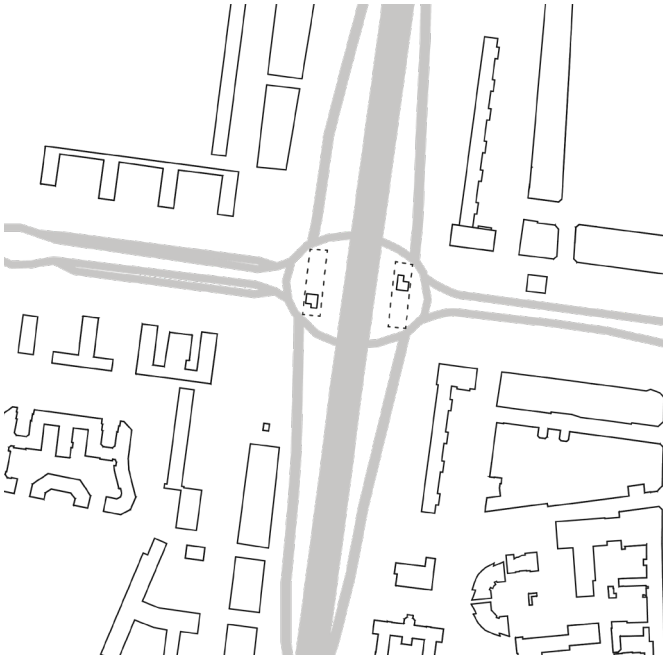
PORTE DE VINCENNES

naturalise | explore | move

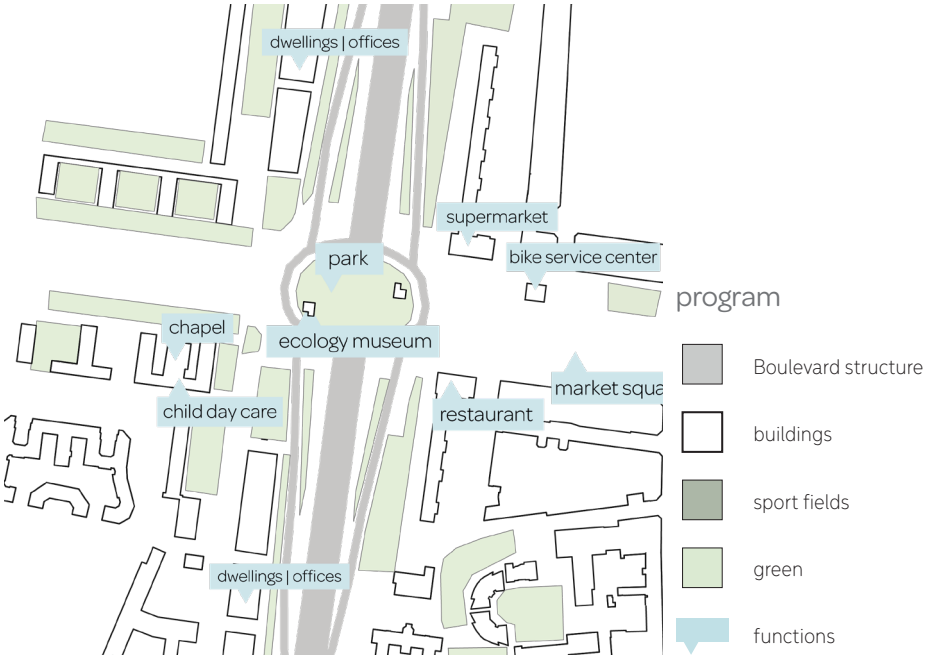
reclaim: functions under- and over the ring road
reconnect: crossings for humans and animals
reduce: network of green structures around the crossing



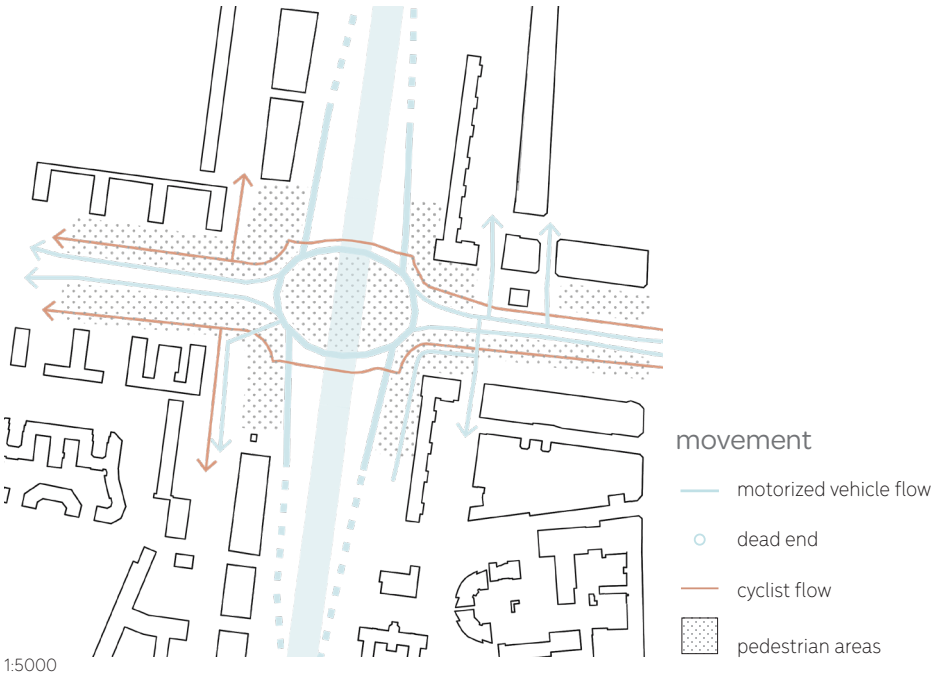




The Porte de Vincennes has a lot of room for improvement, which is currently devoted to the automobile. The plan calls for complete coverage of the crossing and the creation of a dense green enclave there. Under the overpassing, under-used and vacant real estate can be used to add functions to the area.



The biodiversity of the urban society has depreciated in the past decades. The large, concrete ring road structure functions as a (physical) barrier for humans and for nature. More space for green will be created. The vacant real estate under the ring road will be transformed into an educational space, for example a museum about the ecology in the city. The museum can be accessed via two entrances in the park.



Intra-urban (local) traffic connections should be prioritised above through-traffic. Around the junction, more pedestrian space is constructed, as well as two cycle roads connecting Paris to the eastern suburbs. Local traffic includes not just people but also animals and insects that are part of the urban ecosystem.

Figure 65: layers of the proposal: space, program and movement

9.3.1 Urban ecology

The balance between human- and natural systems is distorted in many urban areas. Space needs to be given back to nature and its inhabitants. The rules of the game, described in the spatial strategy, have already highlighted the importance for connectivity for both humans and flora and fauna in this project. The redevelopment project is an opportunity to create space where urban ecology can flourish. Figures 66-67 represent the components of the human system and the natural system, and the shared spaces between the two systems.

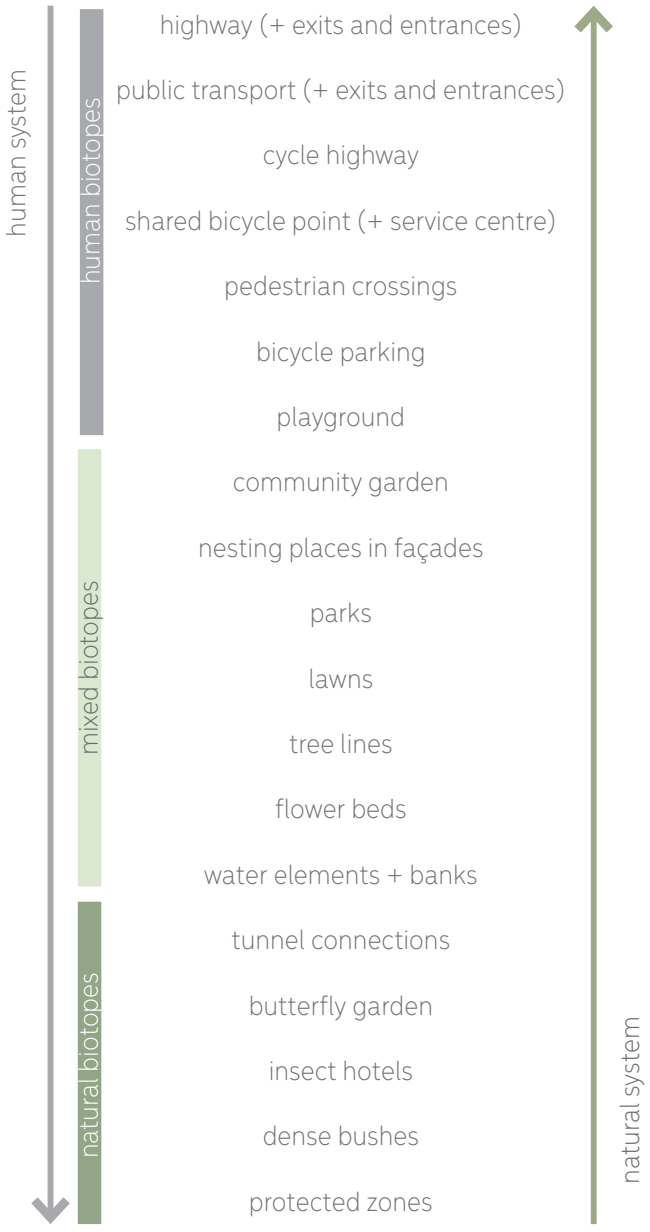
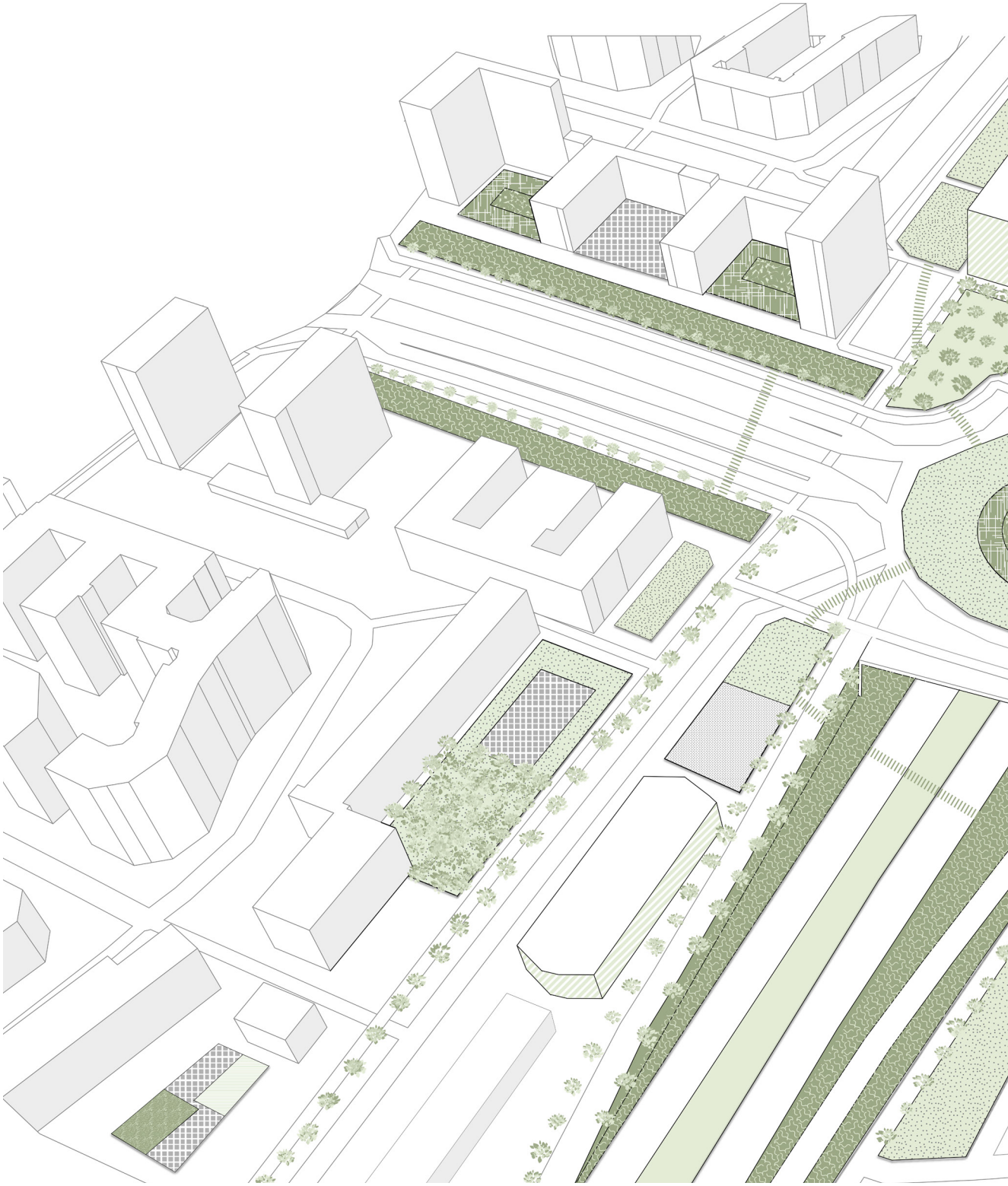


Figure 66: elements of the human- and natural system



Figure 67: types of green around the Porte de Vincennes



bicycle parking

playground | sports area

green strip

community garden

nesting places on façades and roofs

park

open lawns | dog park

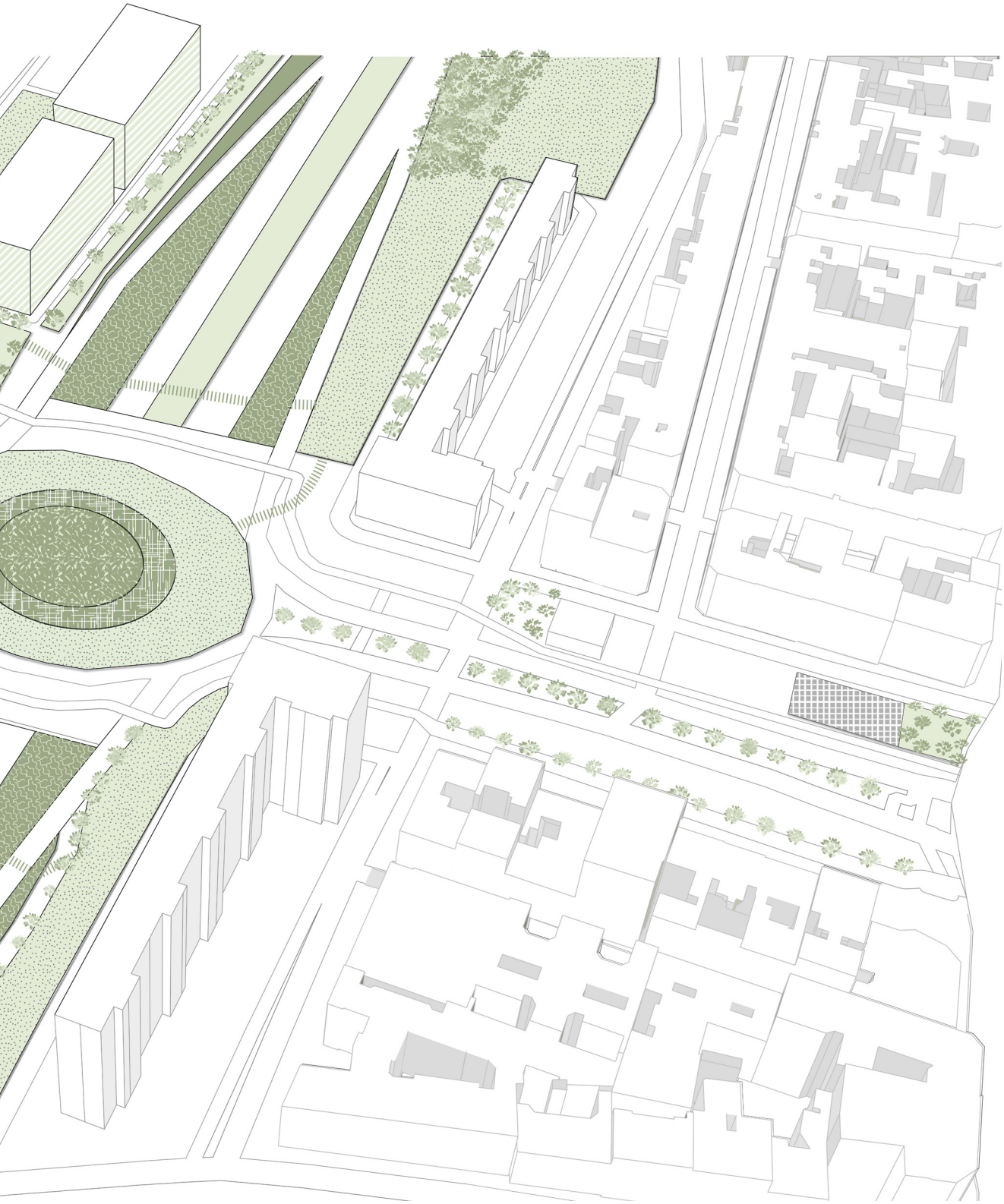
tree lines

dense green

insect hotels | butterfly garden

protected natural zones

tunnel connections (animals)





AFTER





BEFORE




MUSÉE ÉCOLOGIQUE


Want to ride?
Sign-up now!

it is time to
break the bubble



Image 38: Claude Bernard overpass (Author, 2020)

10

implementation

10.1 a BP agency
10.2 stakeholder reorganisation
10.3 planning tools
10.4 planning principles
10.5 phasing

The environment in which decisions are made and plans are designed is crucial to the success of the strategy. Often, the spatial challenges are clear and the real challenge lies in reforming the "second-order" design (Adams & Tiesdell, p.296): the circumstances in which decisions are made. Besides the substantial component of the project (the redevelopment approach) a procedural component is also necessary to show how the redevelopment can take place.

Proposing political changes for the French historical jurisdictions that have been in place for centuries is beyond the scope of this project. Therefore, this chapter aims to propose planning principles within realistic boundaries and to search for opportunities for collaboration, efficiency and justice. Next to that, the planning principles ensure that the urban inequalities are not further strengthened by the interventions.

10.1 A BP agency

The ring road is owned by the city of Paris. The establishment of a metropolitan institution, the Société du Grand Paris (SGP), is already a step in the right direction and an opportunity for the redevelopment of the ring road. Within this institution, a department to guide the project should be founded. This can be established as a "special purpose entity (SPE)" (Sainati, Brookes & Locatelli, 2017), an organisation type that is suitable to use in large-scale infrastructure projects. These legal organisations are established especially for the project and change into a different organisation after the predetermined purposes have been met (Sainati, Brookes & Locatelli, 2017). The SPE is suitable because it facilitates better organisation of Public-Private-Partnerships; an essential component of large infrastructure projects (Sainati, Brookes & Locatelli, 2017). This organisation will represent different stakeholders related to the ring road, such as surrounding municipalities, land owners and residents. Taking the silent stakeholders, such as future generations and nature, into account is one of the main responsibilities of the agency. Considering the voices of these stakeholders can occur by identifying and predicting their needs through research (Rocco, 2020). The establishment of the agency should primarily be focused on temporary collaborations and not on creating fixed institutional consolidation. Its establishment can plant the seeds for addressing future challenges.

10.2 Stakeholder reorganisation

The most important players directly related to the redevelopment project are depicted in figure 68. These actors all fulfil a specific role in the redevelopment process (Adams & Tiesdell, 2012).

decision-making role

The central body for the redevelopment process is the new BP organisation. This department is the primary input collector and output communicator. Different actors should be brought together, that operate on different geographical scales, covering diverse interests and goals. The decisions are made within this department, taking the advices and inputs from involved parties into account. All decisions will be checked by the coordinating organisations.

capacity-building role

Establishing organisational, financial and human capacity is a crucial factor to the success of a project (Adams & Tiesdell, 2012). Relations between public and private institutions should lead to a more networked collaboration instead of a hierarchical way of working. Governments should improve their "enablement skills" to engage private parties in the project, such as activation-, orchestration- and modulation skills (Adams & Tiesdell, p.293). The main responsibility to engage stakeholders and involve important actors lies at the BP organisation and the municipalities surrounding the ring road. In this project, access to the resources that the city of Paris has to offer should be perceived in multiple dimensions: not only the physical access to the city, but also the financial and organisational resources. Another point of attention is the fact that people are attached to small-scale and approachable governmental institutions like municipalities. This is an important given to take into account in order to have both efficiency and positive personal perception among inhabitants. A clear and communal identity should be established for the Métropole du Grand Paris, while the importance of communicating through these institutions should not be forgotten.

facilitating role

The European Union and the French national government fulfil a facilitating role. They do not have direct decision-making power, but can influence the project through policy-making. These large governmental institutions can facilitate the project by supplying financial resources, knowledge and collaborations. The agency should keep these institutions informed throughout the process.

coordinating role

The Région and Métropole both have a coordinating role. They check the process and outcomes of the BP organisation. In order to do so, responsibilities and tasks have to be clearly distributed between the two governmental levels. In that way, they can coordinate from their own perspective and complement each other if necessary.

advisory role

Land developers and investors can provide expert knowledge and experience. It is important to include them from the beginning on, in order to create feasible and successful plans. The voices of silent stakeholders, such as future generations and nature, can be understood through research. Therefore, the research groups play an important advisory role. They are also responsible for creating a balance between economic, social and environmental objectives.

sounding-board role

Smaller municipalities that directly surround the Boulevard Périphérique and resident groups have a crucial role in the process, particularly to make the local voices heard. The local voices can come forward through these small-scale governmental institutions, rather than via one of the 12 Établissements Publics Territoriaux of the Métropole du Grand Paris. This scale is too large to understand the local voices.

executive role

The BP organisation gives direct commands to two main executive companies: the transport- and construction companies. These are in charge of the actual construction of the interventions needed to redevelop the ring road. Throughout the process, evaluations and progress updates should be checked by the coordinating and decision-making organisations.

10.3 Planning tools

This project has proposed a development strategy complemented by strategic spatial interventions as the main planning tool for conducting a complex project like the redevelopment of a ring road. The strategy is a tool of persuasion and builds upon a strong narrative: the fact that Paris has always been a city of walls and its current city wall - the Boulevard Périphérique - fulfils several roles that lead to increasing inequalities. However, the project itself poses quite some technical challenges. Therefore, a combination of shared vision-making for the program and desired outcomes and blueprint planning for the technical elements is suitable for this project.

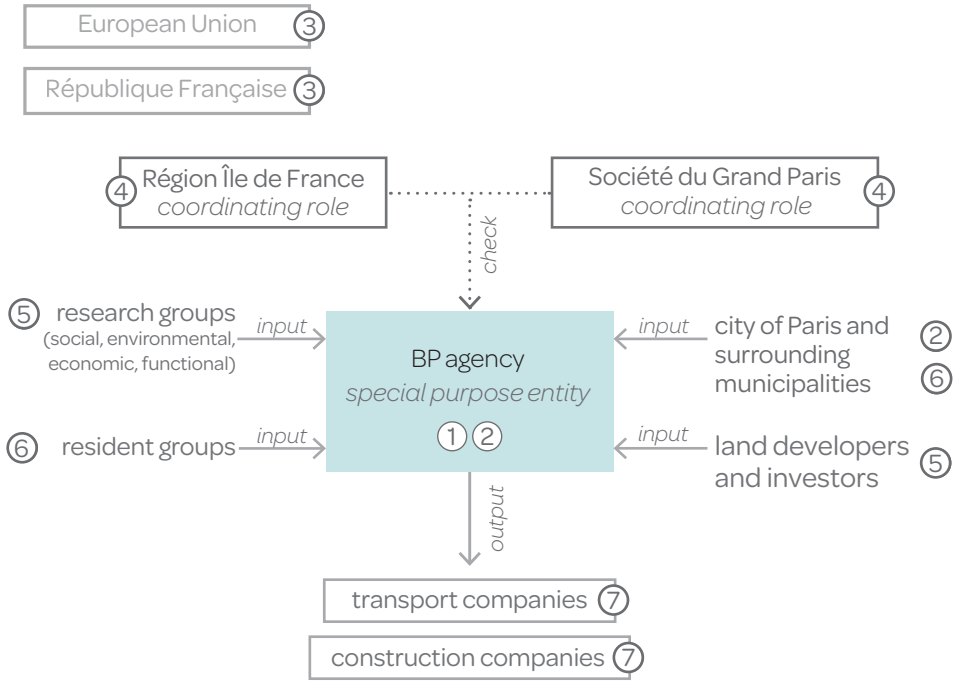


Figure 68: the reorganisation of stakeholders and their primary roles

10.4 Planning principles

As has been stated previously, economic, social and environmental objectives in current (spatial) planning are imbalanced. In order to implement this redevelopment project in a just manner, acknowledging the current and future relevance of the project is necessary. The current relevance comes forward through societal and spatial imbalance. The future relevance derives from the upcoming challenges - such as the mobility transition - and the Sustainable Development Goals for urban areas (United Nations, 2015). Sustainable development is the ability to satisfy the current needs without compromising the needs of future generations (United Nations, 1987).

Justice should be the ultimate goal throughout the process and in all interventions. This means that quality for all is ensured in the fundamentals of the social, spatial and political structures of the city. This project focuses on the structural conditions that contribute to the increase of inequalities, but individual differences should not be left out in the implementation. Urban renewal projects and densification projects should not push people out of their neighbourhood, because of affordability issues. In that way, the problems of inequality will only move to another area in the metropolitan agglomeration. Therefore, it is important that agreements are made in advance about the types of dwellings, functions and prices. Secondly, the redevelopment of the ring road has impacts that will come forward in other areas of the territory. For example, banning thorough-faring traffic from the ring road will lead to more pressure on other infrastructures around the agglomeration. Cost-benefit analyses can be used as a tool for decision-making (Schofield, 2018). It is important to not only take financial costs and benefits into account, but also social- and environmental aspects.

10.5 Phasing

Planning a large infrastructure project like a ring road in a high-density urban area is complex. Many stakeholders are involved, among which the urban population that is affected by the ring road. Figure 70 presents a simplified overview of the phasing strategy. The strategy consists of five phases: collaboration, preparation, pilot, development and consolidation. Throughout the process, several key moments function as crucial points and possible deadlocks.

Key moment 1 | collaboration

In order to conduct a complex infrastructure project, a solid collaboration is needed. Responsibilities and tasks should be clearly divided between the different actors. Coordination between roles is necessary to create a successful process (Adams & Tiesdell, 2012). Spatial planning in France has always occurred through a hierarchical system, which should transform into a network-based system with horizontal coordination between sectors and institutions (Le Galès, 2001). Collectively defined goals should mend the existing fragmented structures and trust, rules and a shared ethos of collaboration should characterise the collaborating network (Adams & Tiesdell, 2012).

Key moment 2 | investments

Collaborations between public and private parties are needed to ensure suitable investments for the project (Adams & Tiesdell, 2012). These Public-Private Partnerships are not unknown in French planning history, but they only make up 5% of public investments (Bougrain, 2014). A new law, implemented in 2004, brought a framework for public-private collaboration forward. For this project, public parties should be in charge of construction and maintenance of the main structure, whereas private parties contribute financially to the interventions. For example, when a bridge over the ring road improves the connectivity to a development area, and therefore the land value, the developer of this land should contribute to the construction of the bridge.

Key moment 3 | approval strategic plan

The strategic plan should be presented to the sounding board groups and validated by the coordinating actors. Throughout the development of the strategic plan, the sounding board groups should be informed and consulted in decision-making, corresponding to the degrees of citizen participation by Arnstein (1969). Informing is an important step, but often a one-way line of communication. To ensure active participation and encouragement, a possibility to give feedback on the presented information is necessary, through consultation. The outcome of the strategic plan will in that case not come as a surprise to the involved actors, as they have been able to deliver their input throughout the process. To reach all important actors, a communication strategy is necessary.

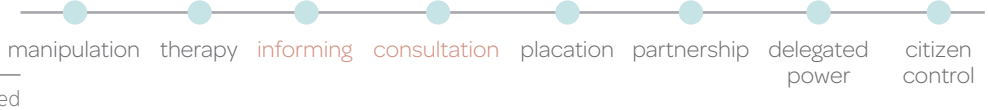


Figure 69: an overview based upon Arnsteins ladder of citizen participation

Key moment 4-5 | construction evaluations
Throughout the construction projects, evaluations should check whether the outcomes match with the proposed plan. Also, the quality of space and values presented in the plan have to be evaluated. To do so, criteria have to be defined in an evaluation framework. Evaluations should take place in a formal way (by reflecting on the goals and ambitions of the project) by the BP organisation and in an informal way (by reflecting on the outcomes for users and uses of space) by consulting the sounding-board groups.

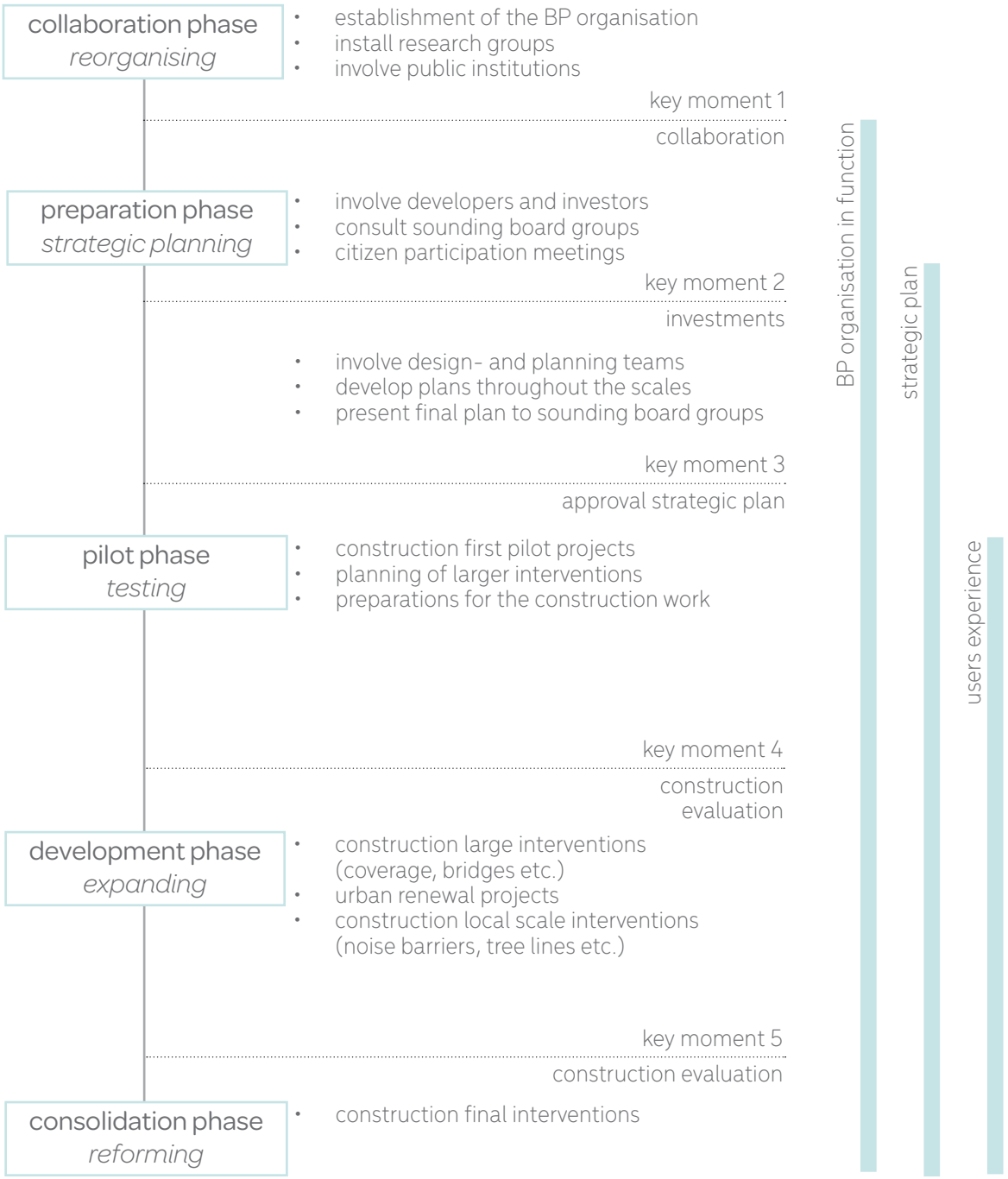


Figure 70: simplified overview of the phasing strategy

10.6 Investments and returns

10.6.1 Place-making

Spatial planning is not just about inventing efficient processes, but also about delivering quality outcomes that last for generations (Adams & Tiesdell, 2012). The ones that are not directly involved in the redevelopment process will only respond to the outcomes of the process: the result of the super-intervention and the changes it brings to their daily life. According to Adams and Tiesdell (2012) governments and private parties should start perceiving "place-making as a long-term investment" (p.300). The initial costs of this project will be quite high, but the long-term returns will be worth the investment. These gains should not just be expressed through financial gains, but also in social and environmental gains.

10.6.2 The project in numbers

The total project area that is concerned in this project is 7.008.000 m^2 (35.04 km (length BP) x 200 m (affected radius)).

Crossings:	from 67 crossings to **83** crossings
Overpassings:	from 39 bridges to **45** bridges
Underpassings:	from 28 tunnels to **38** tunnels
Functions under viaduct:	from 2 locations to **12** locations
Covered segments:	from 9 covered segments to **17** covered segments
COCO segments:	from 0 COCO segments to **5** COCO segments
Half covered segments:	from 0 half covered segments to **7** half covered segments
Green projects:	from 0 to **7** large green projects along the ring road
Restructuring of Portes:	**35** Portes that need to be restructured
Connectors:	from 9 connectors to **12** connectors

10.6.3 Costs of the interventions

Infrastructure redevelopment projects require large investments. Especially the construction of new connections, both under- and overpassings, is costly. Appendix III presents a rough estimation of costs. This is a basic overview of the costs, because calculating the actual costs requires more details about the building conditions, regulations and program. In this estimation, the construction of the proposed spatial interventions are taken into account, such as new connections, coverage projects and segments where a COCO-principle will be developed. The estimated costs are approximately 75% higher, because of process costs, such as building permits, engineering costs and unexpected events.

10.6.4 Returns of the project

Successful places

Adams & Tiesdell have defined successful places as "well-connected and permeable" places (p.17). The urban renewal projects and the investments in infrastructure (for active transport modes) will most likely create more successful places in the central area of the agglomeration. Reducing the environmental impact of the ring road will lead to more possibilities for construction of housing next to the ring road. Several areas in the vicinity of the ring road have to be redeveloped (according to urban policies) and the redevelopment of the ring road is an opportunity to involve these areas in the larger project. Anne Hidalgo and the city council are striving for 30% social housing in the Parisian housing stock by 2030 (Paris Habitat, 2020). Therefore, this percentage is taken into account in the realisation of housing. This aim is necessary to combat residential inequality and gentrification and ensure that this project will not further strengthen the increasing inequalities.

Valuable square meters

Full coverage of the ring road is an expensive construction project, but could deliver valuable square meters in a high-potential urban area. The coverage projects over the ring road will deliver up to 83.781 m2 of construction area. Building over the ring road is an efficient way of land use, as it does not sacrifice high-value urban land for non-urban functions. These plots can be redeveloped for a mix of functions: from housing to offices to societal functions. An FSI (floor-space-index) of at least 2 is needed to create the desired urban density and create sufficient returns for the project developers.

Creating space for green

An additional 125.720 m^2 of green space is proposed by this project, through seven large green projects around the ring road. Not only does this greenification contribute to an improved urban climate, it also contributes to the quality of the living environment and the aims of the 15-minute-city. More inhabitants will have access to a green space in the vicinity of their home. Creating space for green in the high-density urban area will not only be beneficial for the human living environment, but also a possibility for nature to restore itself in the city.

A kick-start for the mobility transition

The proposed interventions will together lead to a safer traffic situation, especially for active transport modes. More inhabitants will make use of this possibility, when safety and quality are ensured. Restructuring the current infrastructure to make space for the active transport modes could serve as a kick-start for the mobility transition. The attraction of innovative concepts concerning shared vehicles or other new transportation modes will be the next step in this transition, and this will occur when suitable circumstances for implementation of these concepts are provided.

Reduction of social costs

The consequences of the redevelopment project mentioned above will contribute to a reduction of social costs on the long term. Health benefits will become visible when the polluting effects of the ring road are taken away. The use of active transport modes could counteract the increasingly unhealthy lifestyle in Western countries, such as obesity and heart diseases and therefore reduce health issues.

10.7 final result

This map shows the possible implementation of the interventions on the entire ring road. It reveals the locations for new connections, coverages and green corridors. It also presents the locations of 'connectors' on and around the Boulevard Périphérique.



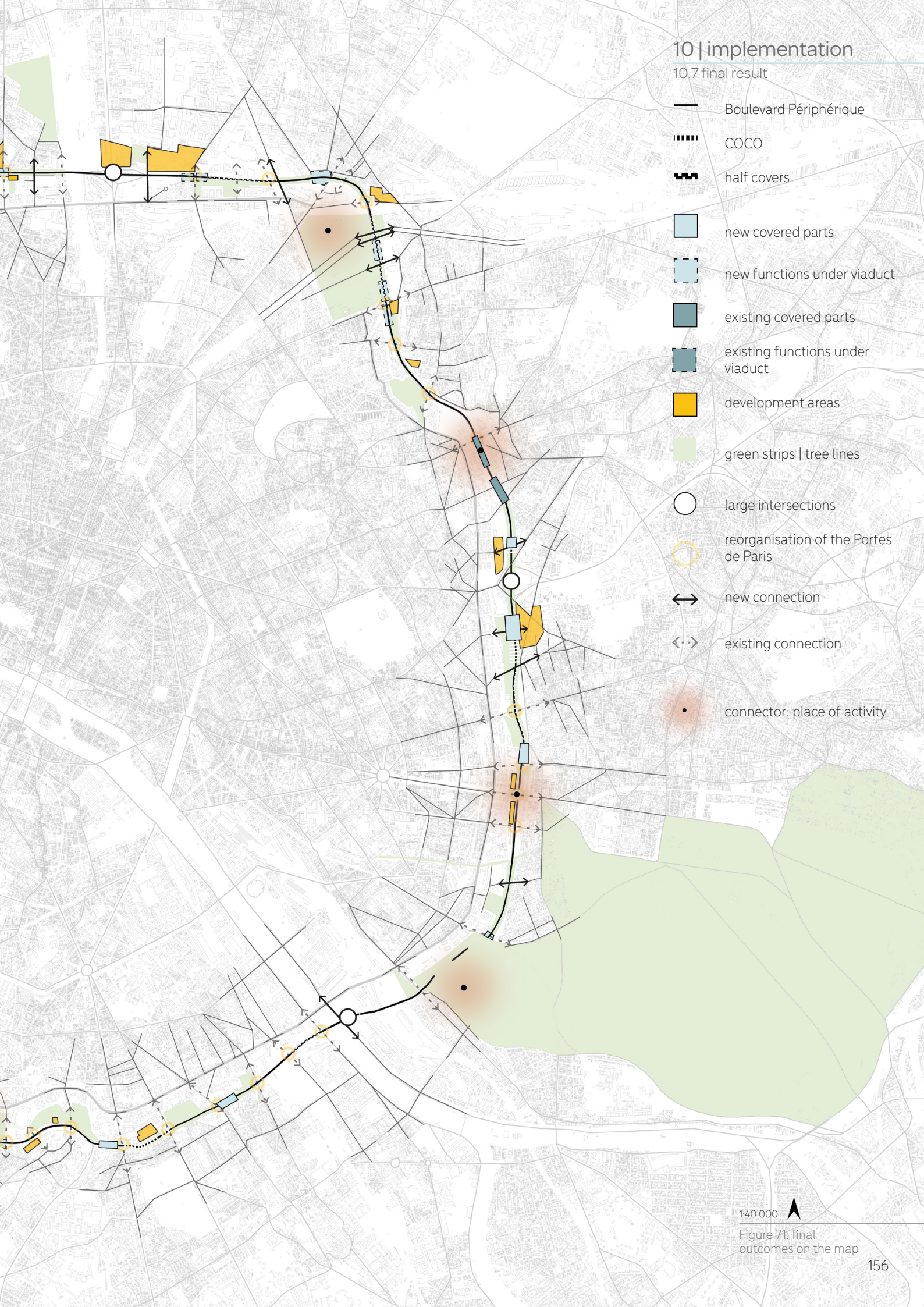


Figure 71: final outcomes on the map

Connectors are important locations on and around the Boulevard Périphérique with a special function where people can gather and engage in activities. These areas are part of the effort to demonstrate the area's potential around the ring road. They serve as interaction zones and "magnets" for the entire metropolitan area, as well as connectors between the city centre and the surrounding districts.



Figure 72: The connectors on and around the ring road

10.7 Final result: a glimpse into the future of the Métropole du Grand Paris

Paris de la Proximité | urban equity
The metropolitan agglomeration of Paris functions as a coherent whole with minimized differences between inhabitants and the circumstances in which they live. The neighbourhoods in the Métropole du Grand Paris are equipped with suitable amenities to live a full urban life. All inhabitants can reach these amenities within a 15-minute journey by foot or bike. The super-intervention of redeveloping the Boulevard Périphérique has opened up space in the heart of the agglomeration.

From barrier to connector | intra-urban connectivity
The redevelopment has, besides opening up space in the urban heart of the agglomeration, changed the role of the structure. The former physical exclusion mechanism and barrier functions as a connector, between transport modes, between people and between urban parts. New infrastructure and networks facilitate a mix of transport modes, increasing the convenience for movement possibilities for all inhabitants. Together with the implementation of more amenities, the possibility to live a full urban life has come within reach for many (formerly excluded) residents.

The liveable city | high quality of life
Redevelopment of the primary suburbs has led to a similar level of quality in the public space as in the city centre. Next to that, green and blue structures are reintroduced in the urban fabric by creating networks between them and connecting them to the infrastructure for active transport modes. Inhabitants of the Métropole du Grand Paris make grateful use of these spaces for leisure, relaxation and active movement. The revision of the traffic system has led to improved air quality and noise pollution has been reduced. The overall quality of life has improved, because of less negative externalities from living around major infrastructure.

turning a city of walls into a city for all



Image 39: A view on the city from the Sacré-Coeur (Author, 2016)

11

conclusion

11.1 re-cap
11.2 findings
11.3 evaluation of results
11.4 transferability of results
11.5 recommendations

11.1 Re-cap

The Boulevard Périphérique, Paris's concrete ring road, is the spatial and symbolic manifestation of the imbalance between the city and periphery. The main aim of the project is to reveal the roles of the Boulevard Périphérique in the increasing imbalance between city and periphery and to show how the redevelopment of this ring road can contribute to a better balance.

11.1.1 Urban inequalities

Three main urban inequalities have been identified. First, residential inequality comes forward through differences in real estate value and issues of residential segregation. Second, related to the residential inequality, is the uneven access to resources. This is caused by the way resources are distributed over the agglomeration and the lack of connectivity between urban parts. This level of connectivity decreases near large infrastructures, which therefore function as physical exclusion mechanisms. Third, an unequal quality of life creates differences between neighbourhoods. The negative burdens of large infrastructure are not distributed equally over the urban society. This is the consequence of the fact that economic objectives are prioritized over social and environmental objectives in infrastructure planning.

11.1.2 The roles of the Boulevard Périphérique

The Boulevard Périphérique plays a prominent role in the increasing inequalities and the growing imbalance. The ring road has multiple roles. Spatially, the presence of the ring road is a constraint to the quality of space. Traffic jams, air pollution and noise pollution are major issues that put pressure on urban structures. Functionally, the ring road functions as a space-taker: it claims a 100-meter-wide strip in the middle of a high-density urban area. Socially, the porosity of the ring road relates to the socio-spatial structure of the metropolitan agglomeration and this spatial layout further strengthens the differences between urban parts. And lastly, the symbolic role comes forward because the Périphérique functions as a mechanism to decide who belongs and who does not. This perception obstructs the possibility to establish a metropolitan identity. This is also caused by the fact that the Périphérique is the official boundary of city governance.

11.2 Findings

11.2.1 Addressing the knowledge gaps

Social aspects of infrastructure redevelopment

This project has revealed the social consequences and -benefits of infrastructure redevelopment, through exposing the role of exclusion mechanisms and intra-urban connectivity in social processes. The second part of the project revealed how dissolving these exclusion mechanisms and improving the level of intra-urban connectivity can influence the social functioning of the city.

Balance between economic, social and environmental objectives

The establishment of a redevelopment approach, that takes social and environmental values into account as well, could contribute to more just procedures for infrastructure redevelopment. The proposed circumstances to implement the project, among which the planning principles, show how a balance between economic, social and environmental objectives can be achieved.

How can the redevelopment of the Boulevard Périphérique contribute to transform its spatial, functional, social and symbolic roles in order to address the socio-spatial inequality challenges in the metropolitan area of Paris?

11.2.2 The roles of the ring road

Intervening in the spatial- and functional role of the ring road lies within reach of planners and designers. This can occur through proposing spatial changes to the existing environment, complemented by research about the possible outcomes of the interventions. Redeveloping the spatial and functional role of the ring road will have effects for its social role. For example, creating a porous interface instead of a barrier will improve the accessibility from and to certain urban parts. This will influence the socio-spatial characteristics of that neighbourhood and therefore the social role of the ring road. Changing the characteristics of the living environment will influence the perception of people, so the symbolic role of the ring road is positively changed too. A recurrent feedback loop can be observed. Transforming the symbolic role in a positive way, will in turn affect its functional and spatial role again, because of a revalidation of the land surrounding the structure (figure 73). For example, when the ring road is no longer regarded as a barrier, but as a high-potential area for densification, investments in the spatial sphere will follow soon.

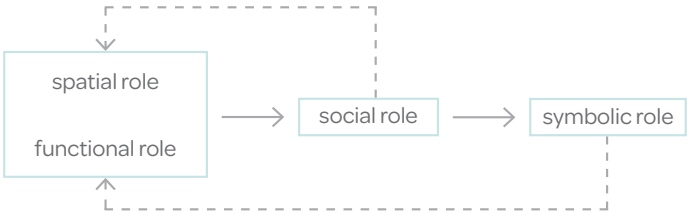
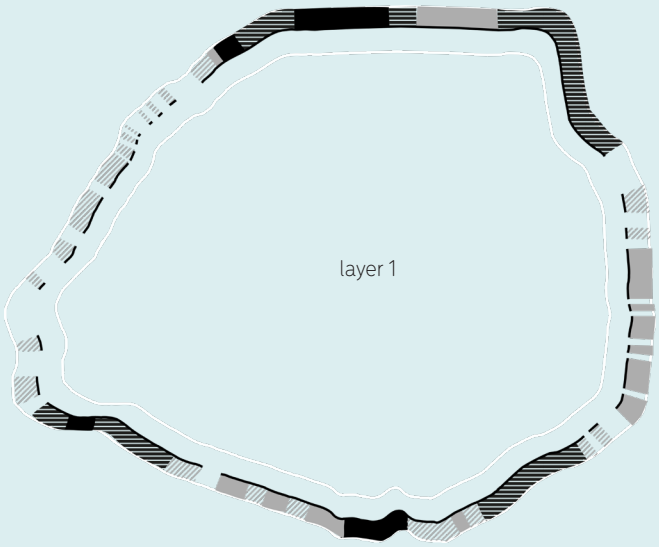


Figure 73: the hierarchy and relations between the different roles of the BP

In the future, planners and designers should gain a more prominent role in discussing the functional and social aspects of design projects. The focus should shift from a merely technical perspective to a more social approach.

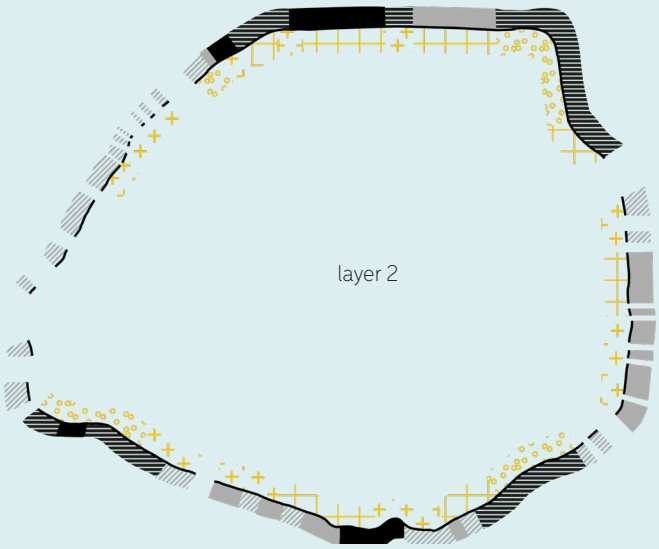
11.2.3 Redevelopment approach

Currently, the Boulevard Périphérique is an underutilised asset in realising an equal and well-connected metropolitan region with a high quality of life. The redevelopment project aims at opening up the exclusion mechanism and unifying the urban area. To tackle the complexity of the redevelopment, a specific approach has been described, based upon structural conditions (typology), contextual demands (redevelopment needs) and intervention possibilities (concepts) (see figure 74). This approach is established to guide the redevelopment and to function as a planning toolbox. The development strategy and spatial strategy have resulted in a spatial framework. This spatial framework reveals the intervention possibilities per typology and redevelopment need. These intervention possibilities function as a toolbox for the redevelopment.



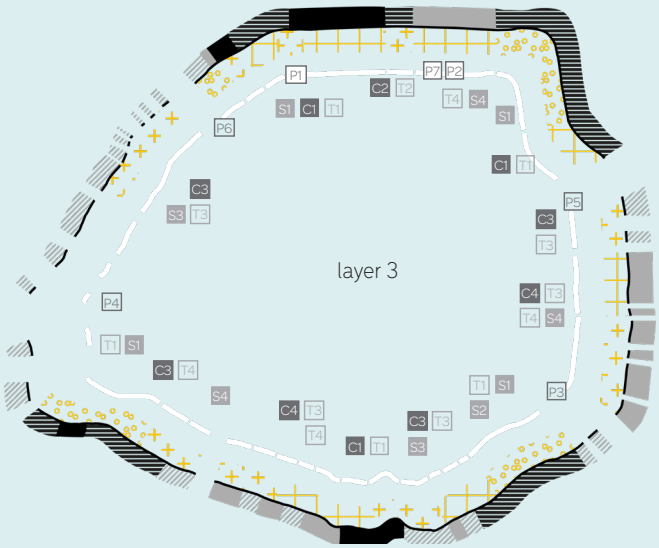
typology
structural conditions

- elevated (closed viaduct)
- elevated (open viaduct)
- on ground level
- open trench
- covered



context
redevelopment need

- change
- improve
- soften
- use



concept
intervention type

- C# creator of a new urban environment
- T# transformer of an existing urban environment
- S# softener of an existing urban environment
- P# pioneers of the urban environment

Figure 74: the three layers of the redevelopment approach

11.3 Evaluation of results

11.3.1 How are the urban inequalities addressed by this strategy?

Social sustainability

The interventions will lead to a more equal distribution of opportunities. This is on one hand done by increasing the connectivity between urban parts - and therefore the accessibility to existing amenities - and on the other hand by providing amenities wherever necessary. The impact of physical exclusion mechanisms is reduced. As more opportunities for interaction between members of the same metropolitan community become available, the impacts of residential segregation are predicted to diminish. It will also increase the quality of life and the ability to live a complete urban life in the vicinity of the ring road, reducing the disparity between the inner and outside districts. A stabilization of this distribution of opportunities will lead to a decrease of inequalities, resulting in a decrease of unrest and riots.

Economic sustainability

The proposed interventions are expensive projects, but also long-term investments. The returns can not be expressed only in financial gains, but also in a reduction of social costs. The project proposes a more efficient use of land, reclaiming the space that is currently sacrificed for the ring road. This creates space for densification and real estate projects. Another financial gain is the reduction of real estate differences, as the negative externalities of the infrastructure are minimized. Next to that a reduction of social costs can be expected. First of all, because traffic safety has been improved due to the proposed interventions. Second, because the negative consequences of air pollution are reduced. And third, more inhabitants will make use of active transport modes when safety and quality are ensured, which combats health issues such as obesity.

Environmental sustainability

Finally, the project gives nature a chance to restore itself in the city. A reduction of air- and noise pollution is beneficial for both humans and nature. Next to that, priority is given to active transport modes in all the interventions. Implementing these interventions could serve as a kickstart for the mobility transition: a global challenge that is necessary to reduce the impacts of climate change.

11.4 Transferability of the results

The Boulevard Périphérique is one of the most prominent examples of disrupting and polluting ring roads embedded in the urban fabric (Cookson, 2016). Finding solutions for the most extreme case will deliver guidelines for similar - and less extreme - cases. This project has delivered a method that shows how to approach a complex infrastructure redevelopment project. This project has exposed how the approach can be applied in a specific context: the case study of the Métropole du Grand Paris. The reproducibility aspect of the approach consists of a redevelopment method that can serve as a toolbox for planners and designers in other contexts as well. Within urban areas, the typologies of ring road structures will most likely be similar to the defined structural conditions in layer 01. The redevelopment needs of layer 02 are defined in a generic way and can therefore be transferred to other contexts directly. These redevelopment needs have to be contextualised in their new context, to identify the location-specific challenges. The intervention possibilities of layer 03 can have a different outcome in other contexts, as long as the role that they fulfil is similar to the descriptions (creator/transformer/softener/pioneer). While transferring the method, the local conditions and constraints of the chosen locations should be considered carefully. It is important to take the differences in the political- and planning cultures into account.

11.5 Recommendations

With this project, the foundations for the redevelopment of the Boulevard Périphérique have been laid out. Several open ends are identified.

11.5.1 For further research

The effect on individual characteristics

Despite the fact that numerous types of inequality exist in metropolitan environments, this project has focused on socio-spatial inequalities. This decision was made with the intention of defining a more precise problem. This research aimed to reveal how impact can be created through changing structural (physical and organisational) conditions. Follow-up research could further investigate the effect of the interventions on individual characteristics. Can large-scale spatial interventions have an influence on the individual characteristics that shape communities?

Data collection in the field

This project was conducted during a global pandemic, (negatively) impacting the possibility for data collection and getting in touch with locals. After the pandemic is over, it would be interesting to collect more data through fieldwork. Conducting in-depth interviews could complement the results of the survey. Being able to interact with locals could lead to a better exploration of the involvement of local actors in this project. Both data collection methods could lead to more detailed location-based interventions.

Implementation in the French case

As has been described in the planning chapter, proposing political changes for the French historical jurisdictions that have been in place for centuries is beyond the scope of this project. A follow-up project could elaborate on the planning circumstances for large infrastructure projects in the Parisian case, using the research and planning ideas presented in this graduation thesis.

Application of the approach in other contexts
It would be interesting to apply the redevelopment method in other contexts to identify general- and context-specific elements. The question is whether and how the content of the approach changes due to changing circumstances. Applying the framework in a different spatial and institutional setting could result in new additions to the approach. These additions are most likely related to the intervention concepts that derive from other contexts. Applying the approach in other contexts could build an encyclopaedia of redevelopment concepts. As described before, the structural conditions (layer 01) and redevelopment needs (layer 02) will most likely remain the same, whereas the intervention possibilities (layer 03) is able to expand with more options.

11.5.2 For implementation in the Paris case

Starting point
Establishing the special purpose entity as a legal organisation for the redevelopment project is the starting point. This agency is necessary to start the capacity-building and to bring all stakeholders to the table. Both voluntary and affected actors should be involved from an early stage on. It would be interesting to create a more detailed planning overview (including phasing) that strengthens this project proposal.

The relevance of the municipal level
As described in the planning chapter, inhabitants often feel most connected to small-scale governmental institutions, such as municipalities. It will take some time to establish a strong metropolitan identity that all 7 million inhabitants of the Métropole du Grand Paris can connect to. Therefore, local identities and networks play an important role and the metropolitan government should collaborate closely with the local municipalities. A more detailed exploration of possible planning- and communication strategies could contribute to this project.

Financial aspects
Infrastructure redevelopment is expensive - especially in a high-density urban area. The different proposed interventions demand large investments. In Appendix III, a short estimation of costs is presented. A next step of this project would be further exploration of the financial aspects of the projects. It would serve to identify the actual costs of the interventions, but also the partnerships that are necessary to realise the proposals.

Final note

The narrative of Paris as a city of walls has been the main incentive for this project. In the future, the focus should be on 'a city for all'. Interventions in both the physical and the decision-making sphere should aim at resolving exclusion mechanisms and creating an equal and well-connected metropolitan agglomeration with a high quality of life.

This project is a claim for acknowledging the role of connectivity in the social- and spatial functioning of metropolitan agglomerations and for restructuring our transport systems. It can steer towards change in the local context, but also influence changes of a larger scope, fulfilling an exemplary role for other cities that carry the future challenge of restructuring their ring roads. This project has revealed the implementation ability because of the context-based approach, but it also brings a certain ambition: revising the role of infrastructure development in addressing socio-spatial issues. The super-intervention of the Boulevard Périphérique redevelopment is an anchor to kickstart greater processes and projects.





the super-intervention
of redeveloping
the Boulevard Périphérique
is an opportunity
to turn a city of walls
into a city for all



Image 40: A view on the city from the Tour Montparnasse (Author, 2016)

12

reflection

12.1 research paradigm
12.2 scientific relevance
12.3 societal relevance
12.4 research methodology
12.5 ethical dilemmas
12.6 personal reflection

12.1 Research paradigm

> *"The research paradigm is a set of common beliefs and agreements shared between scientists about how problems should be understood and addressed."*
> *- Kuhn, 1962, as cited in Calabrese, 2020*

The worldview of a researcher shapes the way problems are perceived and addressed. In order to understand the role it plays in the research that will be carried out, it is important to reveal the researcher's paradigm: his or her view towards the world. The paradigm describes a "basic set of beliefs" and their influence on the research proposal (Creswell, 2018).

The worldview that I hold is a combination of constructivism and the transformative worldview (Creswell, 2018). I believe in the main idea of the constructivist view, the fact that human beings engage in the world and society that they are part of. Consequently, researchers cannot detach themselves from the study object or field, as they will always hold a certain cultural or personal set of beliefs towards the subject to be studied. The ability to give meaning to certain outcomes is connected to this personal worldview. If the context of the study object is observed well, the results can be explained by detailed interpretations of the researcher. These interpretations will be a combination of the observation results and the perspective of the researcher.
The transformative worldview emerged at the end of the previous century as a response to the prevailing worldview of Postpositivism (Creswell, 2018). This worldview takes power relations and socio-spatial justice issues into account. As a researcher, I believe in the power of collaboration between a variety of actors and justice as a common goal to reach sustainable and successful outcomes (Mertens, 2010).

With this worldview, the path for the research is based on social constructs and cultural-historical developments, but has an action-oriented turn aimed at changing the current situation. The study of certain phenomena, followed by an interpretation, leads to propositions that are open to further research. Concepts in the proposal are not stand-alone: they are part of a larger context, concerning people's perception and the cultural meaning that is given to certain concepts. Social values are an important element during the research process and in the outcomes.

12.2 Scientific relevance

12.2.1 Position in the scientific field

The field of Urbanism combines several disciplines: geography, transport, urban design, social studies and management. The research will on one hand link to existing social theories about socio-spatial inequality and on the other hand to more technical explorations about the mobility transition and the redevelopment of urban infrastructures. The topics of urban geography, urban mobility and metropolitan governance are combined in this project.

12.2.2 Relation to the Graduation lab

This project connects to several of the disciplines that have been taught during the MSc program at TU Delft. During the research- and design courses in MSc1 and MSc2 the future challenges for urbanists came forward, such as densification, sustainable design, the energy transition and the role of mobility in cities. During the elective period, I have deepened my knowledge on specific topics, such as Urban Area Development and Bridge Design. Moving through my studies, I have developed an interest for the social and planning aspect of urban design: not just deciding what needs to happen, but also how to make it happen. Together with my interest in the final R&D project, Spatial Strategies for the Global Metropolis, this encouraged me to be part of the Planning Complex Cities graduation studio. The multi-disciplinary approach, combining spatial planning, governance reform and urban design, demonstrates in my perspective a high-potential way to define a desired situation and decide what needs to happen to get there. The project takes the metropolitan challenges as the starting point, but also reflects upon the implications of the ring road redevelopment on the local scale. Moving through the scales to identify solutions and possible outcomes is one of the key components of this project.

12.2.3 Contributions to the field

The Boulevard Périphérique has been subject to research before, but this project offers an unique approach towards infrastructure redevelopment projects. Two knowledge gaps have been addressed in this project:

- *The potential of infrastructure redevelopment in addressing social challenges, such as increasing inequalities*
- *How to balance global economic objectives and local social and environmental objectives*

The complexity of infrastructure projects like these is tackled by proposing a redevelopment approach that is transferable to other contexts as well, as has been described in the main conclusion. The project does not propose radical spatial changes, but the social and symbolic impact of the project are radical.

12.3 Societal relevance

The tension between urban cores and the surrounding *banlieues* have led to social problems and violence for a few decades now in France. The growing challenge of urban inequality needs to be addressed, before exclusion and deprivation lead to an irreversible situation. This project aimed to reverse the growth of urban inequality by proposing a redevelopment approach of the Boulevard Périphérique, Paris's concrete ring road. The project has proposed a more social perspective in infrastructure redevelopment, by taking the context into account and by proposing a (re)development strategy that is focused on restoring the balance between city and periphery, through urban equity, intra-urban connectivity and a high quality of life.

The project connects to several of the Sustainable Development Goals (SDGs), developed by the United Nations (United Nations, 2015). Bringing these goals into practice and exposing how they can flourish through implementation can lead to a better interpretation of them.

SDG 10: Reduced inequalities
The project has shown how inequalities between members of the same urban society can be reduced through spatial interventions in the field of mobility. Striving for socio-spatial equity will first of all address the underprivileged groups of society, as their quality of life will noticeably improve, but also influence the overall metropolitan community, as tensions and unrest can be expected to decrease.

SDG 11: Sustainable cities and communities
In the past years, more attention is given to the importance of spatial justice and social sustainability. The United Nations describes lack of access to public transportation, vicinity of public services and air pollution as major challenges in urban areas (United Nations, 2015). This project responds to all three challenges by improving the level of intra-urban connectivity and by reducing the environmental impact of the ring road.

SDG 13: Climate action
The environmental issues that are caused by large-scale infrastructure in the urban fabric have been addressed through this project. The redevelopment of existing transport infrastructure can be an opportunity to create space for the mobility transition: a future challenge for all cities around the globe, to create healthier and more future-proof urban environments.

SDG 16: Peace, justice and strong institutions
In order to realise the proposed changes, strong institutions and collaborations are needed. France has always been a strong nation-state, but governance reform is necessary. To implement this project, the focus should be on finding out new ways to collaborate with relevant parties, but also with users and residents to make sure all voices are heard and considered. This is necessary to ensure justice in the implementation of the proposal.

12.3.1 Value-building

If pursued correctly, the described objectives of the project will add value to the entire metropolitan region. These objectives are urban equity, intra-urban connectivity and a high quality of life. The most important value that will be added in the process is the shift from a merely economic perspective to an interest for social and environmental values as well.

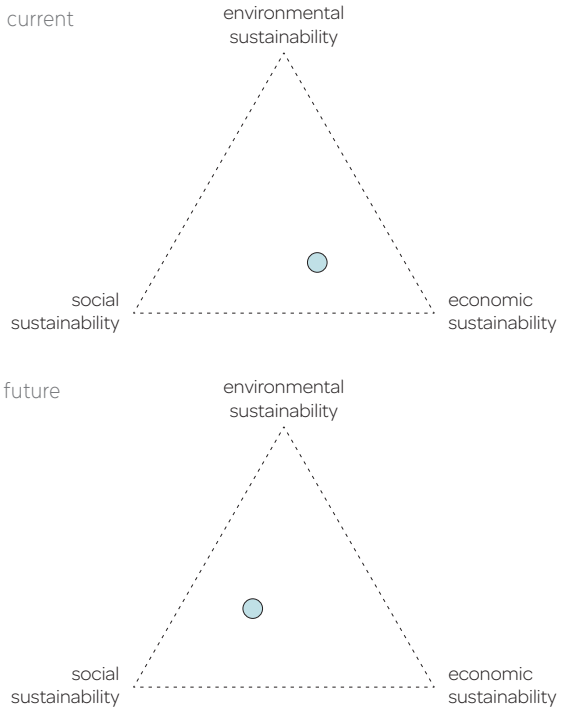


Figure 75: sustainability values in current and future infrastructure planning

12.4 Research methodology: advantages and limitations

Focus of the project

Many types of inequality exist within urban regions. After a thorough literature review, the decision has been made to focus on socio-spatial inequalities. This choice is based on the discourse that the research project is part of and relevance in this location. Taking all types of inequalities into account is beyond the scope of this project.

Data collection: fieldwork

The project is conducted in times of a pandemic. This situation brings some difficulties forward concerning the data collection in the field. In an early stage of the project, I had a safe and responsible opportunity to conduct fieldwork. Although it was not in the most ideal phase of the project, I decided to grasp this opportunity and synthesize this data with knowledge that was gained later on in the project. For the fieldwork, I explored the most disrupting part of the infrastructure (about half of the ring road). If more time had been available, I would have appreciated to discover the entire structure and surroundings. Next to that, possibilities for fieldwork were limited and observations in public space have not been representative for the regular situation. For example, I discovered that, in contrast to preparatory readings, most of the cars on the ring road consisted of local traffic. A reasonable explanation for the amount of local travellers are perhaps the pandemic measures that were in place. Before the 15th of December, France was in a lockdown and people were only allowed to move within 1 kilometre from their home (exceptions were possible). During the fieldtrip, some of the measures were still in place, such as working from home.

Data collection: survey

In addition to the fieldwork, a survey was distributed that focuses on the ring road as a whole. The target group of the survey was quite specific, as I focused on inhabitants of the central part of the agglomeration that encounter the ring road on a frequent basis. I received 75 responses from various age groups and several places of residence. An often mentioned point of feedback from the respondents was the fact that respondents could not indicate what part of the ring road came to their mind when filling in the survey. It could have been interesting to consider the different parts of the ring road instead of the ring road as one object.

Data-based vs. emotion-based methods

In this research project, both data-based and emotion-based methods are applied. An example of the latter is the qualitative survey that was conducted to grasp the perception of the users that are confronted on a daily basis with the ring road. It therefore functioned as an extension of the limited fieldwork. The survey has served as a tool for inspiration and a means to open up discussions about the Boulevard Périphérique. Simultaneously, data-based methods such as documentary data analysis and historical analysis have been used. The combination of data-based and emotion-based methods leads in my perspective to a complete understanding of the project, as it reveals both the physical- and the perceived dimension of the situation.

The role of the development strategy

The research-based development strategy has a guiding role in the project. It has a descriptive and spatial component. The descriptive part brings the vision, values and goals forward, whereas the spatial component focuses on the spatial interventions that are necessary to realise this vision and these values. The spatial component functions as a concrete translation of the general pillars of the strategy. Positioning the development strategy in this role leads to a strong backbone for the project.

12.5 Ethical dilemmas

Prejudiced research

The proposed divide between the city centre and its surroundings should not lead to a project that is carried out from the perspective of 'the inner'. Even though most policy documents and information derive from the national government or the municipality of Paris, the metropolitan agglomeration should be considered as a coherent whole. Throughout the project, is was important to keep an open mind and beware of prejudices. I tried to get a grip on other perspectives as well, for example of residents from the periphery, through informal resources like social media channels.

Terminology

During the literature review, I noticed that I had an issue with the words 'lower' and 'higher' classes. Finding alternatives to these terms turned out to be quite difficult. Several alternatives are possible, but they still carry a negative load. The word that is mostly used to refer to the 'lower class' is proletariat: the working class whose only economic contribution is their labour power and who own little property (Cambridge Dictionary, 2020). This definition still does not cover a considerable part of the population: videlicet the group that is not able to contribute to the urban economy because of personal circumstances. Throughout the thesis, I decided to go with the terms 'underprivileged' and 'privileged'. As socio-spatial differences are the focus of the projects, I consider these terms to be most suitable.

Awareness

In France, tensions between certain groups in society are rising again in the past months. Several areas are subject to unrest. Safety, awareness and responsibility are important indicators to consider while visiting the location. To ensure this, the fieldwork has been well-prepared in advance. Wandering can be a pleasant method to explore a location, but in this case I decided to follow a pre-determined route that I studied in advance, so I would always be aware of my position and surroundings. This ensured that I could focus on the fieldwork itself.

Cultural context

The design proposals are partially based on context-based research, but also on the knowledge gained in the education program. Being a student in a specific (cultural) setting has led to several problem-solving concepts and approaches that might differ in other contexts. A vision and strategy are always influenced by personal experience, even when it responds to the studied context. Throughout the process, one should remain critical and open to different insights at all times.

Political context

When proposing a new set of values or guidelines for change, the cultural and political circumstances should be taken into account and respected. It is important to be well aware of the historical- and the contemporary situation of the location and to respond in a just manner. Next to that, the planning culture can prohibit the implementation of the proposed changes because of policy constraints.

17.06.2021

12.5 Personal reflection

12.5.1 Urbanism graduates

MSc Urbanism graduates at the Delft University of Technology have acquired an inspiring set of skills throughout their education program. A skill that characterizes MSc Urbanism graduates is the ability to not only decide what needs to happen, but also how to make it happen, through strategic planning and policy implementation. Another main skill taught in the master program of Urbanism is the importance of a narrative. A clear storyline reveals the main focus and concept of the project. It is a tool to improve consistency and coherence throughout the process. In this project, the storyline tool has been useful from the beginning until the end of the project. Even though the content of the narrative changes due to new insights and results, constantly reminding oneself of the initial incentive leads to consistency.

12.5.2 The skills of an urban planner

An urban planner can make use of several skills to deliver successful projects. First of all, technical and academic skills, such as the use of methods and research-based design, bring structure to the work. An academic basis serves as a solid foundation for decision-making throughout the process. Next to technical skills, an urban planner also needs moral skills. They should be open, honest and critical about their work and the work of others. Finally, urban planners need communicative skills. Ideas need to be translated into concrete products, both text-based and visual-based. It is important to be able to come down 'from the academic cloud' and present your ideas to an audience that is less familiar with the discourse.

12.5.3 Interplay between research and design

Design processes are complex and unique. Reflecting on one's steps and decisions is essential to discover and understand the process that shaped the project. Throughout the process, a constant interplay between research and design, between converging and diverging and between using theory and experimenting by yourself can be observed (figure 76). This a characteristic element of design processes (van Dooren et al., 2013). In this project, the results from the knowledge generation are often translated into frameworks that form the starting point for the design phase. During the process, I noticed that 'research' and 'design' are not two separate elements; they are intertwined and dependent on each other. The solid research-based foundation has helped me to define incentives for the design phase, but on the other hand I felt that it held me back by trying to fit everything within the defined limitations and insights of the research.

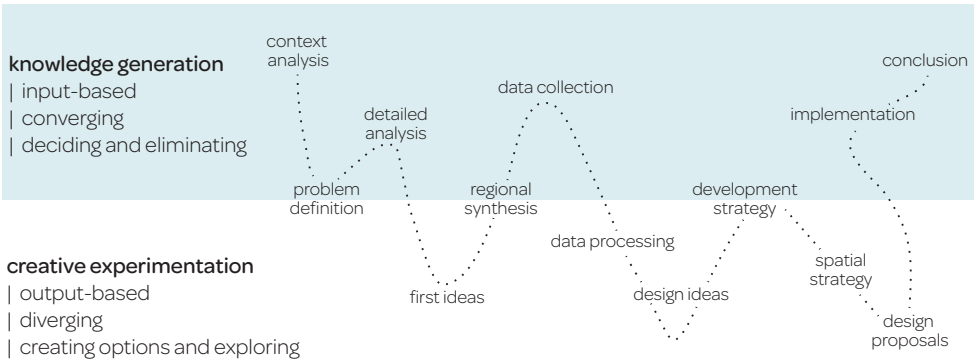


Figure 76: the interplay between research and design throughout the process

"Talent is good. Practice is better. Passion is best."
- Frank Lloyd Wright

Epilogue

In the final weeks of my graduation project, a friend that knows me very well said to me, "graduating is a marathon, not a sprint". And that is right. I noticed that during a year-long research project, consistency is key. Related to the quote by Frank Lloyd Wright, I discovered that passion for the subject motivates you to keep exploring, to keep designing and to keep working.

What I enjoyed most throughout the project was the constant interplay between research and design. Between working with the context and working from theory. I enjoyed looking with different lenses to the project, as an urban designer, a researcher, a policy-maker and as an user. I appreciated using pieces of knowledge gathered throughout my education program for the large graduation puzzle a lot.

This project has further strengthened my interest for the metropolitan region of Paris and the challenges that come forward in this area. I hope to bring my knowledge and creativity to the city one day.



Image 41: A piece of art in the 18th arrondissement (Author, 2019)

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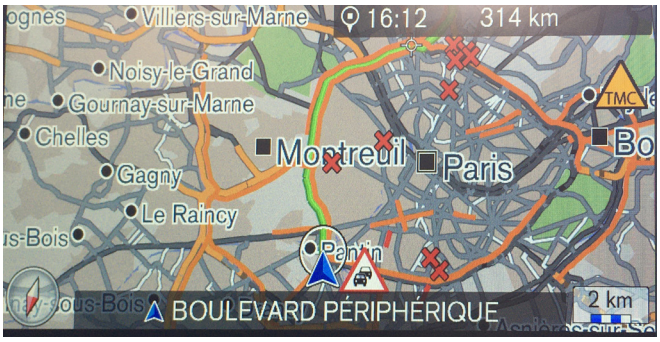
A.

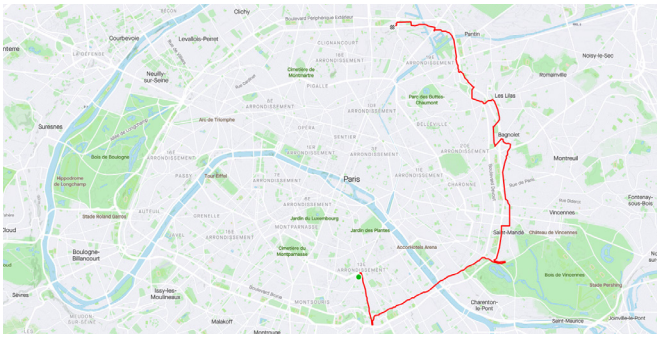
appendices

I. fieldwork log
II. survey
III. overview of estimated project costs
IV. sketchbook: a selection

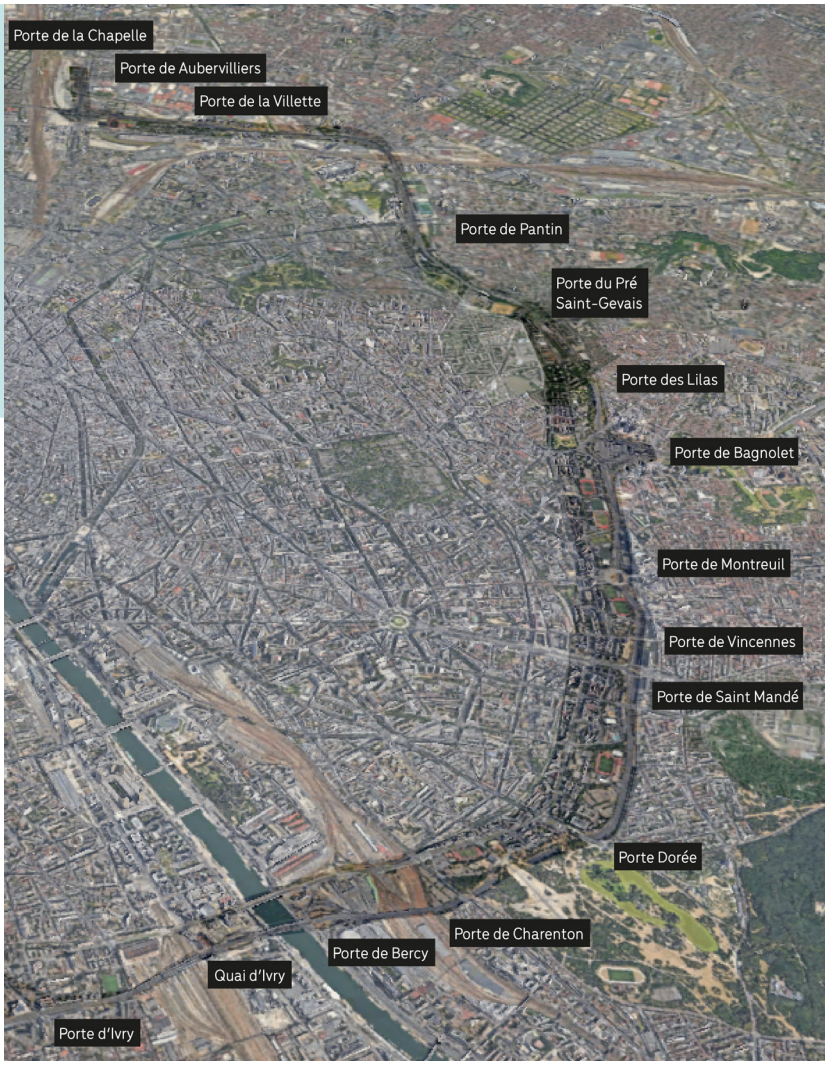
Characteristics: What are the characteristics and important features along the route? (focus on types of buildings, border types, communication elements, quality of space, entries and exits)
Users: Who are the users of the area?
Accessibility: What are accessibillity options for cyclists and pedestrians to enter the city centre from the periphery?
Safety and comfort: What are the spatial characteristics of these over- and underpassings?
Bottlenecks: What are the bottlenecks and obstacles around the BP?



Fieldwork part 1 | by car
What? Verbal description, mapping, photography, counting (to make an educated guess) and drawing.
How? Driving over the chosen transect in a motorized vehicle.



Fieldwork part 2 | by bike
What? Verbal description, mapping, photography and drawing.
How? Cycling along the chosen transect to explore both sides of the structure and the connectivity between both sides.



Map 01: the chosen traject for the project (data: Google Maps, 2020)

DISTANCE	HEIGHT DIFFERENCE
19,11 km	124 m
TIME	POWER
1:36:56	46 W
AVERAGE SPEED	CALORIES
11,8 km/u	301 kcal














PTE D'AUBERVILLIERS
50







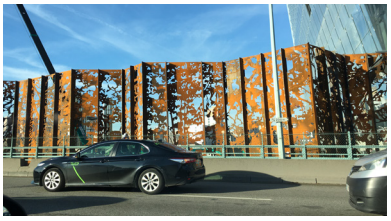






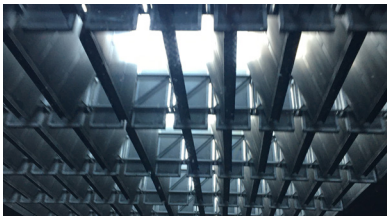




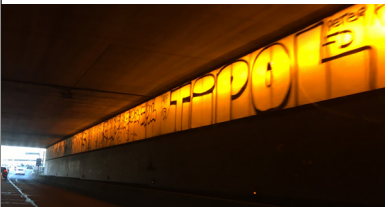






PTE ROUEN
PÉRIPHÉRIQUE EST
PÉRIPHÉRIQUE OUEST

DANGER
A 200 m
50
50



Notes from my notebook during the car ride:

Traffic situation
- a constant stream of traffic on both sides of the ring road
- thoroughfaring trucks are not allowed on the ring road, but small (delivery) trucks still take up a lot of space
- the lanes are separated by a concrete block
- stuck in a traffic jam
- tunnels alternate with open parts
- motors and scooters rage through the maze of cars
- brake lights & sirenes

Crossings, overpassings, entrances and exits
- bridges are unsafe mixed spaces for car traffic, buses, cyclists and pedestrians
- concrete block over one of the tunnels
- entrance to the city (Porte de Aubervilliers) without a view of where one will end up when taking this exit
- sports field / park on top of a tunnel
- pedestrian crossing the Périphérique
- one of the three (safe) newly-constructed pedestrian bridges
- a RER-station entrance under one of the viaducts
- "spaghetti intersection" Bagnolet

Borders
- green lane on periphery-side, wall on city-side
- large noise barrier on city side, in the form of a real wall
- a modern noise barrier along one of the development areas

Along the route: buildings
- new offices on the periphery-side
- noise barrier on the façade of a building, city-side
- urban area development on the southside, city-side
- social housing along the road, city-side

Along the route: other elements
- many communication signs, almost overwhelming
- distracting communication right before entering a tunnel

Quality of space
materialization | safety | deterioration | maintenance | view on the city | perception | uniqueness | greenery
- concrete "bunker" structures
- unsafe escape routes in case of an emergency
- deterioration of materials
- lack of greenery along the route

"Educated guesses" about the users on the ring road:

Users
The different types of users have been written down during the trip and *an educated guess* is made about the division between the different users (note: this is not the exact number; that was not possible due to the traffic and research circumstances). The educated guesses are indicated with an "*". In France, license plates contain the number of the department that they are part of. This was a useful means to make an educated guess about the origin of the users. Preliminary readings concluded that most of the traffic on the BP consists of inter-suburban travellers. During this fieldwork, I came to a different conclusion, based upon my sample. This is explained below.

Buses (city buses and tourist buses): none

Trucks
Only small trucks (for example delivery vans and company vehicles). Further exploration of this observation points out that large trucks are no longer allowed on the BP.

Cars - license plate 75 (department Paris)
Around 25%* of the cars that I encountered during the trip, have a license plate with number 75, which means that they are inhabitants of the city of Paris. Most of the vehicles are quite large for inner-city movements (for example: SUVs). Around 5%* of the vehicles with number 75 are taxis.

Cars - license plate 92/93/94 (departments Petite Couronne)
Around 25%* of the cars that I encountered during the trip, have a license plate with number 92/93/94, which means that they are inhabitants of the direct suburbs of Paris.

Cars - license plate 95/77/78/91 (departments Grande Couronne)
Around 20%* of the cars that I encountered during the trip, have a license plate with number 95/77/78/91, which means that they are inhabitants of the most outward suburbs of Paris.

Cars - other license plate
Around 30%* of the cars that I encountered during the trip, have a license plate that is not related to the city of Paris. There are almost no foreign license plates, most of them are French cars. Around 70%* of the drivers are alone, around 20%* are with two people and around 10%* move more than two people.

Scooters/Motorcycles
All of the present scooters and motorcycles have their alarm lights flashing. This is probably to be visible in between the cars, especially in a traffic jam. Most of the scooters and motorcycles have a local license plate.

Cyclists
None

Pedestrians
None



PORTE D'IVRY
COMMERCES



PARIS



SOUTERRAIN PIETONS







LIVRAISON
2022
Hautes performances
environnementales visées




PARIS RESPIRE
RUE AUX ECOLES
Depuis la rentrée,
la rue est aux enfants !
Plus d'informations sur Paris.fr
MAIRIE DE
PARIS







I started at the Place d'Italie. Via one of the main boulevards, the Avenue de Italie, I approach the Boulevard Masséna and the interior and exterior ring of the BP. The bike path is really bad, with a lot of holes and cracks (1).

First, I cross the Boulevard Masséna – which already feels and looks like a city ring road – just to see how close to the BP I can get. I bike towards one of the entrances of the ring road and suddenly the biking path stops. I inspect the intersection, but there is no (safe) biking route over the BP. Therefore, I return to the Boulevard Masséna, and continue my way in the east direction. Along this boulevard, newly built high-rise apartments blocks and offices arise at the horizon. It is one of the areas at the edge of the centre that is going through urban renewal, to live up to its increasing land value.

The biking path along the Boulevard Masséna is of quite good quality: it is separated from the cars, there are clear signs and the traffic lights do not take too long to turn green (2). Most of the time, pedestrians and cyclists have green together, and cars and buses have green together. The tramline along this boulevard is the only exception to the rule: it always has right of way.

Approaching the Seine river, both the Boulevard Masséna and the Boulevard Périphérique cross a set of train tracks. The Boulevard Périphérique is hung up by a major bridge construction (3), quite different from the Boulevard Masséna (4). Then, the crossing over the river Seine and afterwards, the wide train tracks that approach the Gare de Lyon. I still have not had a possibility to get closer to the Périphérique (as a cyclist).

Approaching the Bois de Vincennes – which is officially still a part of the Paris municipality (5) – the Porte Dorée gives me the first opportunity in four kilometres to safely cross the ring road. It is a city square with monumental buildings, built over the BP to improve connectivity to the park.

The Boulevard de la Guyane has a very wide cycle lane right next to the BP (6). The cycle path and ring road are separated by a large noise barrier, denying a view on the boulevard. This cycle path almost feels like a car traffic lane turned into a bicycle lane. I come across some pedestrian underpassings (7 & 8). They lack maintenance and feel unsafe and dark.

Near the Avenue the Courteline, one of the overpassings over the BP, the biking path suddenly stops and I have to move away from the Périphérique to continue my trip (9). A street parallel to the BP leads me around one of the major overpassings: the Porte de Vincennes. I bike through a quiet street with a village atmosphere. Small amenities, such as a supermarket, office de poste and a bar|tabac appear about 100 meters from the ring road.

Right in the middle between this crossing and the next one, the Porte de Montreuil, I am able to pick up the bike path along the BP again. Approaching the Porte de Montreuil, I have to make some detours and turnarounds because of the major car infrastructure. I probably used some streets and lanes that are not meant for me as a cyclist, but there were no other options to pursue my route.

I also pass a few major viaducts, where buses, cars, cyclists and pedestrians share the space. It offers me a view on the BP (10). These are quite good connections between the city and the periphery, but the traffic situation is not very safe.

I pass by a tunnel, where cyclists have to find their way on a dangerous vehicle lane (11). I have to wait for a traffic light, that clearly prioritizes the car traffic several times. Cyclists around me lose their patience and take the risk of biking through a red light.

After this lower point, the road goes uphill again. The cycle path next to the BP opens up: the noise barrier is replaced by a fence (12). Immediately, I expierence the noise and bad air quality that the highway produces. The buildings along this biking path are mainly offices, large stores and storage spaces (no dwellings).

Right after the Porte de Montreuil, I arrive in a neighbourhood that sharpens my senses. I am aware of the fact that I am an outsider. I would describe the situation as sketchy (13). This is based on the fact that a lot of cars were speeding around me, the streets seemed surrounded by vacant buildings and car garages and there was a lot of trash on the street. The neighbourhood is a complete opposite of the city centre of Paris, which is only about 100 meters away.

Especially the Avenue Gallieni has made an impression on me (14). One of the interesting things are the major billboards that present the upcoming urban developments and architectural projects that should upgrade this zone (15).

After this road, I had to stop for a while, as I approached the Périphérique's largest "spaghetti knot": the Porte de Bagnolet (16). Several highways, on several levels, come together in this point (17). As a cyclist, I am really clueless on what to do here. I cannot cross the BP, because it is only meant for cars and autobuses, and in order to pursue my route to the north, I have to find a way to get under or over all the highways in the crossing.

Again, I probably used some streets and lanes that are not meant for me as a cyclist. At least once, I bike over the bus lane, but I have to continue since I see no other possibility to continue the route.

Under the highways, several unofficial tent camps – quite advanced (even with selfmade chimneys and wooden houses) – and their inhabitants block the road in major groups. The atmosphere is quite violent: a lot of yelling and clustering of people.

Safety and awareness are two main ethical considerations that I described for the fieldwork. I decide to stick to that standard and I decide to turn around and move outwards, away from the BP, in order to move around the major knot.

As soon as I have a possibility to move towards the BP again, I approach one of the viaducts that brings me to the city centre. A steep road leads me along schools and children facilities (18). A large sign introduces me to the Paris respire ("Paris breathes") project: a project to relieve some streets from car traffic to improve safety and air quality (19).

Via the Rue de Noisy-le-Sec, I can cross the BP again to the suburbs. I am impressed by the overpassing: a highway coverage topped off with parks, sports fields and playgrounds. It does not even feel like crossing a highway: at this point it just feels like the urban fabric continues.

On the Rue des Frères Flavien, I lose the BP out of sight. It is near the Porte de Lilas where I can cross again. This time, I am also impressed by the crossing. It is a highway cover with entertainment facilities and a park on both sides.

The Boulevard Sérurier leads me towards the north, having the BP in sight. The area in between is not possible to cross. Via the Porte du Pré Saint-Gervais I cross again the Périphérique. An unclear and quite dangerous route leads me to a tunnel (20). Again, I can continue my route on a cycle path next to the highway, separated by a noise barrier. At the Porte Chaumont, I have to use a tunnel again to cross the BP (21). The continuation of the Boulevard Sérurier defines my route: I can see the BP on my right side but I can not reach or cross it.

I cross the Canal de l'Ourcq and the boulevard bends towards the north. I lose sight of the BP, but when I cross the Canal Saint-Denis, I can see the BP again on my right side (22 & 23). I continue in north-west direction and just like in the beginning of the route, I come across newly-built buildings. Here, it seems like most of them are office buildings and large stores.

One of the pedestrian bridges that I already encountered on the first fieldwork trip (from the car) appear in my sight (24). The public space is renewed here, and a park is created along the BP (probably for all the offices) (25). I end my route near the intersection of the BP and the A1 Autoroute du Nord.

On the next pages, the set-up of the online questionnaire is presented.The goal of the survey is to grasp the perception of inhabitants of the metropolitan region towards the Boulevard Périphérique, and to identify their needs and wishes for change.

The survey is created with GoogleForms and has been distributed via (personal and secondary) contacts and their network and via social media (LinkedIn, Facebook, Instagram).

Graduation project | Boulevard Périphérique

This questionnaire is part of my graduation project "Turning a city of walls into a city for all", a project about the social, spatial, functional and symbolic roles of the Boulevard Périphérique in Paris. This concrete ring road encloses the core of Paris and forms a barrier between the city centre and its surrounding metropolitan region.
With this questionnaire, I would like to get a grip on the different perceptions towards the Boulevard and an insight in the things that only the locals know. This data is necessary to explore possibilities for change and propose a future strategy for the ring road.

The research project is conducted for the Department of Urbanism at the Delft University of Technology.
For questions and/or comments, please send an email to k.e.westerbeek@student.tudelft.nl or leave a message at the end of the questionnaire.

The questionnaire will take 5-10 minutes of your time.

Thank you for your input!
Kind regards,
Karlou Westerbeek

Part 1: personal characteristics

1. What is your age?

Mark only one oval.

- ◯ <18 years
- ◯ 18-25 years
- ◯ 25-45 years
- ◯ 45-65 years
- ◯ 65> years

2. Please choose what is most suitable for your situation. I am...

Tick all that apply.

- ☐ a resident of the metropolitan region of Paris
- ☐ a (regular) visitor of the metropolitan region of Paris (for example: for work)
- ☐ a tourist familiar with the metropolitan region of Paris
- ☐ a traveller using the metropolitan region of Paris as a transit node
- ☐ not familiar with the metropolitan region of Paris

Other: ☐ _____

3. What is your place of residence?

Mark only one oval.

- ◯ Département 75: Ville de Paris
- ◯ Département 92: Hauts-de-Seine
- ◯ Département 93: Seine-Saint-Denis
- ◯ Département 94: Val-de-Marne
- ◯ Another department in France
- ◯ Another country in the European Union
- ◯ None of the above
- ◯ Other: _____



Part 2: Moving on the Boulevard Périphérique

4. How often do you drive over the Boulevard Périphérique in a motorized vehicle? Please choose the answer that suits your situation the best.

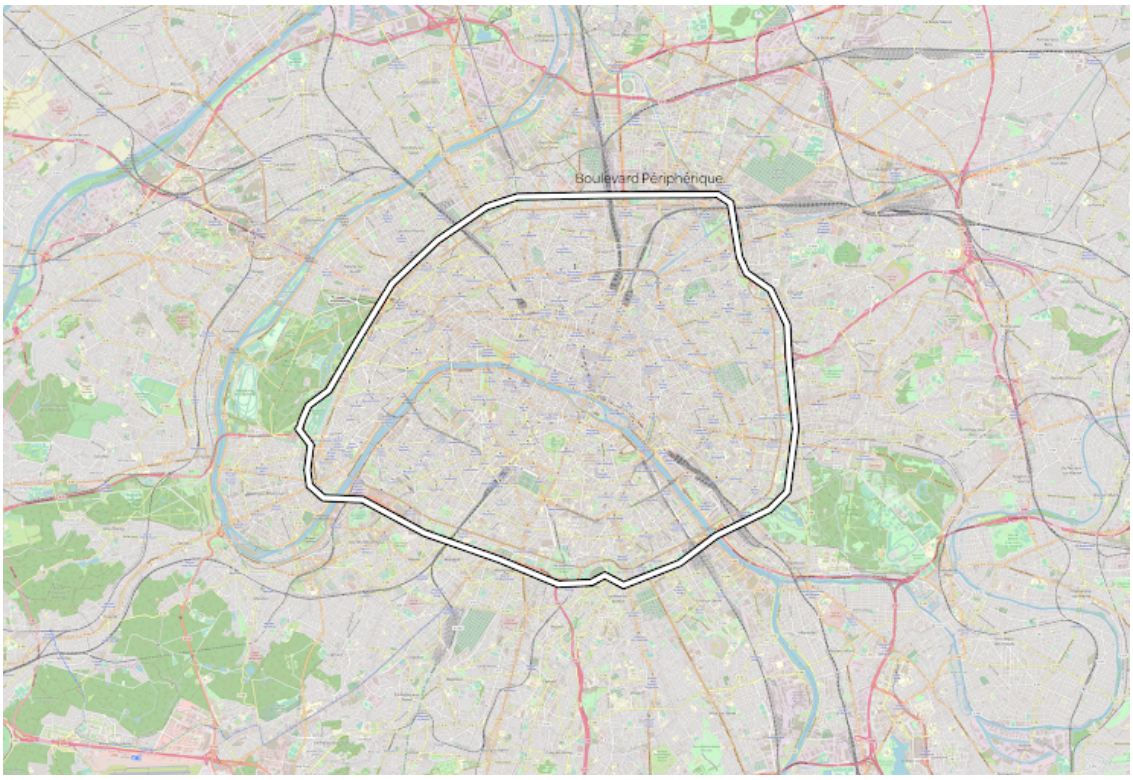


Image: the Boulevard Périphérique ring road

Mark only one oval.

- ◯ Daily
- ◯ 1-2 times per week
- ◯ 1-2 times a month
- ◯ 1-2 times a year
- ◯ 1-2 times every 5 years
- ◯ Never

5. What are the reasons for these movements? Multiple answers are possible.

Tick all that apply.

- ☐ Work / school
- ☐ Visit family / friends
- ☐ Grocery shopping
- ☐ Reach important amenities (for example: health care, child day care)
- ☐ Entertainment (for example: shopping, cinema, museum)
- ☐ Social events
- ☐ Holiday / travel

Other: ☐ _____

6. What is your transportation mode during these movements? Multiple answers are possible

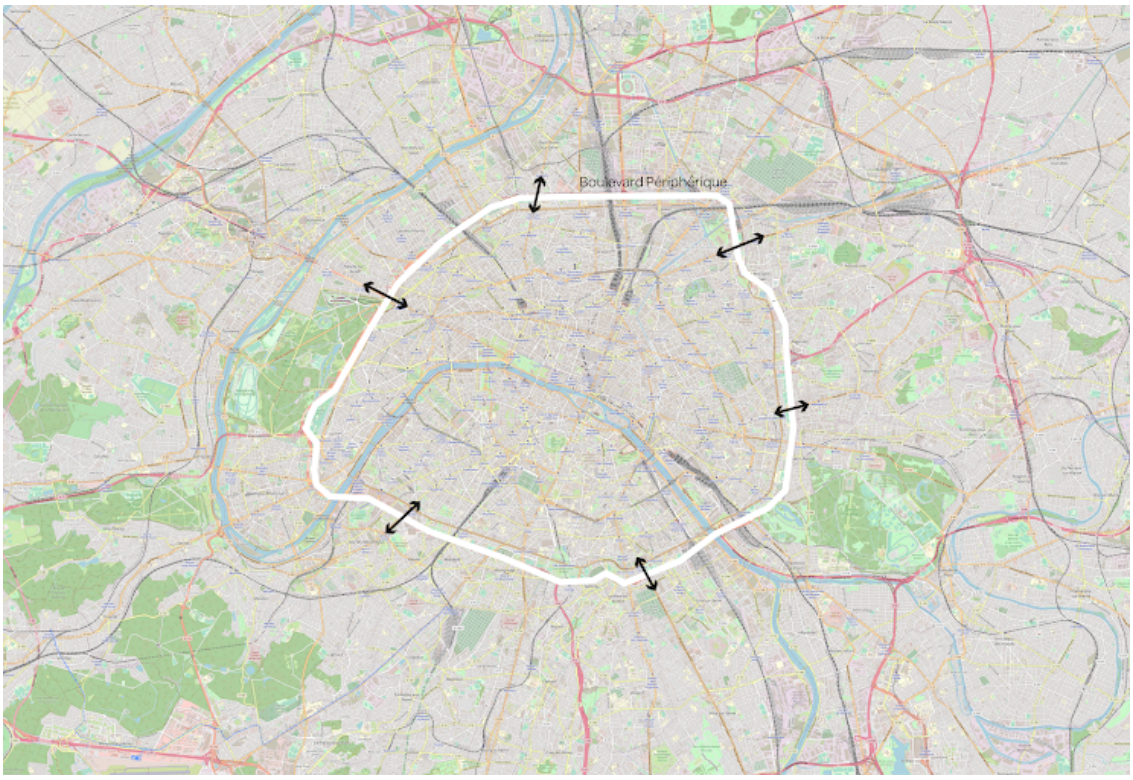
Tick all that apply.

- [ ] Private car
- [ ] Taxi / shared car
- [ ] Motorcycle / scooter
- [ ] Bus (from a travel organisation)
- [ ] City bus (local transport)

Other: [ ] _____

Part 3: moving around the Boulevard Péripherique

7. How often do you cross the Boulevard Périphérique via bridges and/or tunnels? Please choose the answer that suits your situation the best.



Mark only one oval.

- ◯ Daily
- ◯ 1-2 times per week
- ◯ 1-2 times a month
- ◯ 1-2 times a year
- ◯ 1-2 times every 5 year
- ◯ Never

8. What are the reasons for these movements? Multiple answers are possible.

Tick all that apply.

- [ ] Work / school
- [ ] Visit family and / or friends
- [ ] Grocery shopping
- [ ] Reach important amenities (for example: health care, child day care)
- [ ] Entertainment (for example: shopping, cinema, museum)
- [ ] Social events
- [ ] Holiday / travel

Other: [ ] _____

9. What is your transportation mode during these movements? Multiple answers are possible.

Tick all that apply.

- [ ] Private car
- [ ] Taxi / shared car
- [ ] Motor / scooter
- [ ] Train
- [ ] Tram
- [ ] Bus
- [ ] Metro
- [ ] (Electric) bicycle
- [ ] Walking

Other: [ ] _____

10. What would be your preferred transportation mode during these movements? Multiple answers are possible.

Tick all that apply.

- [ ] Private car
- [ ] Taxi / shared car
- [ ] Motor / scooter
- [ ] Train
- [ ] Tram
- [ ] Bus
- [ ] Metro
- [ ] (Electric) bicycle
- [ ] Walking

Other: [ ] _____

11. Could you explain why this would be your preferred transportation mode?

Part 4: characteristics of the Boulevard Périphérique

The next part will describe some indicators of the Boulevard Périphérique. Please rate these indicators according to your own experience. Below, a short description of each indicator is presented:

Safety: the environment ensures that you are safe and not in danger or at risk
Environmental quality: the environment has good air quality, low noise pollution, greenery, trees and minimizes its carbondioxide footprint
Visual quality: the environment is aesthetically pleasing, interesting and unique
Obstacle: the environment contains elements that obstruct movement and connectivity between different city areas

12. Safety: please rank the safety of the Boulevard Périphérique between 1 and 5

Mark only one oval.

	1	2	3	4	5	
Not safe at all	◯	◯	◯	◯	◯	Very safe

13. Environmental quality: please rank the environmental quality of the Boulevard Périphérique between 1 and 5

Mark only one oval.

	1	2	3	4	5	
Low environmental quality	◯	◯	◯	◯	◯	High environmental quality

14. Visual quality: please rank the visual quality of the Boulevard Périphérique between 1 and 5

Mark only one oval.

	1	2	3	4	5	
Unattractive	◯	◯	◯	◯	◯	Aesthetically pleasing

15. Obstacle: please rank to what extent you experience the Boulevard Périphérique as an obstacle in your movement pattern between 1 and 5

Mark only one oval.

	1	2	3	4	5	
Not an obstacle	◯	◯	◯	◯	◯	A major obstacle

16. Which three words come to mind when you think about the Boulevard Périphérique?

17. What kind of changes would you like to see in the future of the Boulevard Périphérique?

Part 5: final part

18. Do you have any questions and/or suggestions?

19. Would you like to stay in touch about the progress of the research project? Please leave your email address below. Your email address will only be used for the purpose of updates of the research project.

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Google Forms

COSTS AND RETURNS OVERVIEW

Intervention costs	object	%	existing #	new #	L [m1]	B [m1]	surface area object [m2]	surface area total [m2]	cost of intervention unit price [€]	price €M	comments
Overpassings (bridges and viaducts)	overpassings		39	6	80	10	800	4800	3000	14,4	
Underpassings (tunnels)	underpassings		28	10	80	10	800	8000	5000	40,0	
Functions under viaduct at Portes	locations		2	10			1000	12.000	2000	24,0	
Covered segments	coverage projects		9	8				83.781	3000	251,3	See "Coverage projects"
COCO (closed-open-closed-open)	COCO		0	5				101.778	1500	152,7	See "COCO"
Half covers (noise barrier with slanted roof)	half cover		0	7				82.000	1200	98,4	See "Half cover"
Green spaces along the structure	green space		0	7				125.720	150	18,9	See "Green spaces"
Development area along ring road	dev area			17				448.800	300	134,6	Land purchase: based upon the French Property Guide: Île-de-France (including Paris) = €300,000 for an empty plot of 1000 m2
Development area along ring road	dev area			17				448.800	50	22,44	Site preparation: raising of soil; qualitative improvement of soil; removal of (unwanted) soil; removal of sprawl; removing trees; any demolition work; leveling of the ground
Project costs										756,7	increases because of process costs: 175%
										1324,3	estimated costs of entire project

Development area		
Development area on BP	83.781	
Development area around BP	448.800	
Total development area	532.581	
FSI	2,00	

Returns	object	%	total [m2]	price per m2 [€]	price €M	
	dwellings (social housing)	15%	159.774	144	115,0	30% social housing in 2030
	dwellings (rental)	15%	159.774	780	623,1	mid-rent segment
	dwellings (owned)	10%	106.516	639	68,1	mid-priced and expensive
	office	40%	426.065	540	1150,4	
	leisure	5%	53.258	490	130,5	
	retail	2%	21.303	650	69,2	
	horeca	5%	53.258	650	173,1	
	hotel	3%	31.955	480	76,7	
	societal function	5%	53.258	190	50,6	
					2341,7	estimated returns of entire project (rough estimation)

appendices
III. overview of estimated project costs

These pages present a short and estimated overview of the costs of the interventions. It should be mentioned that this is based on a rough estimation and needs further research.

COVERAGE PROJECTS

Location	Length [m]	Surface [m2]
1 - North of Porte Bagnolet	100	7.581
2 - South of Porte Bagnolet	250	15.533
3 - Between Porte de Montreuil and Porte de Vincennes	200	8.465
4 - East of Porte d'Ivry	200	12.027
5 - West of Porte d'Italie	235	11.028
6 - Porte de Gentilly (pilot project)	200	9.952
7 - West of Porte de Chatillon	430	19.195
	1615	83.781

COCO

Location	Length [m]	Surface [m2]
COCO 1 - North of Porte Bagnolet	185	12.472
COCO 2 - South of Porte Bagnolet	327	12.616
COCO 3 - Between Porte d'Italie & Porte de Choisy	422	24.402
COCO 4 - Porte de Saint-Cloud	912	25.827
COCO 5 - South of Porte Maillot	594	26.461
	2440	101.778

HALF COVERS

Location	Length [m]	Single or double	Surface [m2] Width = 10 m	Why?
1 - Porte de Aubervilliers - Canal de Saint-Denis	650	Double	13.000	Environmental impact
2 - Parc de la Villette	650	Double	13.000	Environmental impact
3 - Around Porte de Montreuil	1200	Single	12.000	Urban renewal; high-rise
4 - Pont Masséna	500	Double	10.000	Urban renewal; high-rise
5 - Balard	900	Double	18.000	Environmental impact
6 - Tribunal de Paris	400	Single	4.000	Urban renewal; high-rise
6 - Cimetiere de Batignolles	600	Single	12.000	Environmental impact
	4900		82.000	

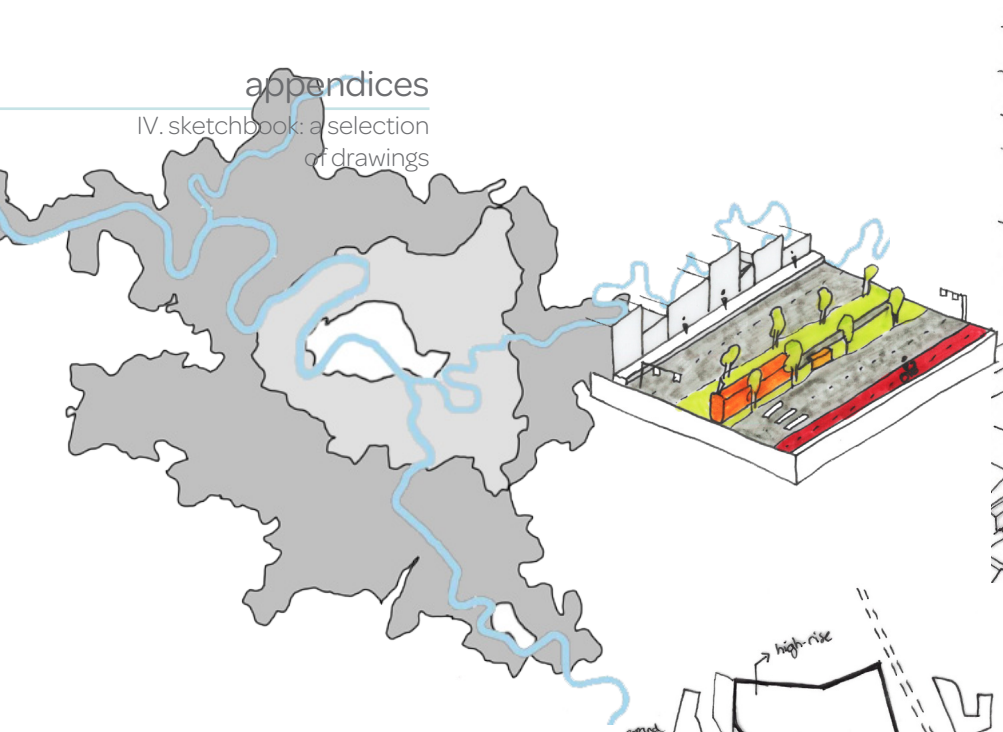
GREEN SPACES

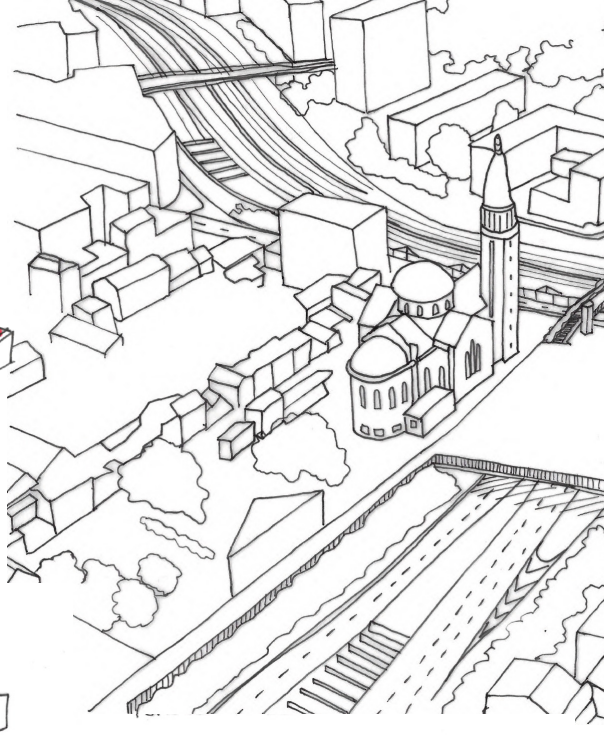
Location	Length [m]	Average width [m]	Single or double	Surface [m2]
1 - Along the Rue Jean-Henri Fabre	1246	10	Double	24.920
2 - Around Porte Bagnolet	1700	10	Double	34.000
3 - North of Bois de Vincennes	1100	10	Double	22.000
4 - Near Porte d'Ivry	980	5	Double	9.800
5 - Cimetière de Gentilly to Université de Paris	1300	5	Double	13.000
6 - Vanves	600	10	Double	12.000
7 - Balard	500	10	Double	10.000
	7426			125.720

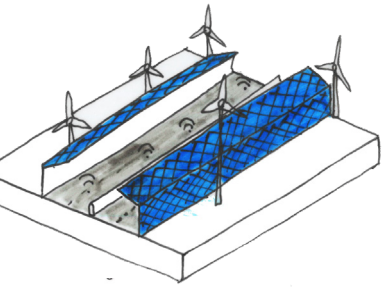
DEVELOPMENT AREAS

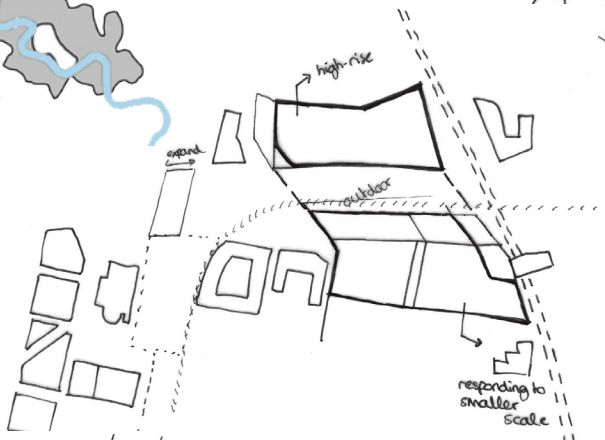
Location	surface [	current status	density	focus
Porte de la Chapelle North	58.000	empty lot / low-quality use of space	high-density	offices / societal function
Porte de la Chapelle East	104.000	empty lot / low-quality use of space	mid-density	offices / dwellings / hotel
North-east corner (Aubervilliers)	14.000	outdated buildings / empty lot	low-density	dwellings / horeca / leisure
East of Porte de Pantin	10.000	empty lot	mid-density	dwellings / hotel / horeca
North of Parc de la Butte du Chapeau Rouge	8.000	outdated buildings / empty lot	mid-density	dwellings
North of Porte Bagnolet, city-side (Rue le Vau)	20.000	densify current plot	mid-density	education / offices
South of Porte Bagnolet, periphery-side (Avenue Gallieni)	76.000	outdated buildings / empty lot / low-quality use of space > planned for urban renewal	high-density	dwellings / offices / retail
Two plots Porte de Vincennes	9.000	empty lot	mid-density	dwellings / offices
Between Porte d'Italie and Porte de Choisy, city-side	20.000	empty lot / low-quality use of space	mid-density	dwellings / leisure
South of Cimetiere de Gentilly, periphery-side	5.000	outdated buildings	high-density	dwellings / offices / leisure
Next to Cimetiere de Gentilly, city-side	2.000	empty lot	low-density	offices
South of Sacré-Coeur de Gentilly, periphery-side	11.000	outdated buildings, low-quality use of space	mid-density	dwellings / horeca / societal function
Surrounding the Gentilly coverage pilot project, both sides	42.000	outdated buildings, new coverage project	high-density	dwellings / education / horeca
Next to Cimetiere de Clichy, periphery-side	8.000	empty lot	high-density	dwellings / retail / horeca
Along the Rue Jean-Henri Fabre, periphery-side	30.000	outdated buildings / empty lot / low-quality use of space > planned for urban renewal	mid-density	retail / dwellings
Marché aux Puces, periphery-side	30.000	outdated buildings / empty lot / low-quality use of space > planned for urban renewal	low-density	retail / horeca
Place Django-Reinhardt	1.800	empty lot	mid-density	office
	448.800			

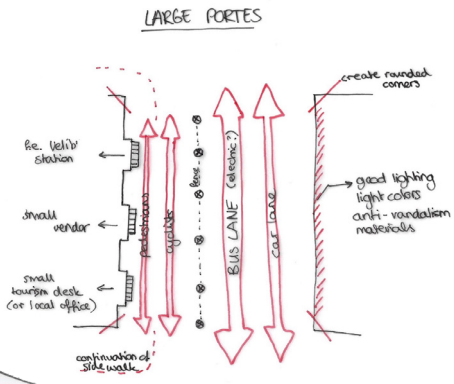


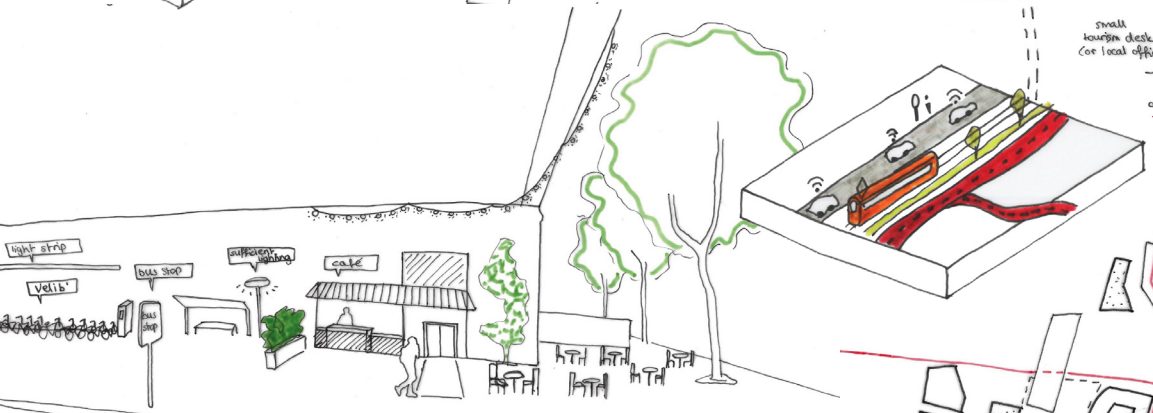


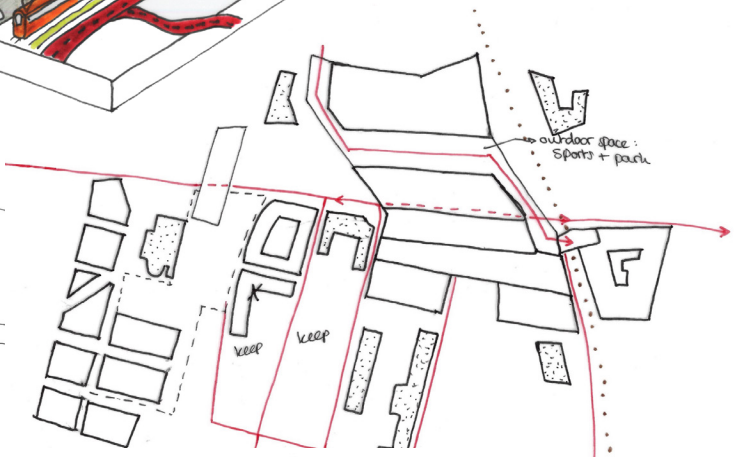


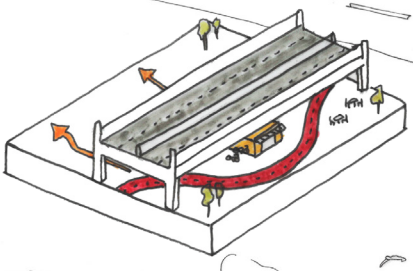


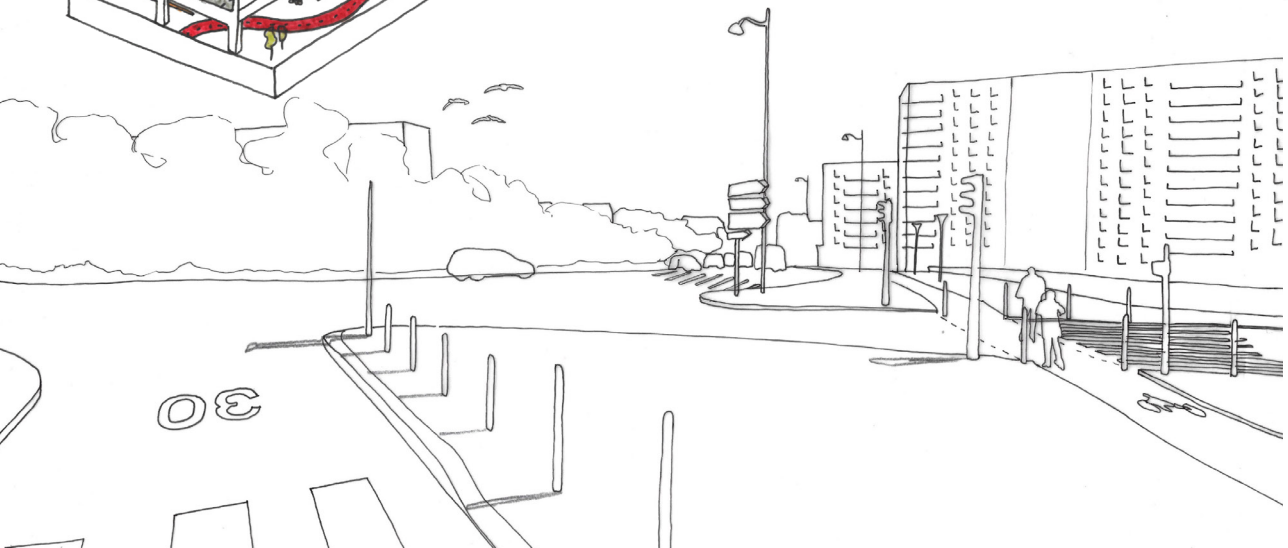

high-rise
expand
outdoor
responding to smaller scale

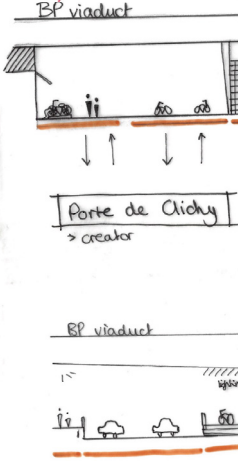

LARGE PORTES
create rounded corners
ex. Velib' station
small vendor
small tourism desk (or local office)
pedestrians
cyclists
BUS LANE (electric?)
car lane
good lighting
light colors
anti-vandalism materials
confirmation of sidewalk

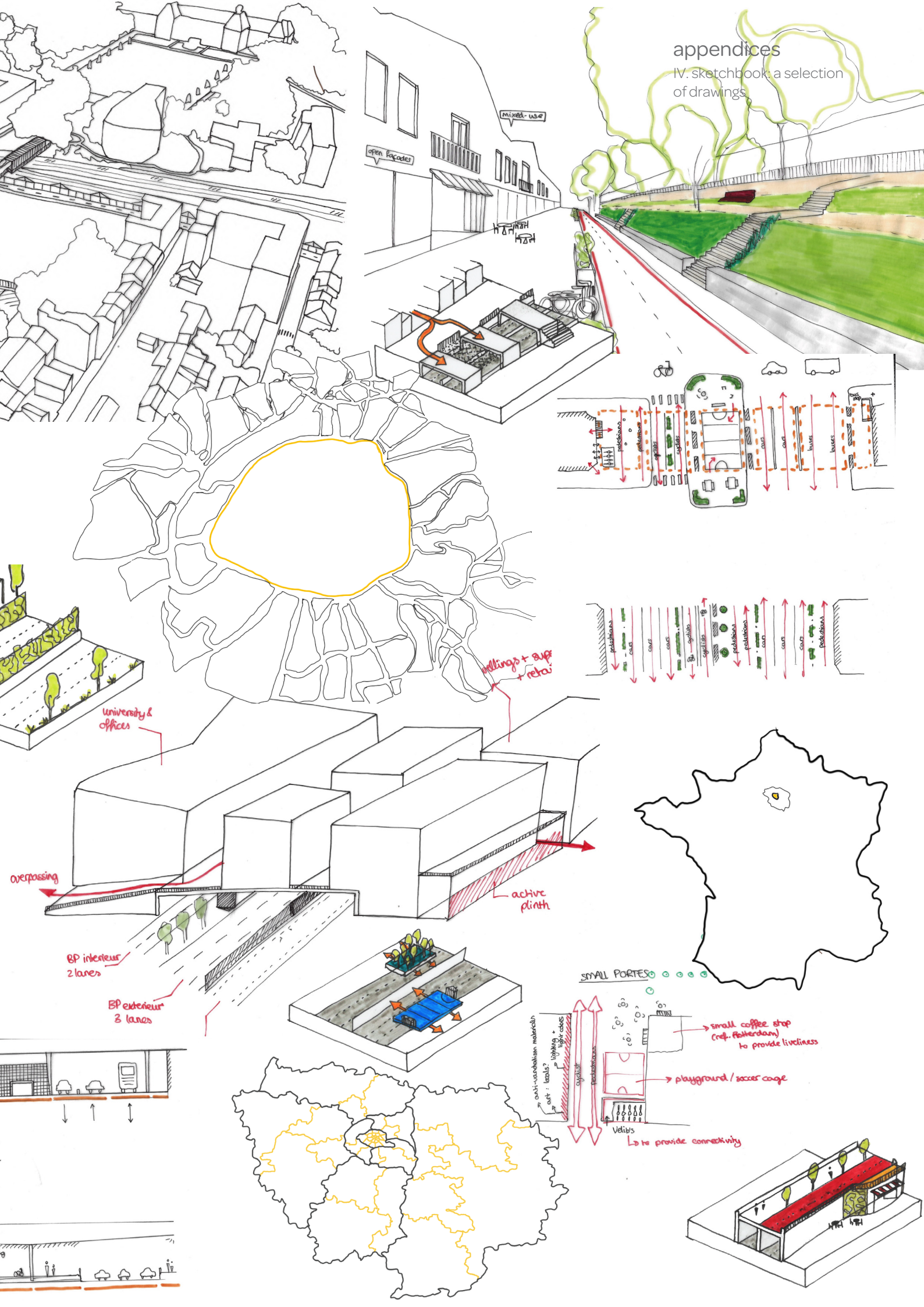

light strip
Velib'
bus stop
sufficient lighting
cafe


outdoor space : sports + park
keep
keep






BP viaduct
Porte de Clichy
> creator
BP viaduct


mixed-use
open façades
dwellings + sup
+ retai
university &
offices
overpassing
active
plinth
BP intérieur
2 lanes
BP extérieur
3 lanes
SMALL PORTES
small coffee shop
(ref. Rotterdam)
to provide liveliness
playground / soccer cage
Velib's
to provide connectivity



Turning a city of walls into a city for all

a redevelopment strategy to reunite the urban core with the metropolitan region of Grand Paris

Karlou Westerbeek
4348125
MSc. thesis | Urbanism TU Delft
June 2021