

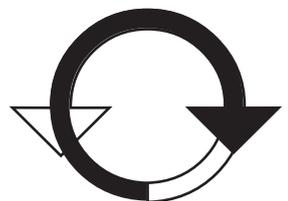
De-fragmenting Athens*

*Drosscape as a device for integration
between the metropolitan and the local scale



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Acknowledgements

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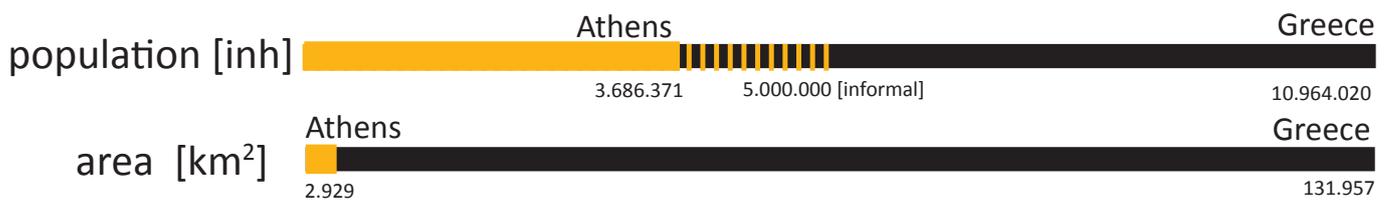
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> the location of Greece in Europe and of Attica region in Greece



1. Problem field

It is particularly challenging to deal with one of the world's oldest cities, whose recorded history spans around 3,400 years, which in parallel is so chaotic due to the gap existing between the established plans and reality. Unauthorized development, known in Greece as illegal construction, is one of the major pathologies of the Greek spatial planning system (Gianakourou, 1998). The city of Athens underwent a rapid expansion that initiated in the 1950s and 1960s because of the transition from the agricultural to the industrial economy and continues today particularly toward the East and North East. Regional planning legislation is really recent in Greece. In fact, it is within the Greek Constitution of 1975, the first Constitution after the dictatorship, that the first legal provisions for the supra-urban spatial planning were introduced. Until that time, the city would expand constantly in the form of illegal construction. These illegally built parts of the city would later be included in the "city plan", the main tool to apply the town-planning legislation. The same process holds nowadays as well, leading to a constant expansion of the city which seems to have reached its limits. And I am being literal by saying that the city has reached its limits, because urbanization has covered all the existing space in the Attica basin, where the city is located, and has reached its physical borders which are the surrounding mountains of Mount Aegaleo to the west, Mount Parnitha to the north, Mount Penteli to the northeast and Mount Hymettus to the east as well as the sea in the southwest. In addition, this explosion of urban area consists of especially high densities, low quality of space and lack of green and public spaces. Today, the capital of Greece is undergoing different transformations due to the shift from the industrial to the postindustrial and informational era.

2. Thesis objectives

These observations could lead us to question the future of the city of Athens and of the Attica territory as a whole and could make us realize the potentialities of the drosscape within the Attica basin. Drosscape is defined by Alan Berger as «the productive integration and reuse of waste landscape throughout the urban world» (Berger, 2006). The thesis attempts to confront the problem of wastelands, drosscape and brownfields and research for new tools to deal with them. For this reason the thesis could contribute to the Randstad centre where one of the research aims is to investigate urban effects as a result of multiple scales and to compare the way these processes work in metropolitan and megacity regions in different parts of the world (<http://cms2.tudelft.nl>). The subject of the thesis relates to the EMU research agenda mainly regarding the post-industrial sites and the cultural landscapes. The thesis is design-oriented and as a project attempts to transmit knowledge by integrating the different scales of city and territory. By looking at the complexity of urban dynamics it investigates how urban design deals with contrasting processes: on the one hand, the need to create conditions for 'bottom-up' activities and self-organizing processes, and on the other, the effects of globalization, addressing similar questions with the U-Lab (<http://cms2.tudelft.nl>). Special attention is paid to the interrelationship of societal forces, territorial conditions and technical possibilities for the development of urban patterns.

Main research question:

«How can we re-use the waste landscapes of the Attica basin by combining the needs of both the metropolitan and the local scale? »

Athens in numbers

[ΕΣΥΕ, 2001]

City

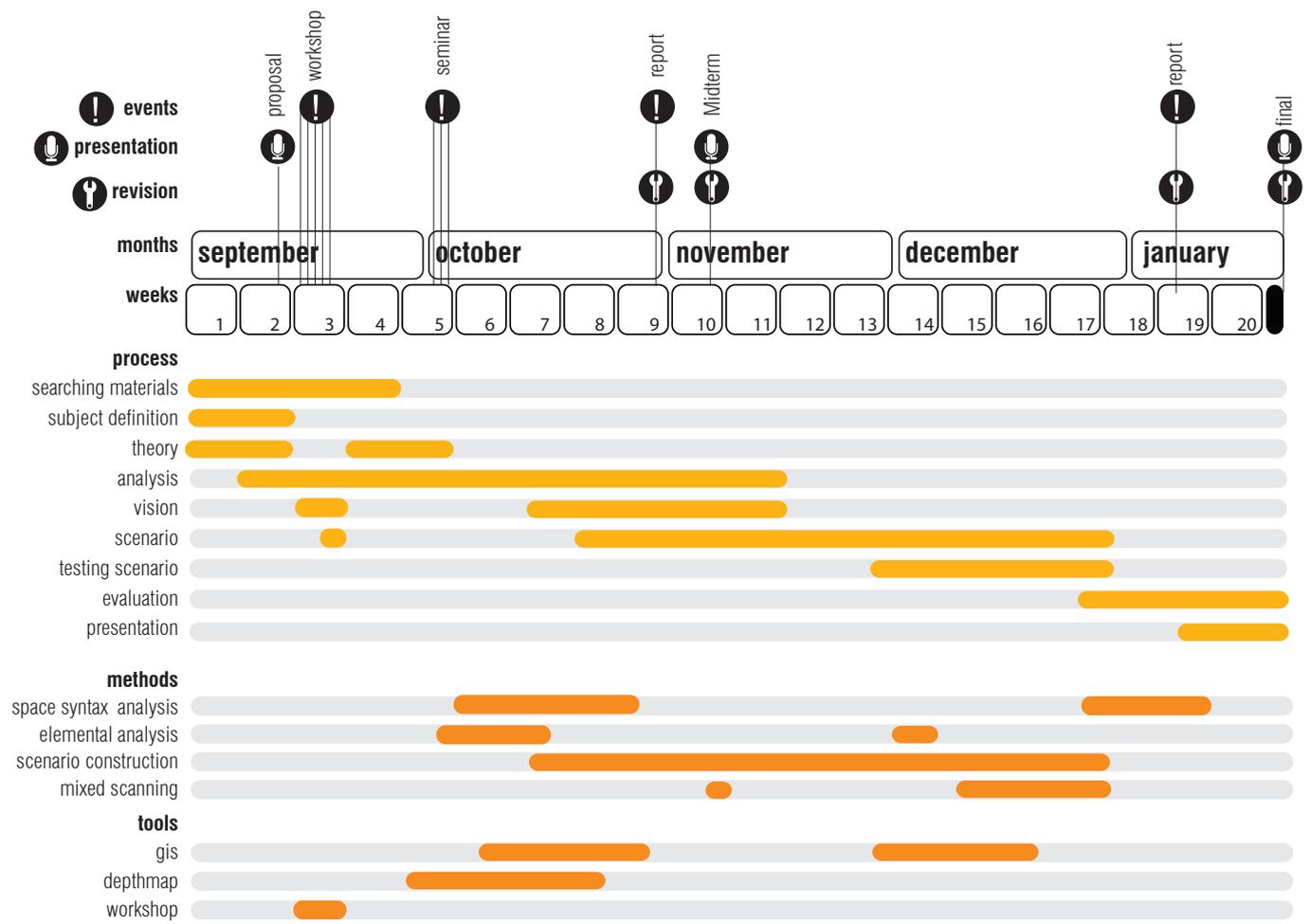
Population: 745,514
Area: 38.964 km² (15 sq mi)
Density: 19,133 /km² (49,555 /sq mi)

Urban

Population: 3,130,841
Area: 411.717 km² (159 sq mi)
Density: 7,604 /km² (19,695 /sq mi)

Metropolitan

Population: 3,686,371
Area: 2,928.717 km² (1,131 sq mi)
Density: 1,259 /km² (3,260 /sq mi)



> diagram representing the timeline for the semester, the scheduled processes, the methods and tools used and when applied

3. Approach.

The proposal relies on the formulation of a vision for the city through the exploration of different future spatial scenarios based on the concept of drosscape as the driver to shape potential urban transformations. More specifically, the thesis attempts to identify, map and investigate the unused or misused areas inside the Attica basin that could be reused, transformed and reshaped as active parts of the city. For the project the method followed will be the action scenarios. The final product of the thesis is not to provide a definite solution but to put forward possible scenarios for the future of the region, expressing long term goals for the whole territory. The spatial implications of these scenarios are tested through design for specific smaller areas.

It is important to mention the relation of the project with the body of knowledge and state of art in this process, as represented in the diagram in the following pages. The initial stage of the current research work consisted in defining the subject and the project location and searching for related data and maps. In order to gain a deep understanding of the subject the literature in question was extensively studied, providing a background knowledge that aided to concretely formulate the research question and led to the problem statement. The main approach followed was design through description and scenario construction in relation to the spatial form of the city, its social conditions and the post industrial sites. The goal of the thesis is to understand the problem of the city, reach a problem statement and proceed to construct the scenarios and assess the hypothesis through design; ultimately, to evaluate the entire research process and draw valid conclusion based on the preceded analysis.

4. Project Location.

The thesis investigates and tests the aforementioned themes in the Attica territory and in the city of Athens. Athens is the capital of Greece located in the South-East part of Europe, in the border of East and West, in the limits of Europe, Asia and Africa. The testing areas of the scenarios are located in the Attica basin. They have been selected based on the results of the analysis and in relation to the theme of drosscape.

5. EU Dimension.

Apart from the important location of the city due to the neighbouring condition of the three continents, Athens is important also because of its size for European standards. According to Eurostat, the Athens Larger Urban Zone (LUZ) is the 7th most populated LUZ in the European Union (the 5th most populated capital city of the EU) with a population of 4,013,368 in 2004 (Eurostat, 2008). Even though it is not a megalopolis if we compare it to other cities in the world, it certainly is of significant size and population for European standards. The investigation for the future of the drosscape, wastelands, brownfields and post-industrial sites has been of significant importance in the last years due to the abandonment of huge areas in the urban cores of European cities.

6. Planning.

The table shows the proposed timeline of the thesis in terms of processes, methods and tools used in each period. It is important to mention that these activities were not linear, even if represented as such on the timeline. Circular processes took place in reality, as constant evaluation was important during the workflow. The table depicts only the initial planning and was not followed with time accuracy, since the work adapted to the emerging needs and results during the synthetic process.



Subject definition

Drosscape of Athens, The
waste landscapes of the
Attica basin

Title

De-fragmenting
Athens

Search for Maps + Data

Autocad Maps:

Autocad Map: Athens Metropolitan Area (Attica Basin), Street network, Urban Fabric (Block detail), Topography, Metro, Attici Highway.
Land use map and for the Eleonas area, Attiko Metro

GIS Data:

Population, Attica. (1991), ESYE
Occupation, Attica. (1991), ESYE
Land Uses, Heights, Land Cover, Attica. (1986), MAM
Contours lines, GYS
Water, Greece
Geology, Greece
Political borders, Greece

Body of Knowledge & State of Art

LITERATURE

Theme: Dross = Waste

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Problem Statement

There are several misused or unused spaces in the Attica basin. Its formation is a consequence of the territorial conditions and of the big infrastructural elements' dynamics. Its use is mainly related to the metropolitan scale. These spaces generate enclave conditions that fragments the city.

Research Question

"How can we re-use the waste landscape of the Attica basin by combining the needs of both the metropolitan and the local scale?"

Description

Dross relates to territorial conditions:
territorial analysis

methods:
mapping, krikage

Dross relates to infrastructure:
historical analysis

methods:
mapping
tools:
aerial photos, mapping, diagrams, GIS

Conclusions

Draw conclusions by applying the design tests in the scale of the territory

Project

De-fragmenting Athens
[dross as a device for integration between the metropolitan and the local scale]
Design proposal based on the defined principles

Evaluation

evaluate the design test and define principles

Scenario Construction

Vision

Athens has quality of space

Hypothesis

Scenario 0: existing plans

Scenario 1: Athens Un-do:
[dross as a device for restructuring the metropolitan ecological system]

Scenario 2: Athens Re-do
[dross as a new centrality]

Research by Design

Test 1

Test through design of the spatial implications of the scenario1 in Eleonas

Test 2

Test through design of the spatial implications of the scenario2 in Eleonas





1. “What is dross?”

Etymology: *Middle English dros, from Old English drōs dregs*

1: the scum that forms on the surface of molten metal

2: waste or foreign matter: impurity

3: something that is base, trivial, or inferior

<http://www.merriam-webster.com/dictionary/dross>

If we search for the etymologic definition of dross we will see that it actually means the waste or foreign material, refuse, impurity and residual. Waste and vast have the same root of the Latin term *vastus* and dross relates etymologically with *vast* and *waste* and represents that which is left over from a combination of natural and manmade processes. The creation of dross is an inevitable part in the natural processes. By everyday observations or even by having in mind Murphy’s Law or the second law of thermodynamics we realize that nature produces waste while growing. This is valid also for the processes of urban growth; drossscapes would be the landscapes that could be considered as wasted within urbanized areas. But what do I mean by wasted landscapes? Waste landscapes mean actual waste [such as municipal solid waste, sewage, scrap metal etc.], wasted places [such as abandoned or contaminated sites], or wasteful places [such as huge parking lots or retail malls] (Berger, 2006). Dross is the residual of the urban processes, the left-over of the city, the junk space.

So, what should be the task of an urbanist dealing with the wasted landscapes? According to Berger drosscape deals with the productive integration and reuse of waste landscape throughout the urban world (Berger, 2006). But in order to be able to integrate and reuse the wasted landscapes, first we have to identify them and in order to do that we need to understand the reasons of their creation. As Studio 09 claim each era leaves dross, residual spaces where we can identify the change, the porosity of fracture, (équipe Studio 09, 2009). Based on that, I considered it necessary to read and interpret the historical processes of urban transformation and drossscapes creation, since dross or residual concerns not only spaces that are currently under transformation, which could be easier located, but also the ones that could be transformed in the future. Therefore, the task of an urbanist lays also on identifying, locating and understanding the spaces that in the upcoming decades could be reinterpreted and reused.

2. “How is dross formed?”

«Dross emerges out of two primary processes: first, as a consequence of current rapid horizontal urbanization [or what some refer to as urban “sprawl”], and second as the leftovers of previous economic and production regimes, which are both catalyzed by the drastic decrease in transportation costs [for goods and people] over the past century.» (Berger, 2006)

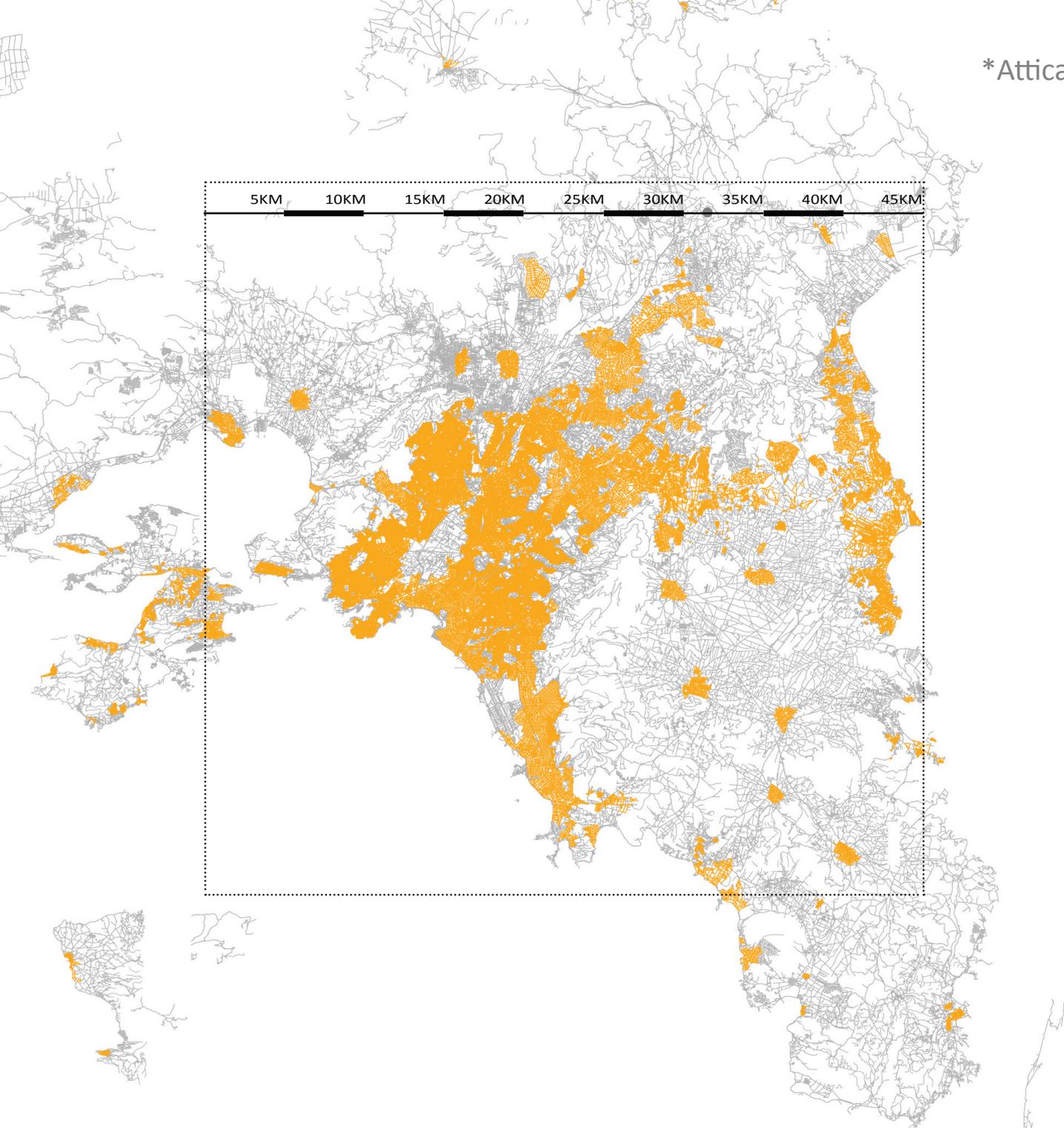
This means that the production of waste landscape could be mainly described through two processes: the process of accumulation and the process of attrition. The process of accumulation is the process of the urban expanding, the process of the city taking over more territory. It is the development which in the current era could be identified in the phenomenon of “sprawl” and dispersed territories. The process of attrition is the process of abandonment, the process of the urban forming black holes; the process of decay which in the actual city could be observed in the post industrial sites. The first, where the waste landscape is formed through accumulation, is a consequence of Post-Fordism, and the second, where the waste landscape is produced through attrition, is a result of de-industrialization. Both processes have their roots in similar causes, which relate to the shift in economy, production and consumption, political regimes as well as the technological progress and the changes in lifestyles. However they manifest themselves in the territory with opposing strategies: the first by abandoning land and the second by occupying more. These two processes lead to two main patterns of location of dross in the urbanized region which are the de-industrializing core and the sprawling periphery and the transitional landscapes in between.

According to Berger (2006) the wasted landscapes are generated through processes that contribute to urbanization and that relate to contemporary modes of industrial production, driven by economical and consumerist influences. On the other hand “Pope discovers that these new places are the result as well as the cause of an ever increasing polarization: between private and public, interior and exterior, between the spotless landscape of corporate campuses with its artificial undying “nature” and the abandoned and disintegrating residue. They are composed in other words, by a succession of islands of decreasing entropy in a world in which entropy as a whole tends to increase. Pope identifies this accelerated disorganization as not only spatial, but also social and political” (Doxiadis, 2001).

I have to go along with both Berger and Pope. I believe that the causes leading to the formation of dross for sure lay on economical, social and political processes. However in my research the focus is not on the economical, social or political reasons that lead to the formation of these residual spaces. Instead, I focus on the study of the spatial elements in order to identify the factors that contribute to the formation of drosscapes in the city of Athens. Therefore the analysis starts from two hypotheses. The first is that dross relates to the territorial conditions. The second is that dross relates to infrastructure. In order to find the answers and understand the process of drosscapes’ formation I turned to history and in excessive mapping of the territory of Athens and of Attica. I thought that only by understanding the past a meaningful prediction about the future may be attempted. Hence, only upon completing the analysis I proceeded to formulate a model based on which a hypothesis for the future drosscape of Athens was made available.







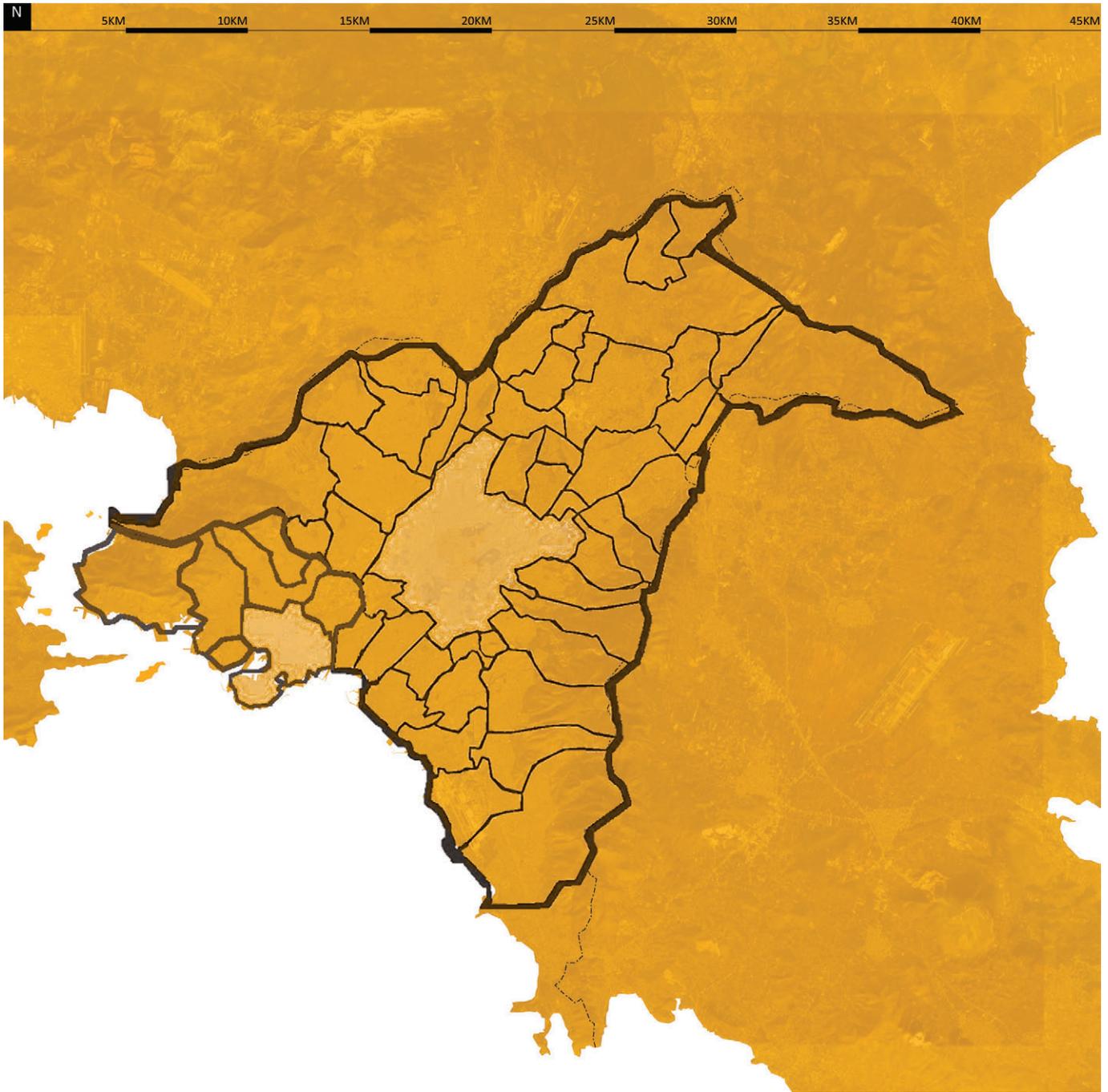
> The peninsula of Attica represented through the street network and the studied territory of Athens

source data: ΓΥΣ 2003

*Introduction

“Athens is the city manifesting the contemporary era: noisy, polluted, extended and fragmented. Opposed to the cities of culture and rationality, Athens is the city of the myth and the chaos. Opposed to the cities of order and rules, substantiates the inordinate and the lack of rules.” (Richard Scoffier, 2007)

I consider it useful before anything else to have a general overview of the national spatial planning system as an introduction to the context. Then the analysis will follow the two axes described previously, based on the two hypothesis of the creation of dross: the relation with the territory and then the relation with the infrastructure. Initially I attempt to understand how territorial conditions influence the dross formation by studying the topography, the water, the geology and the sections related with the functions of the territory. In the second part, I try to identify how the formation of dross is affected by the changes in the infrastructure with a historical study of the city, focusing not only on the city’s growth, but also on the changes in the infrastructure and the industries’ location.



>the administrative limits of Athens metropolitan area which includes Athens and Pireaus prefectures.

Highlighted with white the municipality of Athens and Pireaus

source of data: Google earth and <http://www.ireference.ca/search/Athens/>

* 1. Spatial Planning in Greece and in Athens

“Greece is part of the “urbanisme” planning tradition. This tradition is being actually challenged by two kinds of complementary factors: the impact of the European Union policies and legislation on the Greek spatial planning system and the undergoing changes (induced or intentional) in the more general administrative, economic and societal models and behaviors at the domestic level (e.g. decentralization, deregulation, privatization of the public sector, enforcement of civil rights, etc). Greece has a rather complicated and plethoric system of spatial planning extending to all levels of government, that is national, regional and local levels, and comprising a large variety of instruments, usually with a low degree of coherence among them.” (Gianakourou, 1998).

The region of Attica Periphery consists of four prefectures: the Athens Prefecture, the Piraeus Prefecture, the West Attica Prefecture, and the East Attica Prefecture, all governed by democratically elected councils. Athens became the capital of Greece in 1834 and is also the capital of the Attica Periphery and the Athens Prefecture. Athens Prefecture is made up of 48 municipalities, each having an elected district council and a directly elected mayor. Along with the Piraeus Prefecture, it forms the Athens-Piraeus super-prefecture, which was created in order to incorporate big part of the metropolitan area. The rapid expansion of the city, initiated in the 1950s and 1960s, continues today (particularly toward the East and North East) because of the transition from an agricultural to an industrial nation. Nowadays, the Athens urban area consists of 55 municipalities, 48 of the Athens Prefecture and the 7 of the mainland Piraeus Prefecture. The municipality of Athens is divided into 7 municipal districts, called dimotika diamerismata. The Attica Periphery encompasses the most populated region of Greece with around 3.7 million people. The Urban area spans and has a population of 3,130,841 (in 2001), which makes it one of the largest urban areas of the European Union. The actual population, however, is believed to be higher as various sources refer to a population of around 5 million people for Athens (<http://www.ireference.ca/search/Athens/>, 2009). In the region of Attica is concentrated almost the 34,31% (2001) of the total population, the 40,25% (2001) of the active employment, which always increases, the highest percentage of specialized and qualified labor force of the country, 39,80% (2001) of the total employment (Dellatsima, 2008).



>aerial foto of the studied territory 45km x 45 km including the Athens metropolitan area

source: Google earth

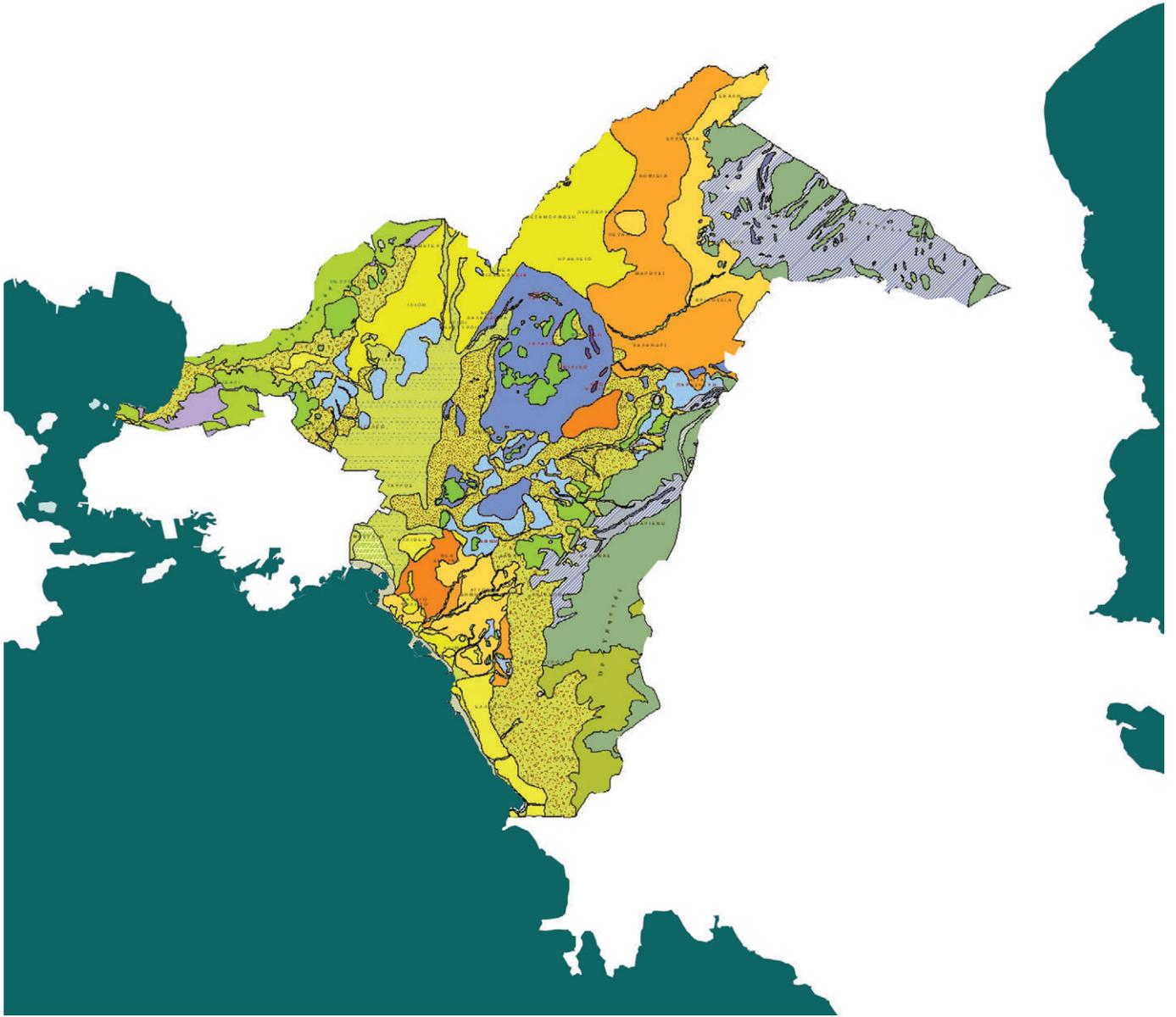
* 2. The territory

> a. Topography

Athens was constructed in the location of the ancient city. The city is situated in the Attica peninsula and more specifically in the plain of Attica. At its southwest side it reaches the sea and from all other sides it is naturally fortified: Mount Aegaleo to the west, Mount Parnitha to the north, Mount Penteli to the northeast and Mount Hymettus to the east. The passages for accessing the city were limited because of the constitution of the territory and therefore have been easy to control. The plain of Attica is 22 km deep in the direction from north to south and 10 km wide in the direction from west to east. It is divided in two unequal parts by a series of hills which are from north to south: Tourkovounia, Lycabetus, Strephis, Agoraios Kolonos, Areopagus, Acropolis, Hill of the Nymphs, the Pnyx, the Museum, Ardetos and finally the Sikelia hill (Travlos, 1972).

> b. Water and geology

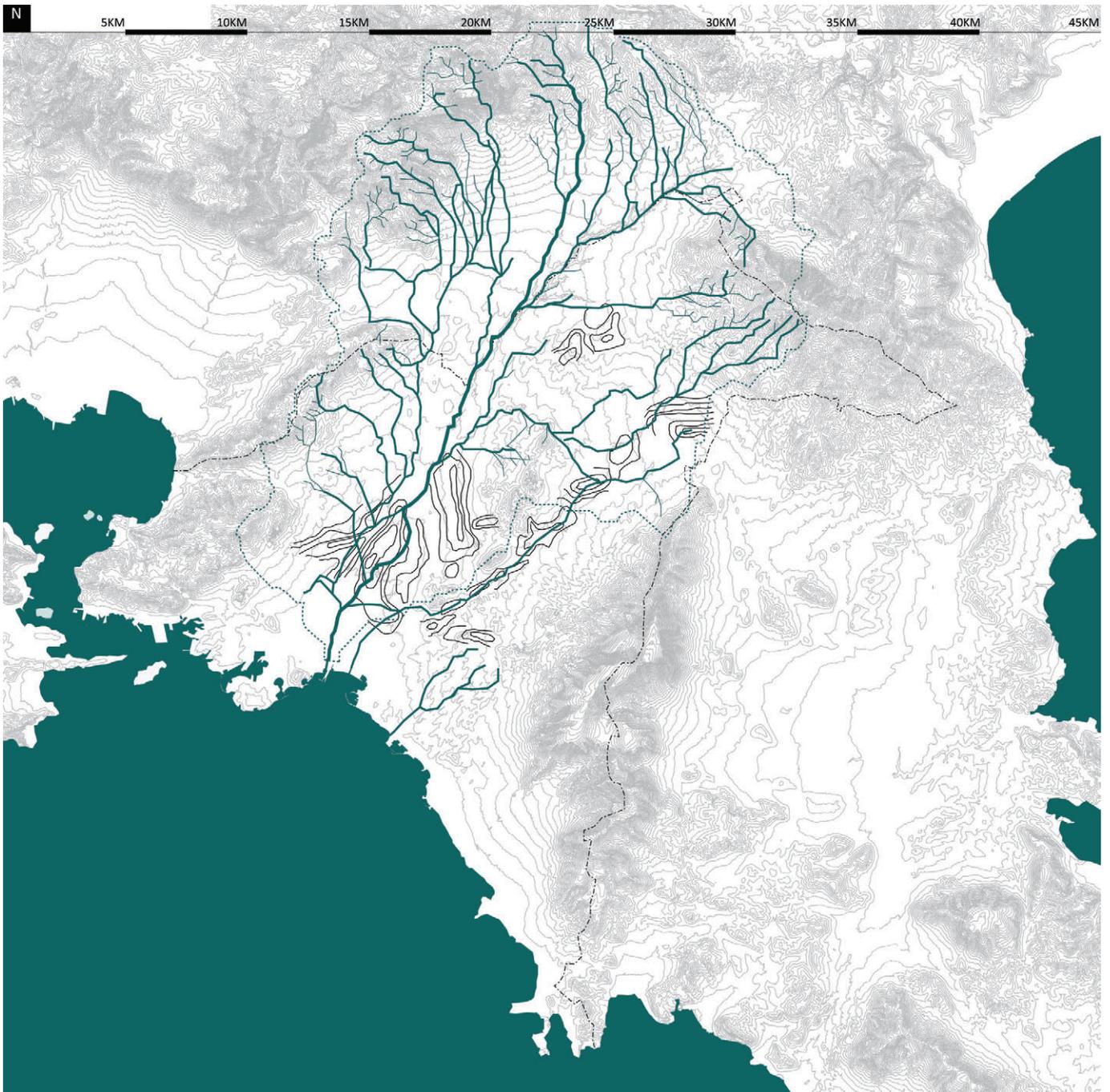
In the east side of the plain runs the main water body of the territory, the Kifissos river, which is another natural limit of the territory. Kifissos sheds from the mountains of Parnitha and Penteli and bisects the territory in a parallel direction to that of the hills until it reaches its delta at the Faliro bay and pours into the sea in the Saronic Gulf. In the east part of the plain runs the second river of Athens Ilissos, which sheds from the mountain Hymettus and pours into Kifissos River. These two rivers function actually like torrents. Due to the special weather conditions and the climate of the territory half the time of the year they have a minor flow, yet after an excessive rainfall they carry a strong body of water resulting in the flooding of the southern part of the territory. This leads us to survey the constitution of ground and the geological properties of the territory. As shown in the following map, the unsafe areas (due to high flooding risk) are the ones with the fluvial soil. These areas of high risk can be also identified in the map of water by the contours of the underground water levels. It is interesting to mention that traditionally the street network in Greece has been constructed over rivers. This is common practice as it is a cheap and easy solution. The last estimation of the IGME was that 550 km of streams and currents exist in the Attica basin (<http://7gym-zograf.att.sch.gr/activities/2004-05/TELIKO/kifisos2.htm>, 2009). This was finally what happened to the last 10 kilometers of Kifissos after 1996, when the last part of Kifissou avenue was constructed over the river in order to compete the Olympic ring of car circulation (<http://www.itia.ntua.gr/kephisos>, 2009).



>technogeological map of Athens prefecture

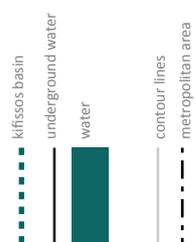
source: <http://www.nom-athinas.gov.gr>

-  anthropogenic landfill
-  contemporary material of the banks of currents, rivers and coast
-  loose coastal deposits of ash sandstone - mild argil
-  loose deposits of mixed phases with dominance of the fine grain
-  loose deposits of mixed phases with dominance of the big grain
-  side material indifferently to well adhered
-  indifferently adhered conglomerates with auburn connective matter
-  indifferently adhered matters - argil of light brown colour
-  indifferently adhered up to very adhered configuration with fine layers of gravel, small conglomerates and sand, coastal phase
-  Connecting red mud and indifferently adhered conglomerates
-  indifferently adhered configuration of marls, sandstone, marls limestone, yellow and white
-  Mid-thick layered white ash, heavily ruptured limestone
-  Mid-thin layered limestone, heavily constructed, yellow and white
-  Mid-thick layered heavily constructed limestone
-  Dolomite - dolomite limestone
-  Schistose sandstone period of the Athenian limestone with lens of limestone
-  Athenian limestone
-  marble with layers of limestone
-  Limestone with layers of marble
-  Half=Transfigured- transfigured indivisible configurations



>map of the Attica territory 45km x 45 km showing the contours every 20m , the limits of Kifissos basin, the main water bodies and the underground water

data source:
 contours: GYS
 water and basin: <http://www.itia.ntua.gr>
 underground water: <http://www.nom-athinas.gov.gr>

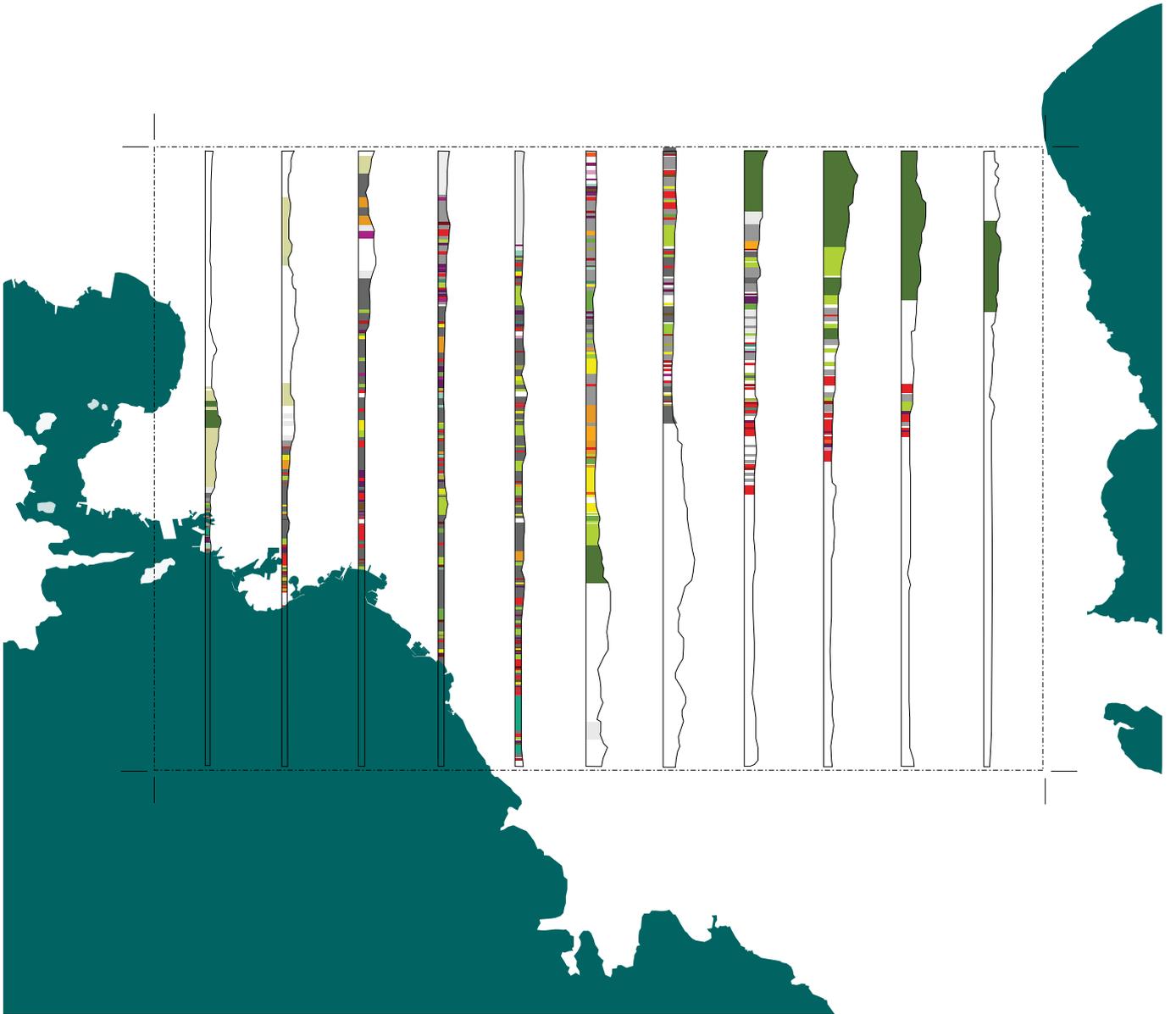


> c. Territory and land use

Here is an analysis of sample sections of the territory every 3km in order to identify the relationship between the territory's topography and the land's occupation by diverse land uses. From this it becomes apparent that the higher parts remain forest, as they are too high to be habitable, the slightly hilly parts are where the residential areas concentrate, as they are safer, and the lowest unsafe parts are mainly used for industrial or commercial activities. This analysis is based on a method called Kriging, which is a method of analysis used in spatial georeferenced studies in order to interpolate certain qualities in space. The method derives from Daniel Krige, a South African mining engineer, who on an empirical basis developed his method during the first decades of the twentieth century. Its aim was to augment the accuracy in estimating concentrations of gold and other precious metals, starting from a grid distributed geo-referenced space. The method was formalized and named krigage from the French engineer Georges Matheron, pioneer of geostatistics in 1963 (équipe Studio 09, 2009).

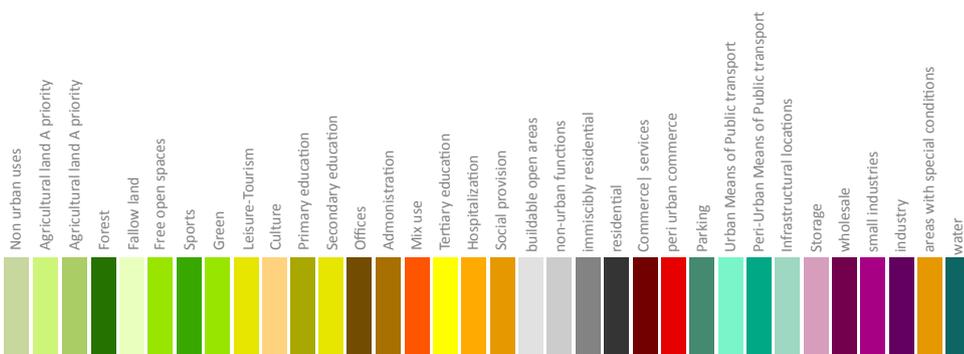


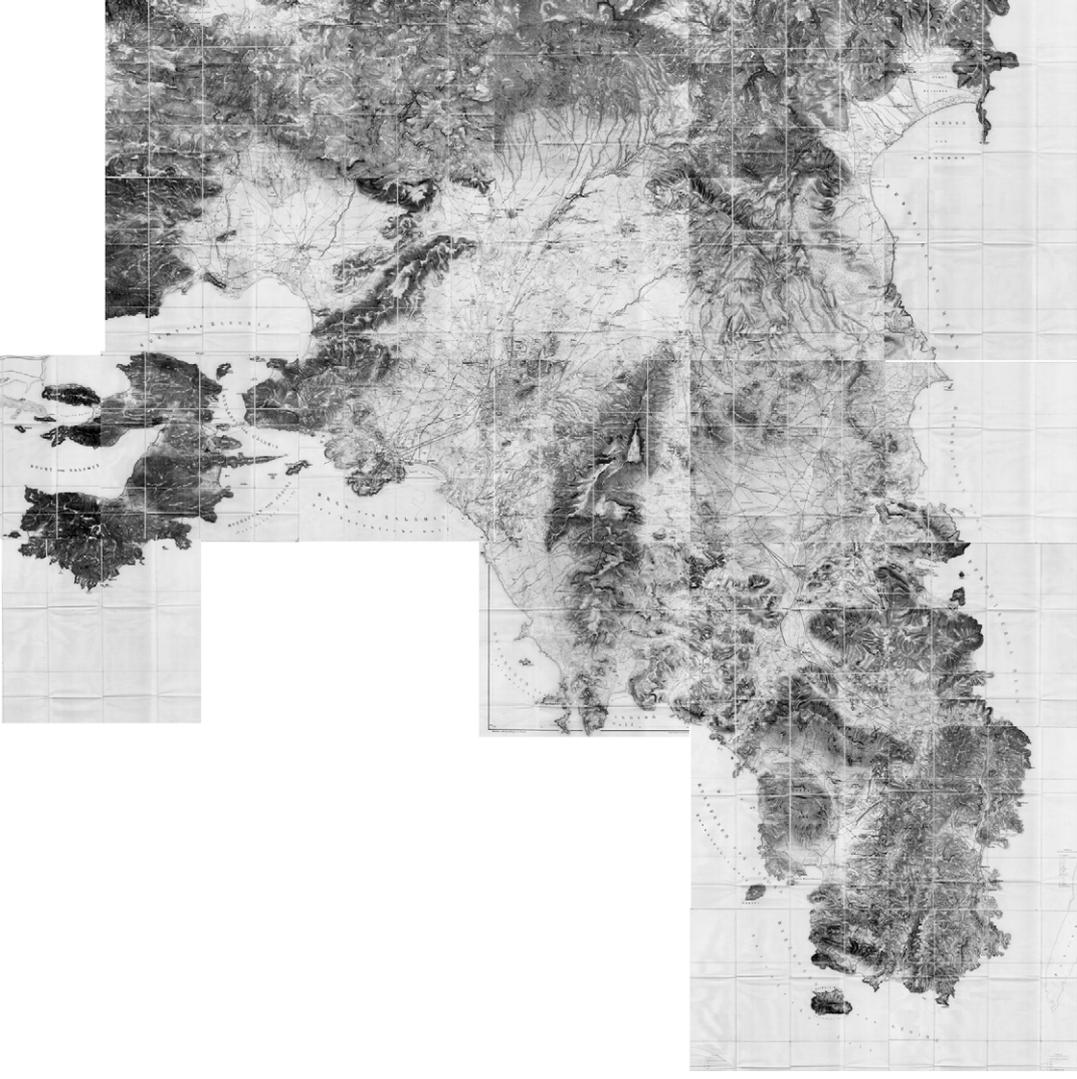
> 3d of the territory which was used for the sections sawing the direction of the sections and 3d of the 11 sections
data source: contours: GYS



>Sections on the territory of Attica basin every 3 km with the representation of the dominant uses in each section

data source:
contours: GYS
land use: MAM 85





● -1050

The geometric era

● -700

Consolidation of the athenian state

● -510

The athenian democracy, the medic wars

● -479

Classical Athens

● -350

The macedonian danger and the athenian reaction

● -300

The city of the Diadoch era and its destruction by Sylla

● -86

The roman influence

● -14

The developement of the city under the roman domination

● 253

The renaissance of the city after its destruction from Herules

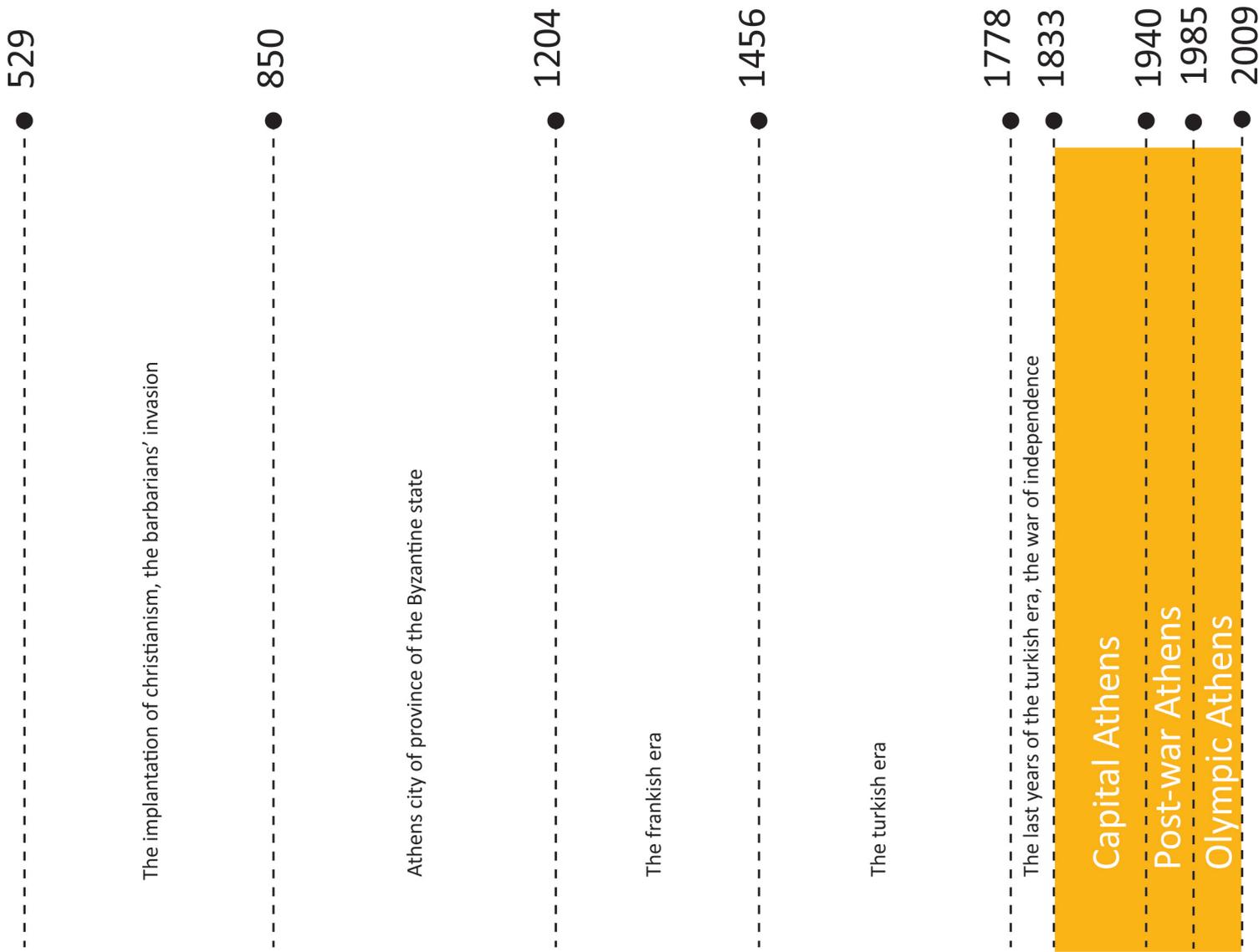
* 3. Historical analysis

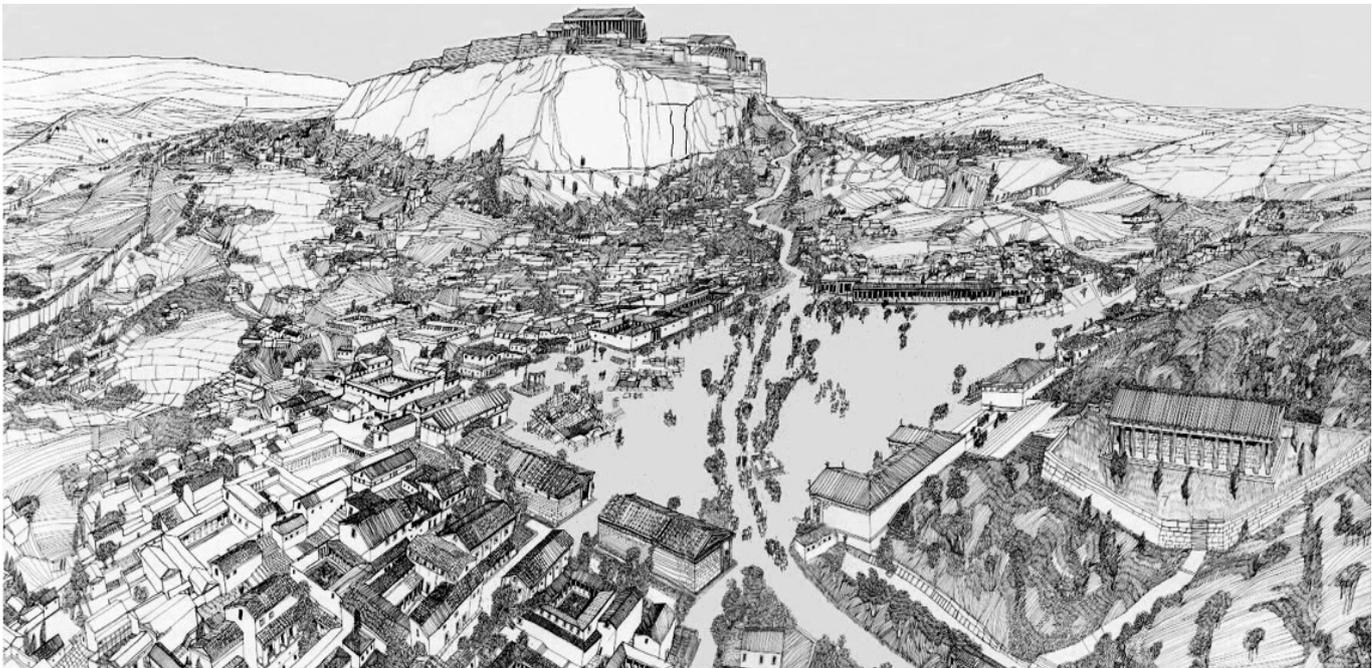
Introduction

The current chapter goes through the historical analysis of the city of Athens and the territory of the Attica basin. It aims at understanding the processes that lead to the creation of waste landscapes through time. I consider important to take into account not only the city growth but also the changes in the infrastructural networks and the location of industries. The city growth represents the expansion of the city plans and therefore the formal city that, as stated earlier, follows the informal development. The historical analysis concerns a territory 45 X 45 km, selected based on the connections of the city since ancient times with other cities. I considered it important to study not only the Attica basin but also its relation to the surrounding territory beyond the mountains and also the relation with the sea in the south west and north east.

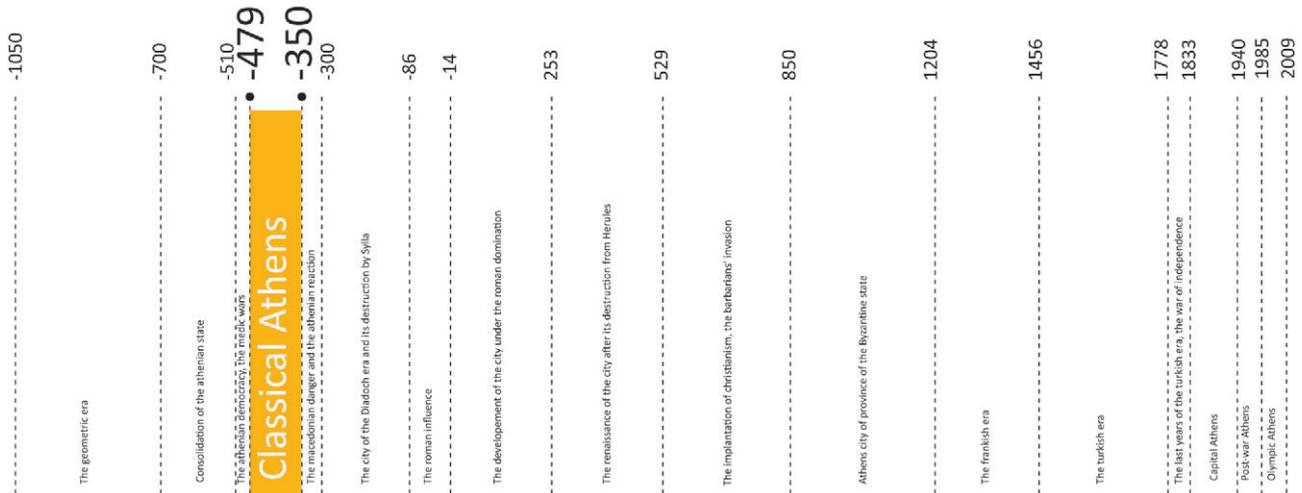
The analysis is divided in four main periods: Classical Athens [-479 -350], Capital Athens [1833-1940], Post-war Athens [1941-1985] and Olympic Athens [1985-2009]. The analysis focuses on the more recent history of the city, i.e. the last 200 years. 1833 was chosen as the starting date, which is the year when Athens became the capital of the newly born Greek state. For sure this period is rather small when compared to the long history of the city which can be located somewhere between 3000-1050 BC. Even though the city existed since the Neolithic times, I have considered important to present at least the classical Athens, as the period of the apogee of the city, in order to be able to compare the contemporary structure of the city with the structure of antiquity.

> The Attica peninsula mapped by Kaupert in 1870
 source: EMP
 > timeline and
 the four periods studied highlighted with yellow
 based on Travlos(1975)





> Representation of Athens in the 5th century b.c.
 source: http://www.sikyon.com/Athens/Monuments/athens_recns_gr.html



> 1. 479 -350 b.c. – Classical Athens

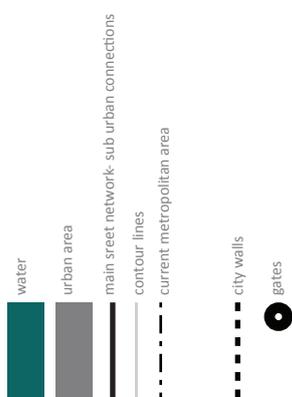
In the years of -479 -350, Athens reached the climax of its civilization and was the city and society where the basis of democracy was founded. The period is the apogee of Athens and is known as the golden century of Pericles. Athens and Piraeus were two separate cities, clearly divided by walls. Athens was actually the city itself, positioned in the safer and higher territory inside the Attica basin in the hinterland and Piraeus was the port, the gateway of Athens to the rest of the world through the sea. They functioned as a bipolar structure; they worked together as one entity. This can be identified by the fact that they were directly connected by one street, called Piraeus Street. This street was also protected by fortifications from both sides, the so called Long Walls. The Piraeus Street is one the first streets of Athens of suburban importance from the golden age of Pericles. "This strip of land has the length of 4 kilometres and width of 150 meters. Today it is constrained between the train lines and the high way" (Scoffier, 2007).

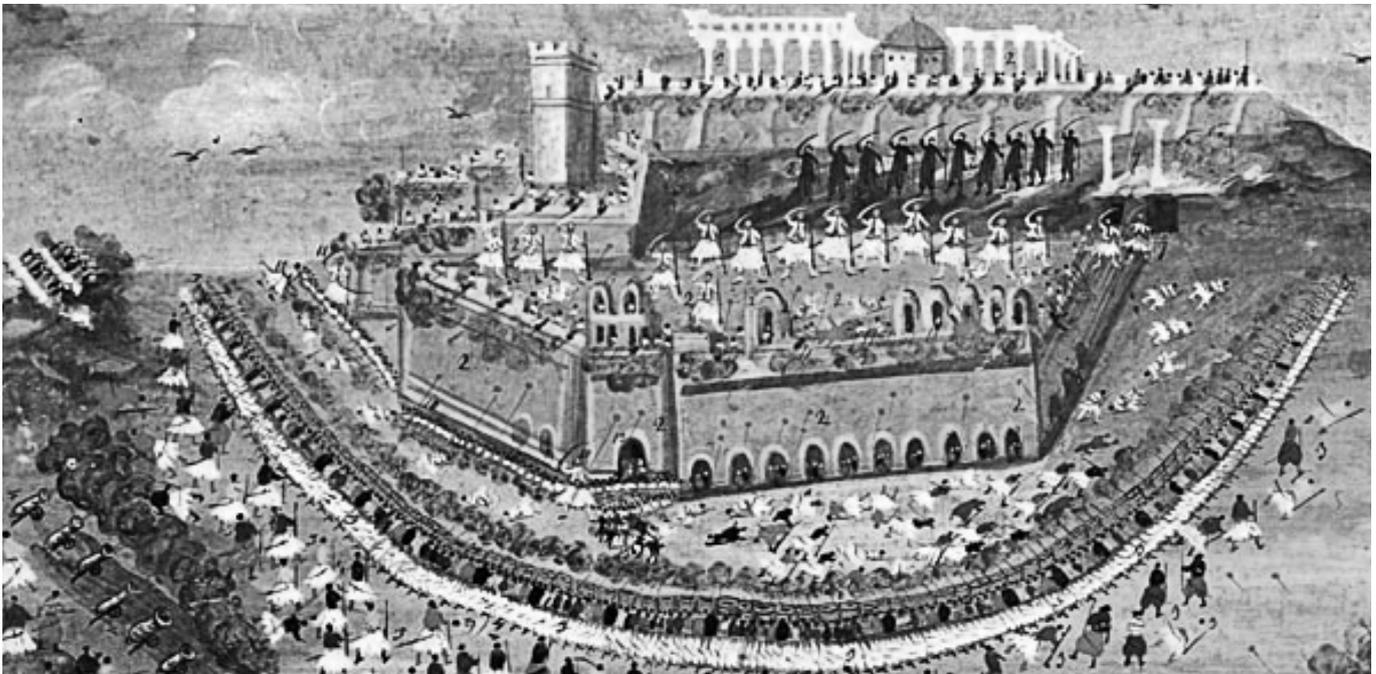
It is important to mention that the main street network of the city, connecting Athens to the port and to the nearby cities, formed a polycentric network with radial structure which led to the city of Athens via several fortified gates. What is interesting is that on the trace of these same streets and connections lays nowadays the main axes of the urban street network.



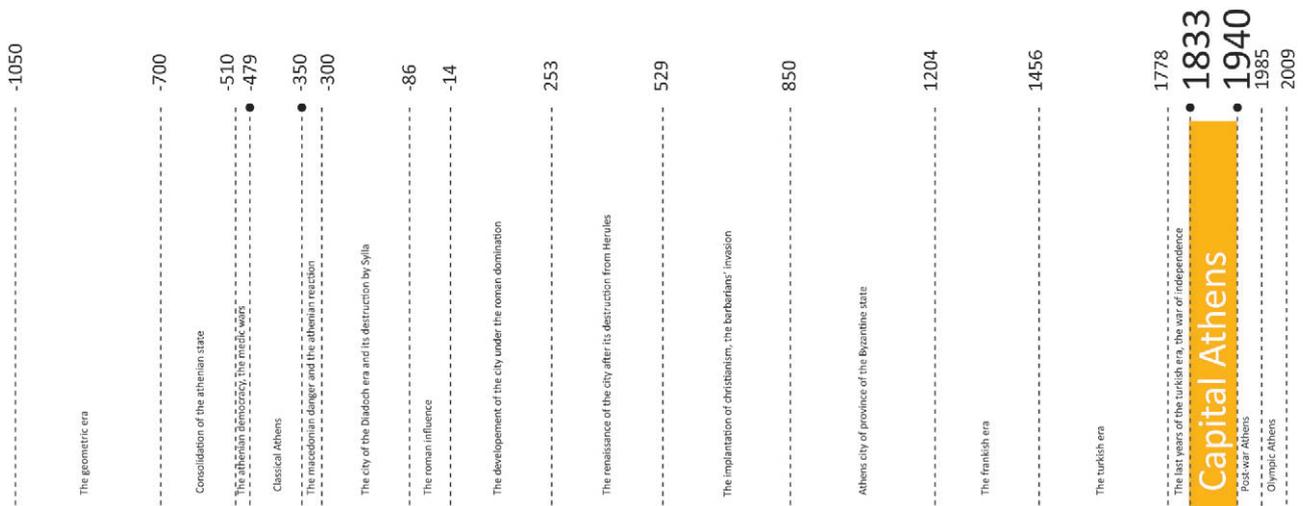
> 479 - 350 b.c.

data source:
maps of Travlos (1972), Doxiadis and historic map of the city and its surrounding retrieved in : <http://www.ebooks.adelaide.edu>





> Representation of Athens before 1833 when it was under the Othoman occupation source: <http://www.eie.gr/archaeologia/gr>

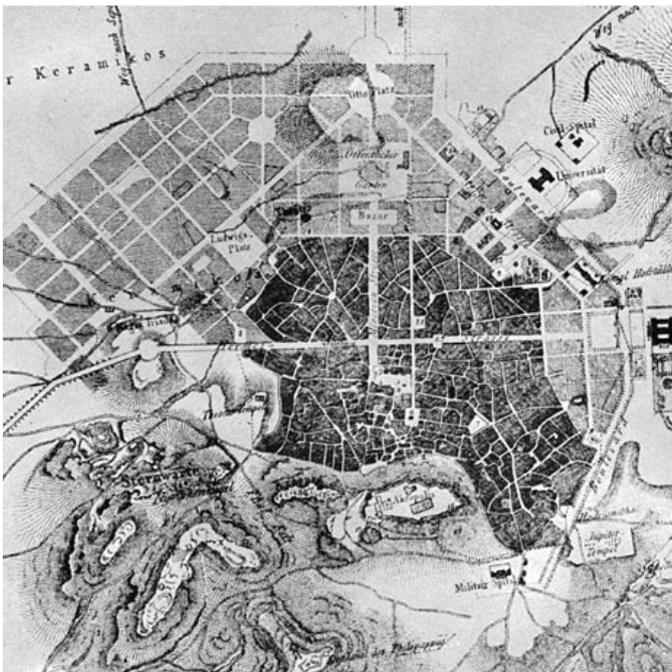


> 2. 1833-1940 – Capital Athens

Athens, like the rest of the country, has been deprived of autonomous development during medieval times. The history of the city has been discontinuous due to the long period that has been spent under the ottoman occupation. This can also explain the fact why Greece has been in many ways close to peripheries in contrast to its southern European neighboring countries that could be defined as core societies (Leontidou, 1990).

Athens in 1830 was actually just a village, because in 1827, during the fight for independence against the ottoman rule, it had been evacuated. In the map we can observe the difference between the state of the territory in the 5th century b.c. and the 1830. The decline not only of Athens but also of the neighboring cities is obvious from their size. However, we can observe that the main position of settlements in the territory is similar with antiquity and therefore also the main street network remained similar through all these years.

In 1832 Greece finally became independent and in 1834 Athens became the capital of Greece. Athens had a population of almost 4,000 people, residing on the North Slope below the Acropolis, but once it became the new capital, the city grew at a regular rate of about 7 percent a year, soon reaching 50,000 inhabitants (<http://www.britan->



> The final city plan after the intervention of Gaertner on 1834
 > Map of Kaupert for the center of Athens in 1870
 source: <http://www.eie.gr/archaeologia/gr>

nica.com/EBchecked/topic/40773/Athens). In this period, there were a lot of changes at the territory mainly due to three reasons: planning, that was implemented for the first time in the city, infrastructural innovation with the introduction of railway and “industrial revolution” starting from 1880.

When the newly imported king of the Greek state Otto arrived, he assigned to German architects to design his palace and the first plans of Athens. The first proposal for the plan was made by Kleanthis and Schaubert in 1833 with a design of an isosceles triangle with corner point the palace and the two axes towards Piraeus and the Stadium. Then Klenze revised the plan in 1834 and finally the plan applied was a different revision of the original by Gaertner which repositioned the palace. (http://www.eie.gr/archaeologia/gr/chapter_more_9.aspx, 2009).

The foundation of the newly formed sovereign state coincided with the start of the railway era. By 1835 plans were being put to the Greek state to construct a railway line from Athens to the nearby port of Piraeus. However, the works for the construction of this train line of 8,8 km was initiated by private companies 22 years later in 1857. The line was activated in 1869 and was supplied with electric power in 1904 (<http://www.sansimera.gr/articles/97>). As the economy of Greece, at the end of the 19th century, was based on agricultural activities and local marketplaces, there was the intention to reinforce the industrial development with the construction of a railway line. For that reason, and also with the vision to make Greece a pivotal point on the



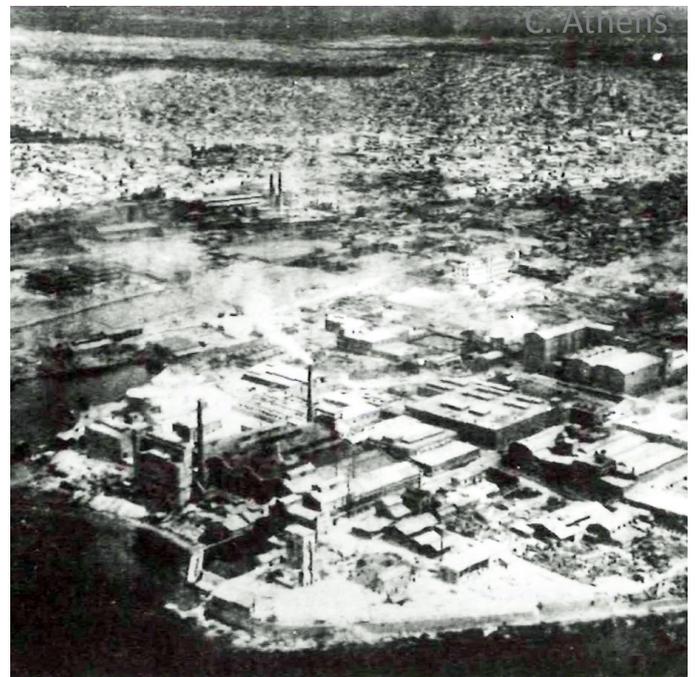
> Photo of Athens in 1873

On the top right we can see the Syntagma, the housing of the period and the comparative small size of the city
source: <http://www.eie.gr/archaeologia/gr>

route from Europe to India, in 1881 the Prime Minister Koumoundouros signed four contracts for the construction of a train line with standard gauge. These contracts were replaced with new in 1882 by the new Prime Minister Trikoupis, whose main goal was to connect Greece and stimulate internal growth. At the same time, there was laid a separate line of 76km connecting Athens with the mining area and the port of Lavrion (situated on the peninsula of Eastern Attica). Finally, after 25 years Athens was connected with Larissa in 1909 and the railroad network was complete with a total of 1.606 km of track. Athens was also connected with Thessaloniki by train in 1918 (http://en.wikipedia.org/wiki/Railways_of_Greece, 2009).

The period is characterized by the development of the first industries in Greece that relate to the introduction of train as a means of goods transportation. The “industrial revolution” in Greece was initialized around 1880 and 1920s. This was the period of the establishment of the first industrial activities that were primarily concentrated near the port of Piraeus and along the Piraeus Street as well as the first train line connecting Athens with the port. In the 1920s the type of industrial activities reported were food, textile, chemical, energy, clothing, paper, wood, leather, turnery and tabbaco industries (Leontidou, 1989). Since World War I Athens had become the hub of all mercantile business, export and import. Along with Piraeus, it is until today the most important manufacturing city in Greece. (<http://www.britannica.com/EBchecked/topic/40773/Athens>)

By 1907 the municipality had a population of 167,479 and the city was growing to the north in contrast to the logical southward axis that the plan projected. In 1921, there was an exchange of ethnic minorities between Greece and Turkey which resulted in



> Immigrants after 1922 occupying the theater as a settlement
 > Industrial development in Drapetsona in 1930s.
 source: Leontidou (1989)

the influx of 1,500,000 Greeks from Asia Minor. This event interrupted the orderly progress of the city and initiated the process of haphazard development. (<http://www.britannica.com/EBchecked/topic/40773/Athens>). The difficult conditions and the urgent needs for housing generated the routes of social segregation but also of spatial fragmentation in the city of Athens. With a lot of pressure from the new arriving population, the higher classes developed two strategies of new housing. The first was building block of flats, which was the beginning of Greek “polykatoikia” and at that time was thought as a symbol of higher class, but later in the post-war period was generalized in all the societal classes. The second was fleeing away from the overcrowded center of the city and seeking for residential areas with better quality and therefore a variant of the “garden city” emerged. Pioneer communities of this sort of private development are Psychico, Ecaly and Kifissia situated mostly towards the north and the east of Athens, where it was greener and with safer soil quality. On the other hand the refugee settlement was developed informally but also formally by the Refugee Settlement Commission (RSC) established in 1923 by the Greek government. The settlements for refugees were planned as satellite communities at least 4 km distance from the center segregating them from city life. However RSC failed as urban planners, since already by 1925 the situation had escaped their control. Despite government efforts to resettle them elsewhere, many swarmed into shantytowns around the fringes of Athens and Piraeus, and the area’s population soared from 473,000 to 718,000. The first four refugee settlements: N. Ionia, Kaissariani, Byron and Kokkinia grew to be predominant industrial communities (Leontidou, 1989). From 1936 until the start of the Second World War Greece is under the dictatorship of Ioannis Metaxas.



> 1833

data source: map of Doxiadis





> 1833-1861

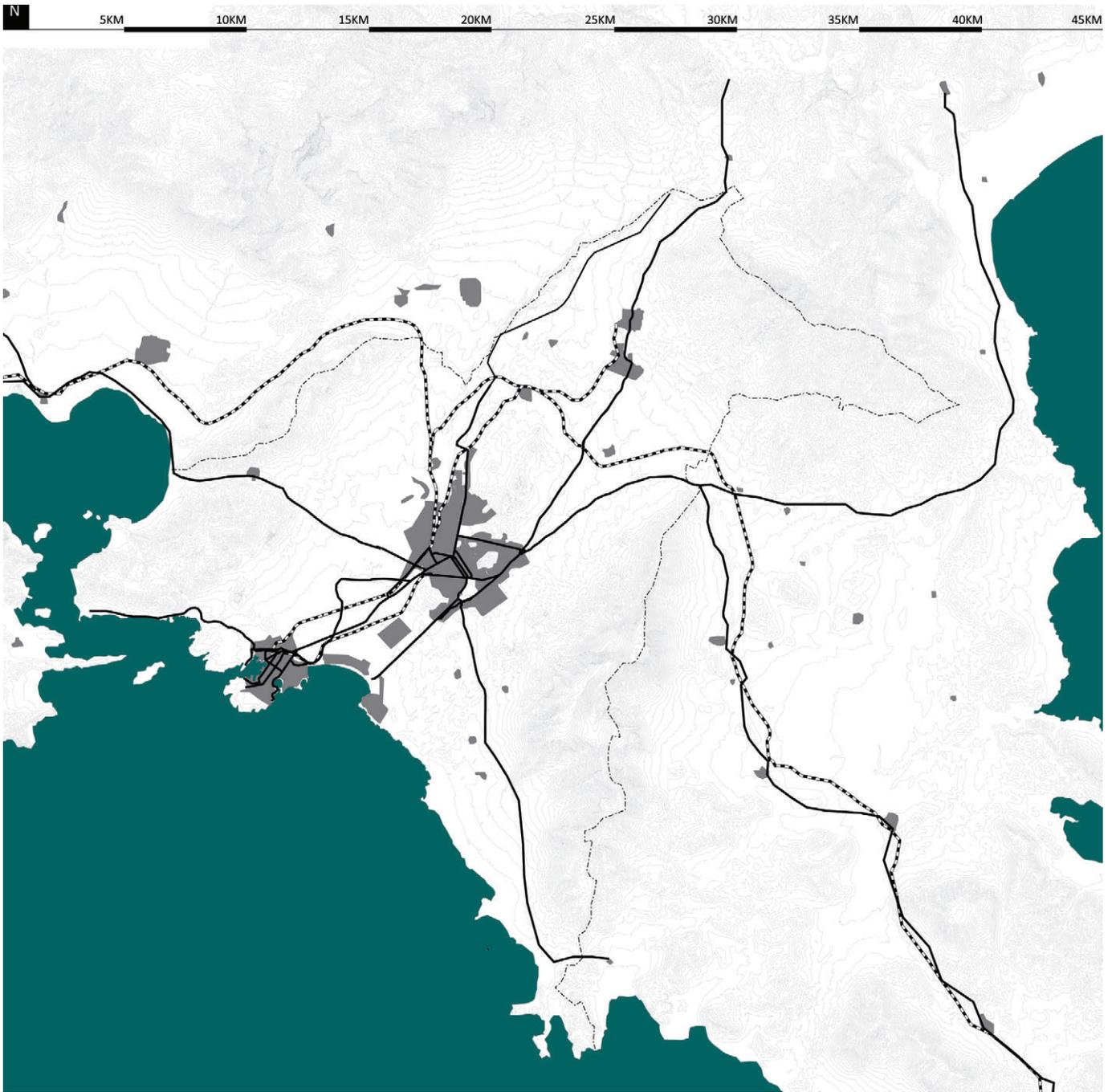
data source:
maps of Doxiadis and of Leontidou (1989)





> 1861-1880

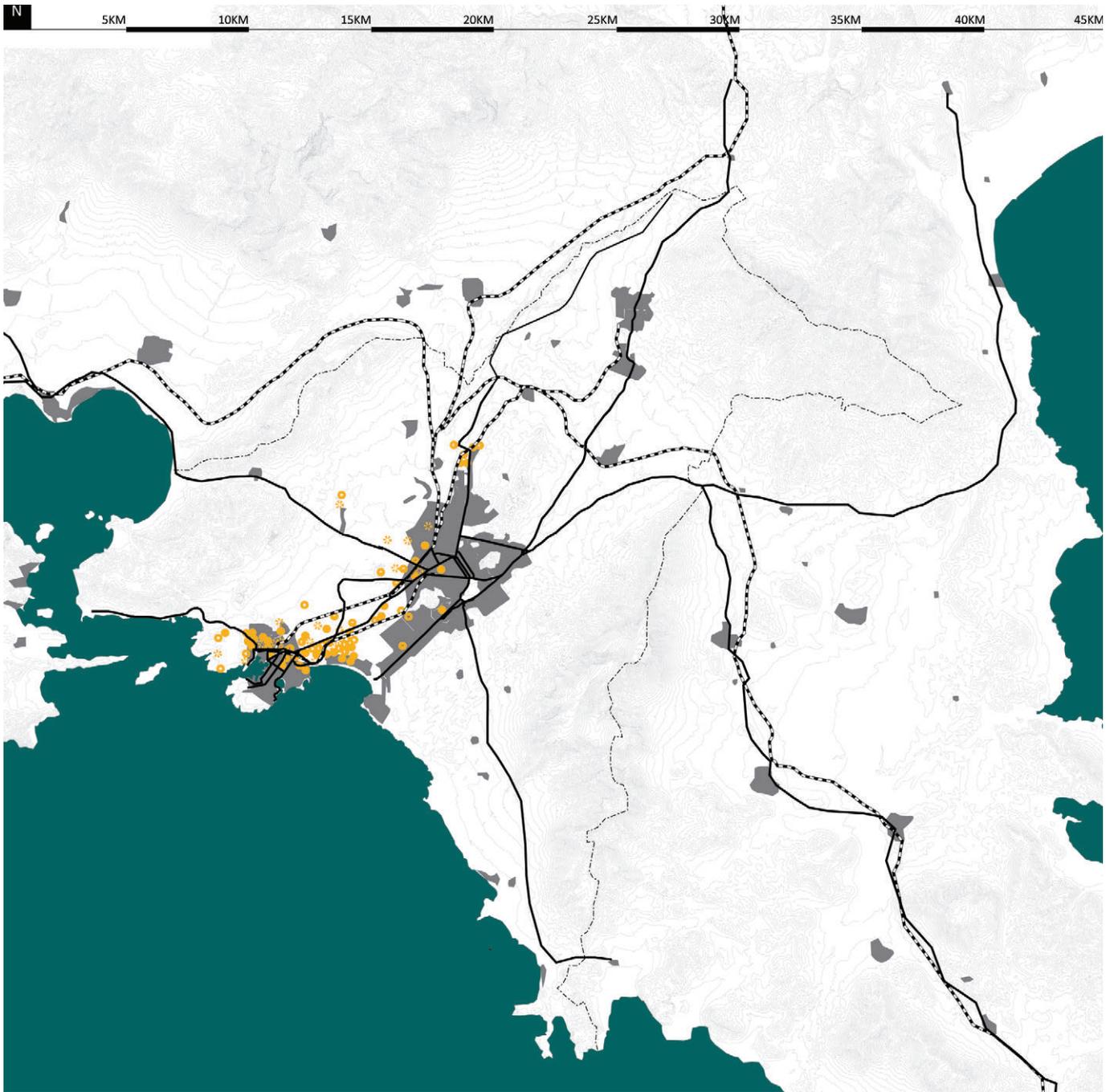
data source:
maps of Kaupert (1870), Doxiadis, Leontidou (1989)



> 1881-1900

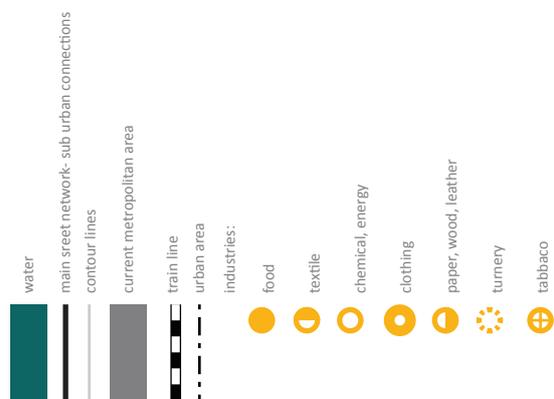
data source:
 maps of Doxiadis, Leontidou (1989), map of Greece with railroad from The
 Matthews-Northrup works, Buffalo, NY, (1903) and map of "the big projects
 of the 19th century in Greece", G Prevelakis.

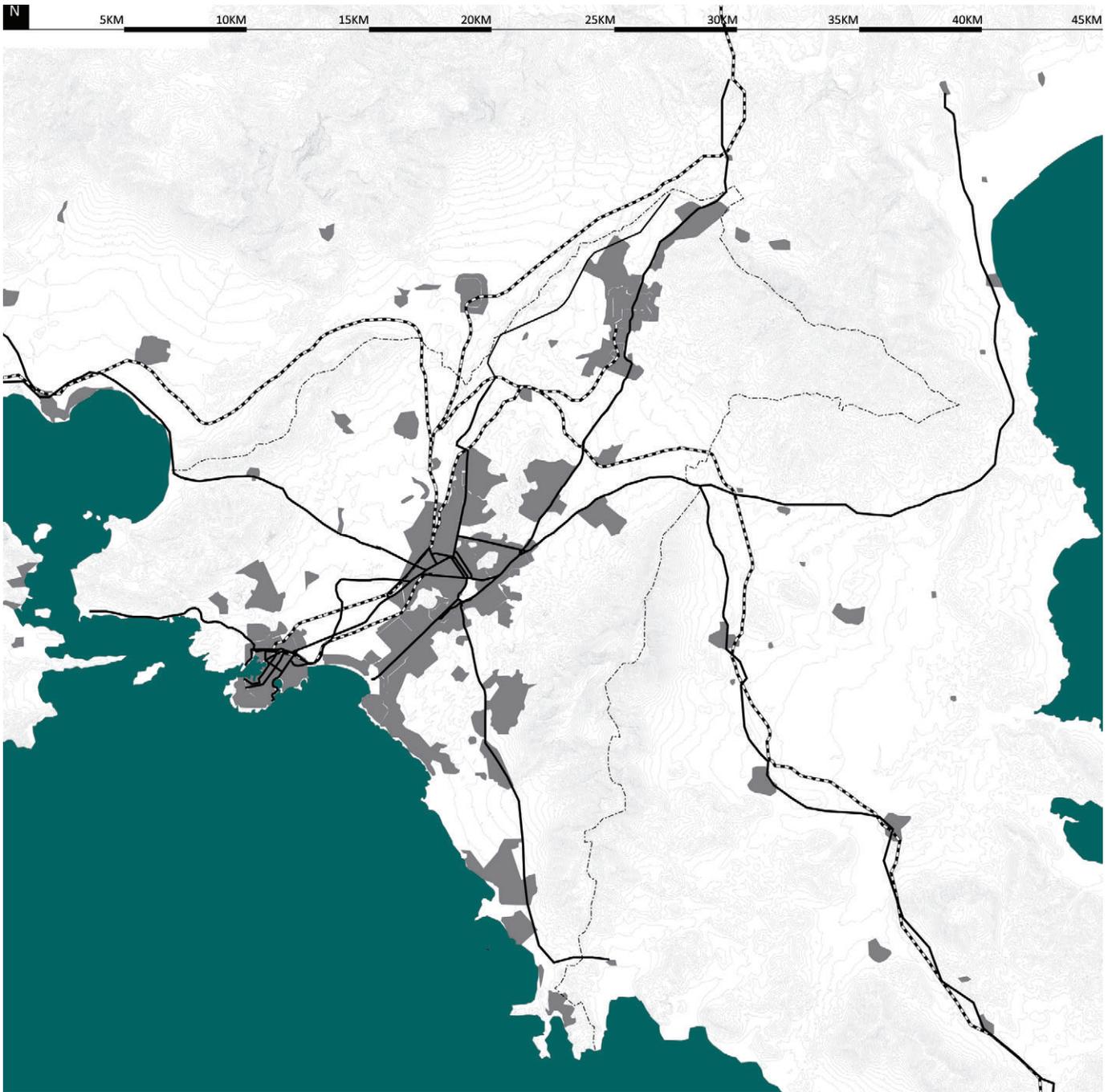




> 1901-1920

data source:
maps of Leontidou (1989) and map of "the big projects of the 19th century in Greece", G Prevelakis.





> 1921-1931

data source:
maps of Leontidou (1989)





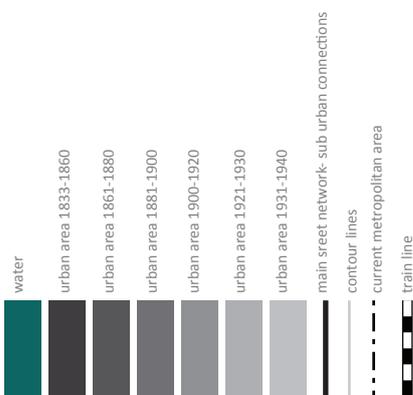
> 1931-1940

data source:
maps of Doxiadis, Leontidou (1989)



> 1833-1940

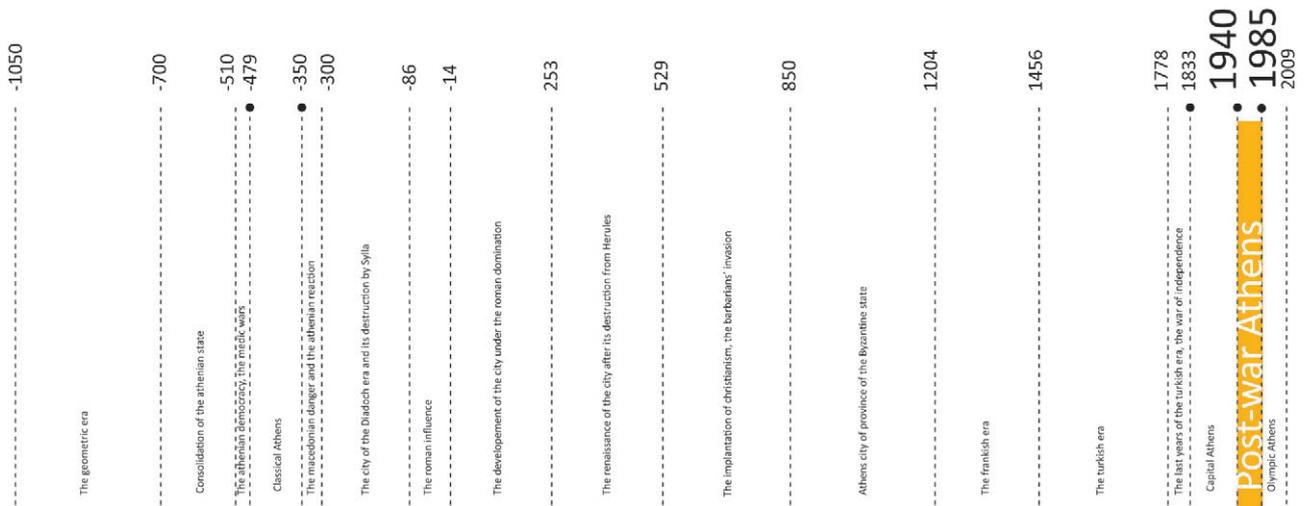
data source:
maps of Leontidou (1989)





> The Omonoia square in 1940 | source: <http://jimmy278.blogspot.com>

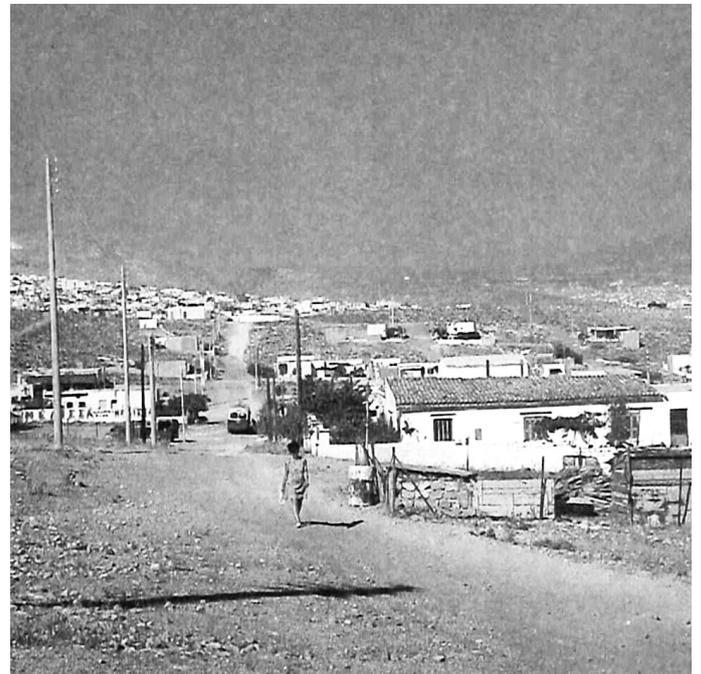
> Photo of Athens in 1944 | source: <http://www.wikipedia.com>



> 3. 1941-1985 – Post-war Athens

During the World War II Athens was under the German occupation. At that time many people died from starvation and the city started to fall apart due to lack of maintenance. After the occupation the civil war began (<http://www.britannica.com/EBchecked/topic/40773/Athens>). In this period Greece passed from peripheral to semi-peripheral status in the world economy. However, it developed in a way that it is closer to the rest of the Mediterranean societies and with certain important differences from Northern Europe (Leontidou, The Mediteranean city in transition, social change and urban development, 1990).

The period of 1950 – 1965 is characterized by intense immigration to the cities and especially towards the capital, which results in increase of low-cost housing needs. During the years 1966 - 1973 in the capital large scale commercial development of housing was reinforced and the popular self-housing was being destroyed by introducing the control of illegal developments. The period 1974-1982 was the first period after the dictatorship and the period of establishment of democracy in Greece (Romanos, 2004). In 1978-79 the new framework for Athens Master Plan: "Capital 2000" was constructed, a program of regeneration of immigrants' settlements and of creation of pedestrian areas. In this period there was stagnancy of population (www.Wikipedia.gr). The main characteristics of post-war Athens are the urban expansion through unauthorized development and the model of "antiparochi", the construction

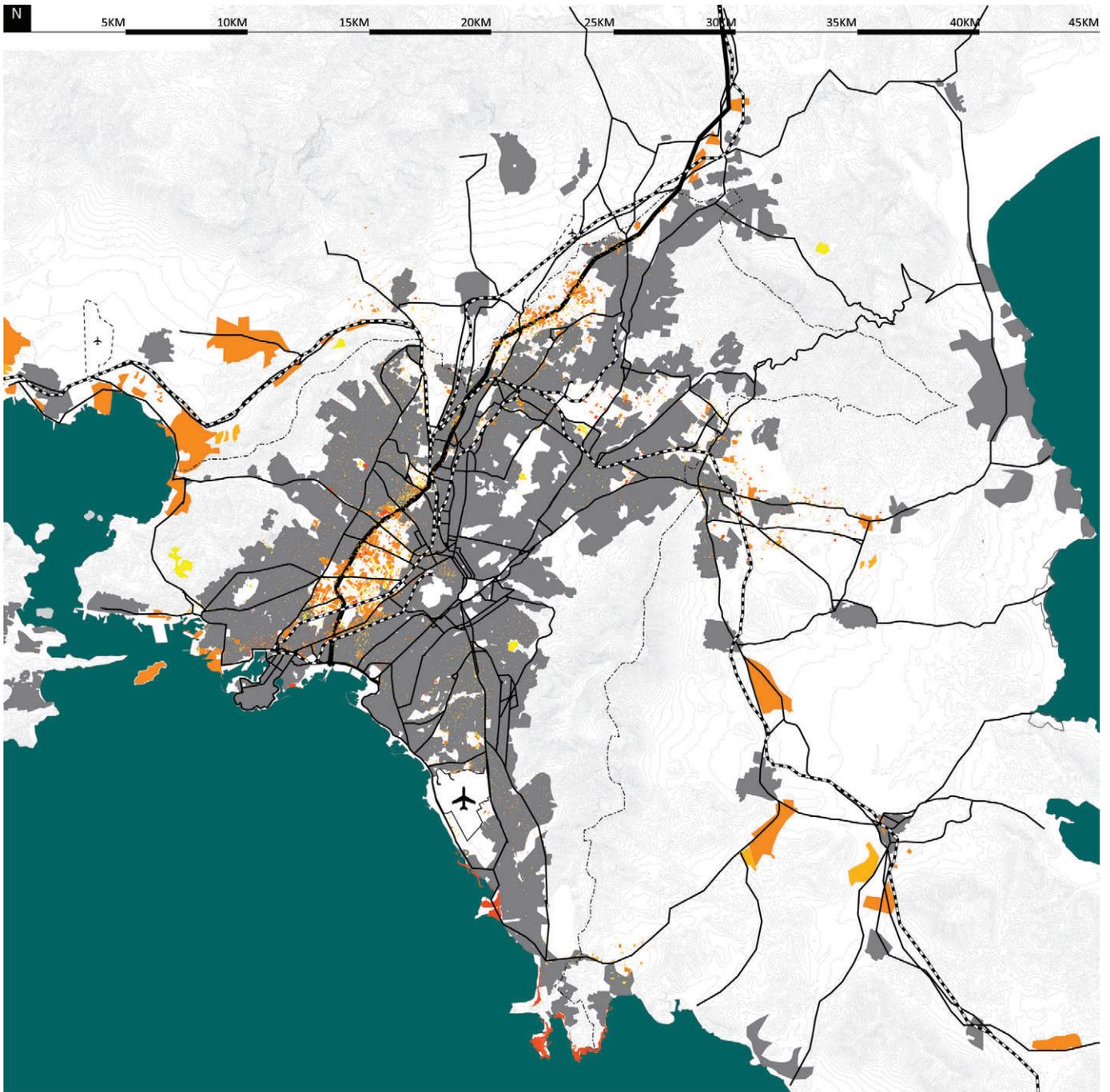


- > The vertical development of the city through the model of “antiparochi”
 - > The horizontal expansion: residential development in western Athens in 1969
- source: Πρεβελάκης(2001) and Ρομανός (2004)

of major highways and the second phase of industrial development.

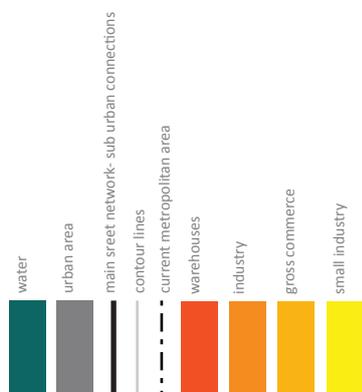
In the 1950s a construction boom began. The west part of the historic olive grove (Eleonas) as well as the hillside greenery disappeared under the unauthorized development. The intense construction resulted in the disappearance of any kind of open space and there was no provision for parks, playgrounds or even schools. In 1958-1962 due to the unauthorized development the expansion of the town plan was decided. Town plan was the only tool as strategic planning did not exist yet in Greece. Then in 1964 the city counted 75 square miles according to the city plan plus 17 more square miles of a built-up area outside the plan. Land values in the centre octupled and augmented proportionately in the rest of the territory. The city continued to sprawl beyond the planned area. (<http://www.britannica.com/EBchecked/topic/40773/Athens>). The expansion of the urban area is obvious if we compare the map of 1940 with the one of 1970.

During the construction boom, the lack of governmental provision had as a result the mobilization of the private sector and the construction of illegal developments and the replacement of the existing two-floor houses with blocks of flats (Romanos, 2004). This new block of flats named poly-katoikia, which means multi-housing, was initially in the previous period housing for the upper class society but with the model of “antiparochi” became common for all the classes of society. The system of “antiparochi” is a kind of contract between the owner and the developer and this agreement is to be understood as a land-capital relation. “Antiparochi” is like a small scale stra-



> 1940-1970

data source: map of Doxiadis and MAM 85

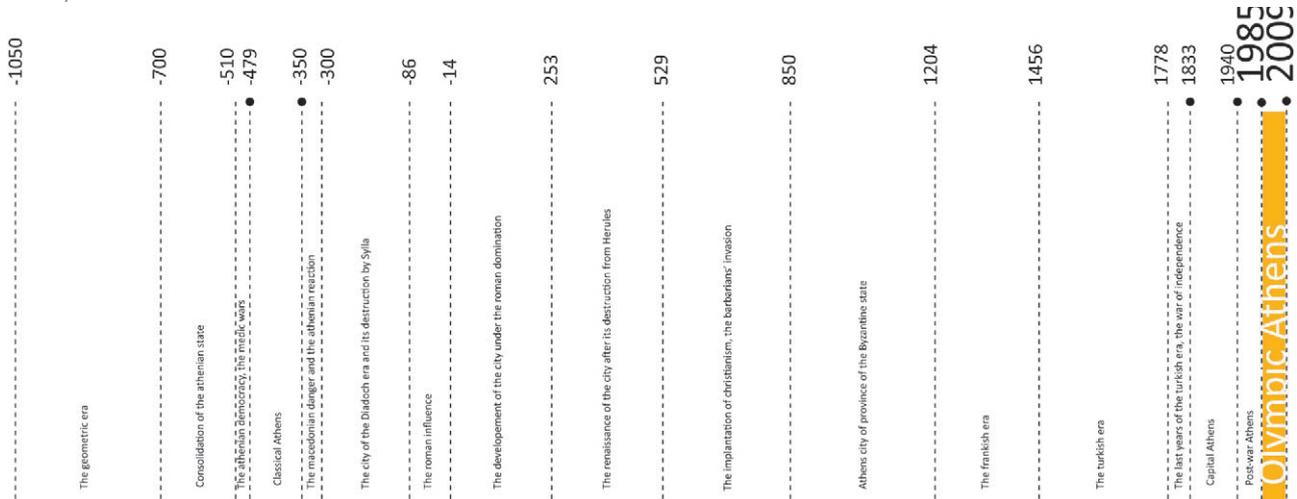


tegy dealing with the process of attrition of dross. Actually the model of “antiparochi” involves three actors the owner, the developer and the buyer. It functions like this: the owner of the single family houses needs a renovation of his property after the war and probably needs more space to house the family as his descendants share the same house due to economical conditions. Then there is the developer, whose role is to arrange the building of the block of flats in the plot. He makes a deal with the owner, instead of buying the plot to develop it, he can provide to him a percentage of the final housing units. Then, the third party of “antiparochi” enters which is the buyer. The buyer normally has the economical condition to buy an apartment but not a single family house and can afford to give a deposit so that the developer can initialize the new construction (Πρεβελάκης, 2001). “The emergence of the “antiparochi” system was due to a series of fortuitous post-war conditions, such as the spatial and social characteristics of the property. These factors subsequently shaped an environment which favored the generalization of the system throughout Greece and permitted its final triumph in the urban housing market for three decades after the War and even today has not been ceased to be widely applied” (Papamichos, 2001).

The expanded urban area in combination with the car based lifestyle and the consequent traffic increased the infrastructural needs of the capital. There was an important change in the infrastructural structure of the city. A network of major highways was thrown up. Furthermore, the works of the train line continued in this period and finally Athens was connected with Kifissia in 1957. In 1976 the train lines became public(<http://www.sansimera.gr/articles/97>). In 1962 the first part of the national highway from Athens to Lamia was inaugurated. This highway started from Piraeus and was named Kifissos Avenue because it was running parallel to the river of Kifissos. This street was planned by the masterplan of the 60s by Doxiadis as the main spine of development of the city. This highway was of major importance for the street network as it connects the city not only to the rest of the country in the North but also gradually to the rest of the European street network. This resulted in it being an attractor of industrial activities in diverse points along its axis. After 1960s a lot of industries were funded in Athens also because of the establishment of the law N. 2687/53, which brought the legal framework that facilitated the industrial development. (Romanos, 2004). Along with Piraeus, Athens was the most important manufacturing city in Greece, with almost half of the jobs in industry and handicrafts and the higher earnings nationally. The types of industrial activities included cloth and cotton mills, distilleries, breweries, potteries, flour mills, soap factories, tanneries, chemical works, and carpet factories. It exported olive oil, tomato products, wine, cement, bauxite, and textile manufactures. (<http://www.britannica.com/EBchecked/topic/40773/Athens>).



> The faliron bay and the Delta of Kifissos as it is now under the Kifissos avenue source: <http://picasaweb.google.com/>



> 4. 1985-2009 – Olympic Athens

The period from 1983 until 1996 is characterized by an attempt to stabilize Athens. The most important fact is the implementation of the Athens Master Plan which was adopted in 1985 and was the main planning instrument to guide the spatial development of the urban region. This Master Plan has proven to be ineffective to address the main problems of the city such as curtailment of urban sprawl, the environmental protection and the service and infrastructure provision. (Dr. Dimitris Polychronopoulos).

The next period, 1997 – 2004, is the preparation period for the Olympic Games with the New Athens Master Plan of 1997. In Athens while undertaking the organization of the Olympic Games, there was an establishment of the law 2598/24-3-1998, that arranged the creation of new fundamental organisms: the National committee for the Olympic games 2004 and the Organizational committee for the Olympic games 2004 "Athens 2004 S.A.", which was a legal body with a status of a private company that could function with the laws of the market. The main objective of "Athens 2004 S.A." was to organize the "Olympic Games 2004" and undertake all the necessary infrastructural projects. The company was assigned extraordinary power for implementation and had the possibility to accumulate resources functioning out of normal legal procedures and controls and it could be said that concerning certain aspects the company functioned as a provisory metropolitan government (Dellatsima, 2008).

The requirements for the organization of the Games assigned not only the location and design of major sport complex facilities, essential for the realization of the Games but also infrastructure projects that did not serve only for the Games but attempted to: a). cover the infrastructural needs of the city, b). solve chronic problems of the city and c). constitute strategic interventions related to urban planning and urban development. In this category we could mention the International Airport, the Metro, the Tram and the Attiki odos (Romanos, 2004). The Olympic program was not structured around a main 'Game site', unlike most of the other Olympic cities, but evolved around the development of three main activity nodes located along an axis which was designated as the Olympic Ring Road. However, it has been suggested that the dispersed sitting of these facilities and of the accompanying large-scale development of activity centers in the Athens metropolitan region is expected to negatively influence the locational patterning of Athens by further promoting its current sprawling pattern (Dr. Dimitris Polychronopoulos).

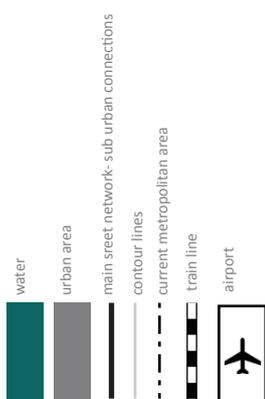
In 2001 the new international airport of Athens "Eleutherios Venizelos", located in the Spata area, started functioning replacing the previous airport of Elliniko. Since the 70s there was discussion for its relocation as the growth of the city had reached the area of the old airport and a bigger one was needed to cover the transportation needs of the capital. In 1976 it was decided that the airport should be transferred at Spata but its construction was postponed. Additionally the hierarchy of the street network was completely redefined after the application of the Olympic strategy. The construction of the highway Attici Odos was finished with the Olympic Games and connected the city with its new international airport. Attici Odos is a freeway running through Attica territory from Eleusina until Spata. The role of the Attici odos is of primary importance, as this new road axis connects the two seas that wash Attica: the gulf of Evoikos in the east and the gulf of Saronicos in the south and west. In this sense Attici odos creates a new transversal axis from East to West, which is vertical to the South-North axis of Kifissou that used to be the backbone of the city until now.

In 2009 the new framework for Athens Master Plan was created. Currently there are two processes of transformation in the region. The first one relates to the attrition of dross and the abandonment of post-industrial sites and the second to the process of accumulation of new territory mainly referred to as sprawl. The process of deindustrialization has been initiated in the Greek capital and this is proved by the fact that in order to discourage new factories from further adding to the problem and to stimulate the economic growth of other regions, an industrial wage tax has been imposed in the Athens area, and tax incentives have been offered to factories to set up in other areas (<http://www.britannica.com/EBchecked/topic/40773/Athens>). Fire is the main mechanism used for the current expansion of the city. This «technique» is also applied for the development along Attici odos. This pattern of development is common in the Mediterranean territory and because until now there was no law protecting the burnt forest areas; hence, a forest area once burnt could change use and eventually be built. The tension on the territory along the new infrastructural axis is proved by the transformation of the areas around it from 1987 until 2007 and also by comparing the fires put in the territory during the same period.



> 1985

data source:
MAM 85,

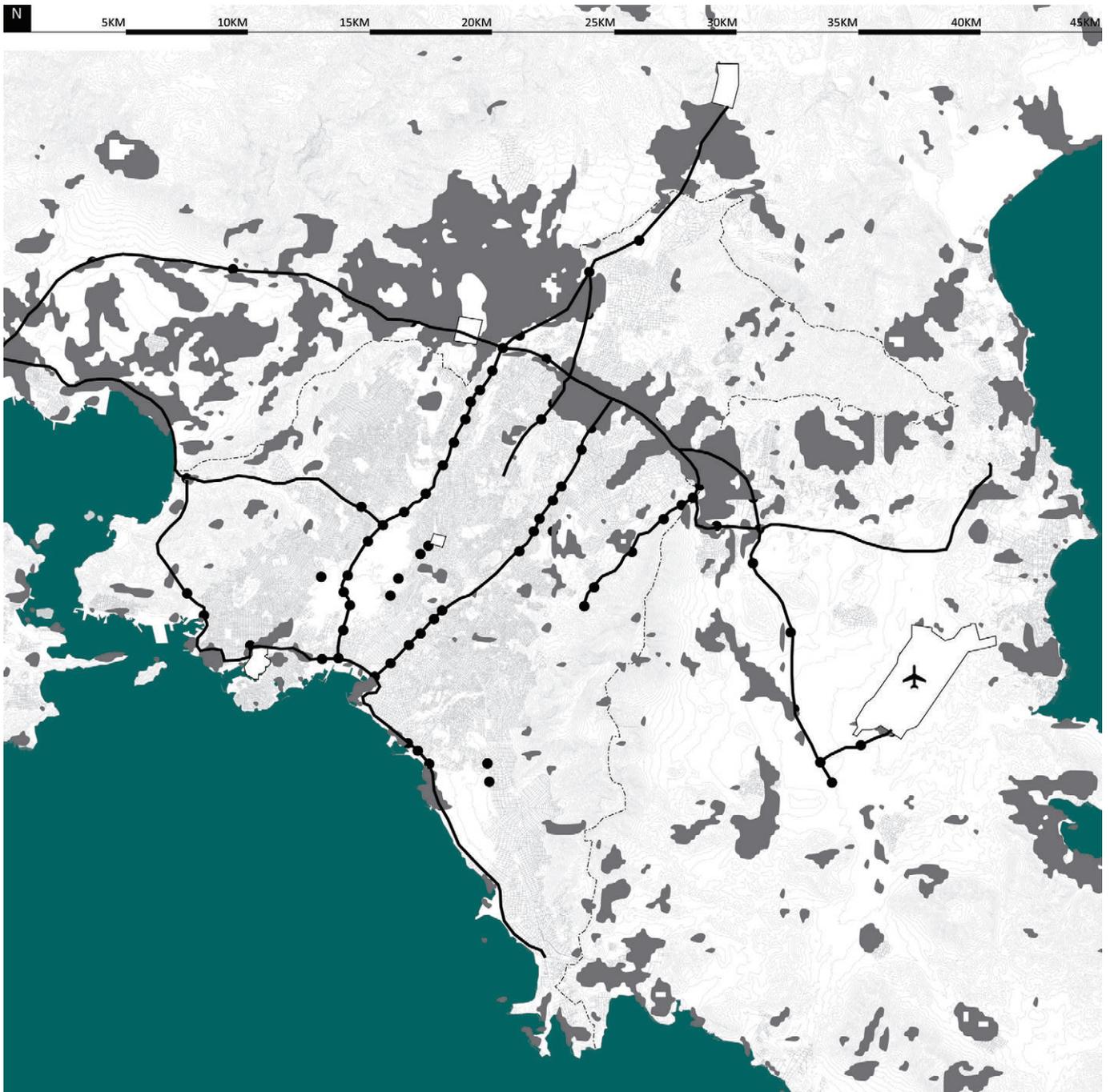




> 2000 , olympic strategy

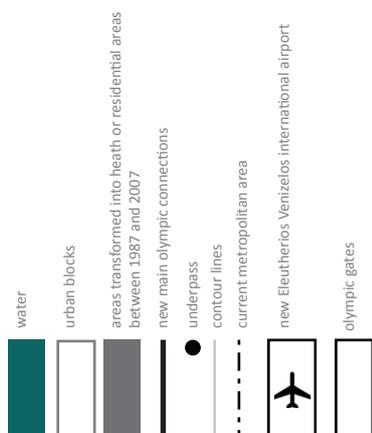
data source:
 map 7.1 "Main street network 2004" from the research programm:
 "Strategic plan of Spatiakl development for Athens, Attica" First fase, ministry
 of Environment, Spatial Planning and Public works and
 Metsobeio University of Athens Oct. 2000, Denco EPE

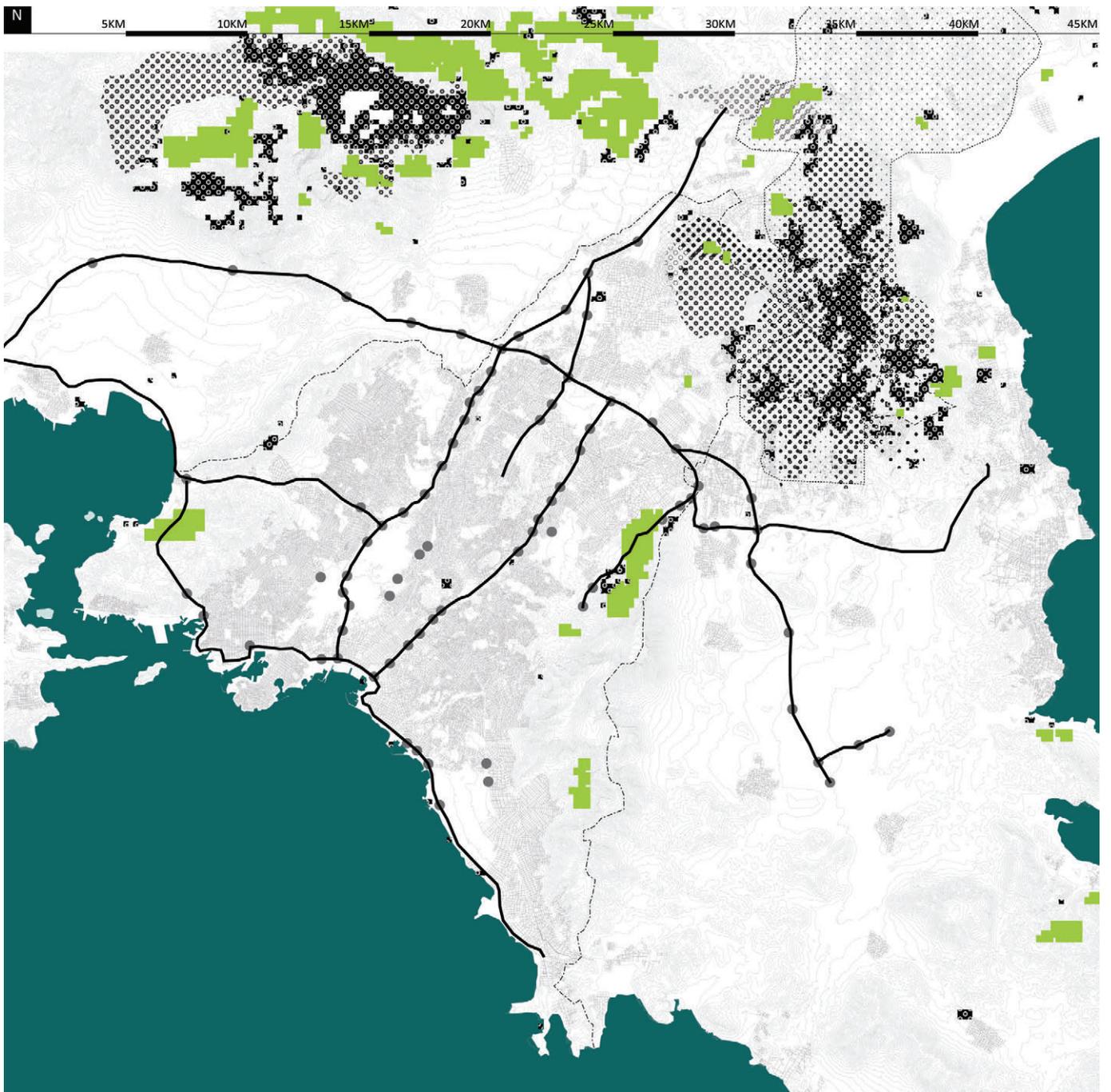




> Urban growth from 1987 until 2007
 in relation to the new street network created with the olympic strategy

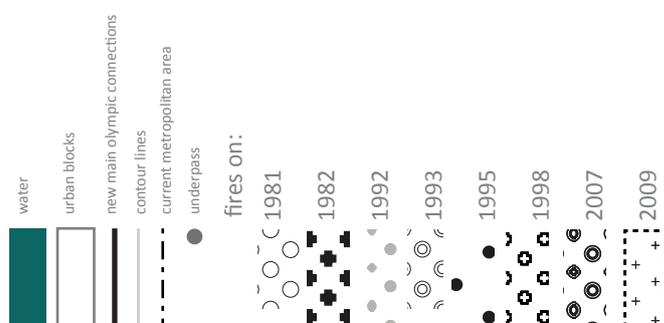
data source:
 map from the programm: "the future of the forest" from WWF and AUTH
 and map 7.1 "Main street network 2004" from the research programm:
 "Strategic plan of Spatiakl development for Athens, Attica" First fase, ministry
 of Environment, Spatial Planning and Public works and Metsobeio University
 of Athens Oct. 2000, Denco EPE





> Fires and lost forest from 1987 until 2007
in relation to the new street network created with the Olympic strategy

data source:
map from the program: "the future of the forest" from WWF and AUTH
and map 7.1 "Main street network 2004" from the research program:
"Strategic plan of Spatial development for Athens, Attica" First fase, ministry
of Environment, Spatial Planning and Public works and Metsobeio University
of Athens Oct. 2000, Denco EPE

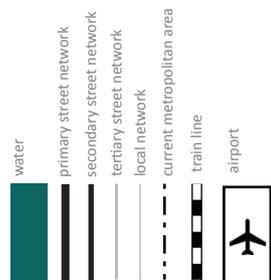


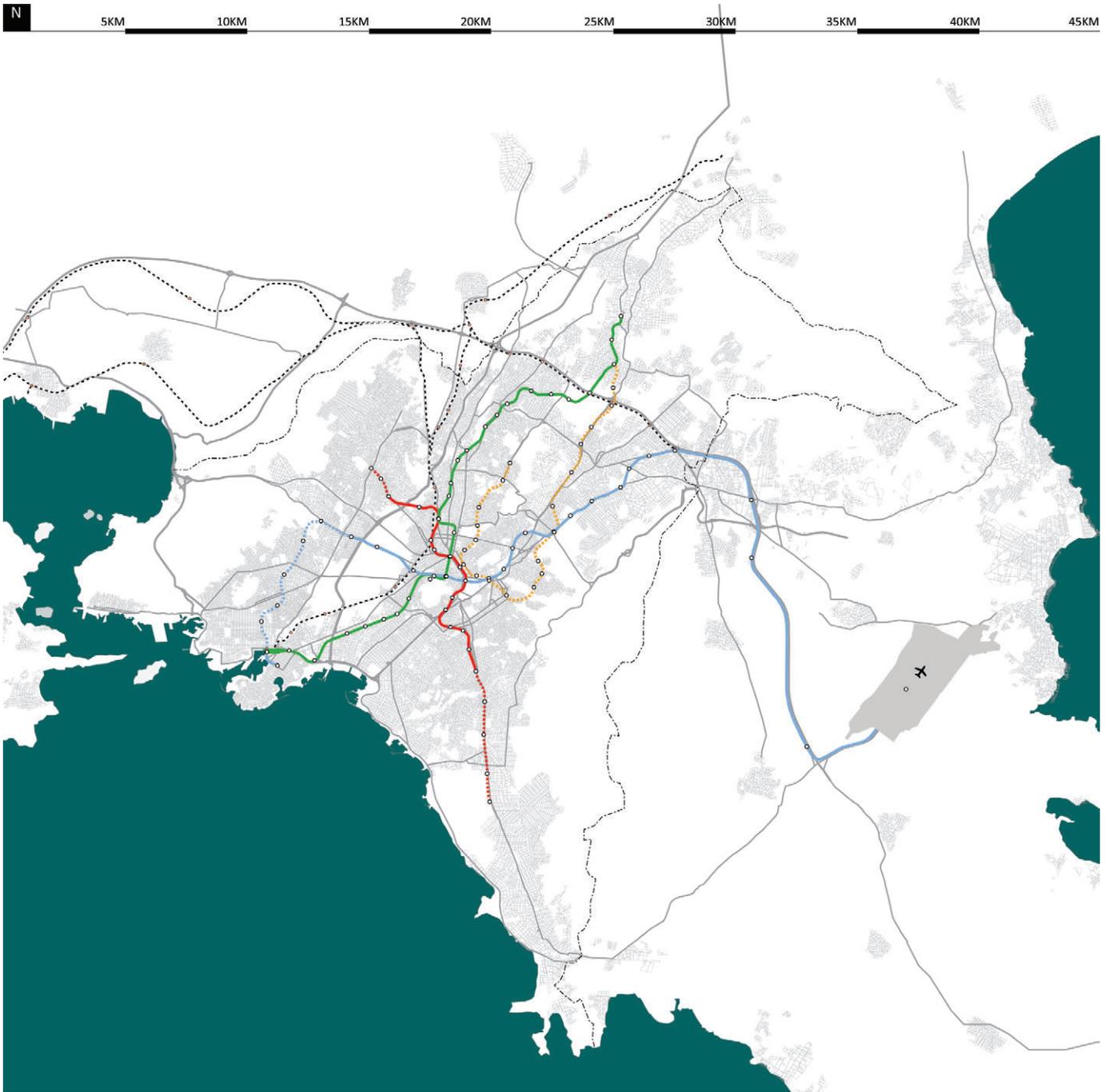
lost forest from 1987 until 2007
preserved forest from 1987 until 2007



> The current street network

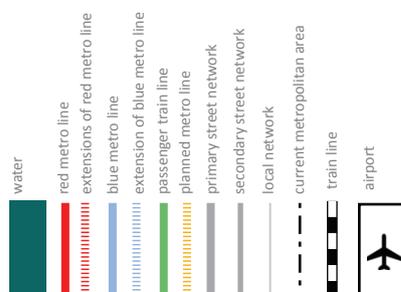
data source:
map of Attiko metro S.A., and MAM '85





> The existing and the under construction metro system

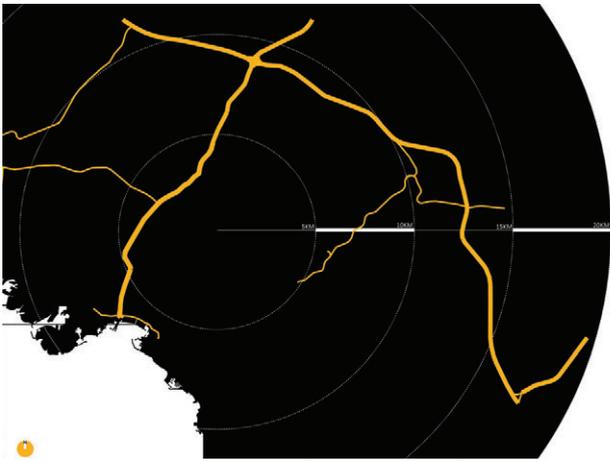
data source:
map of Attiko metro S.A., and MAM '85



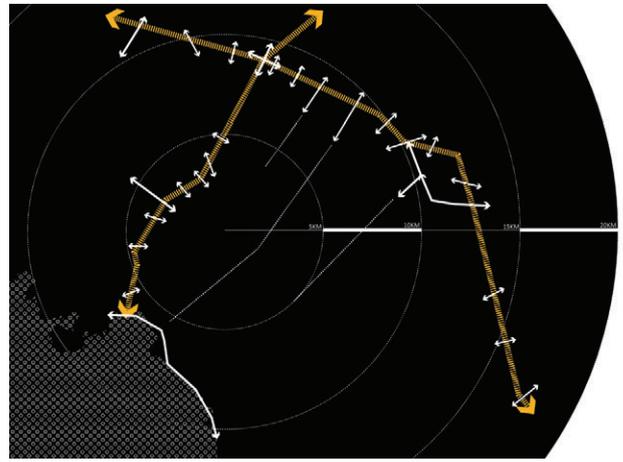


D. Dross formation in Athens*

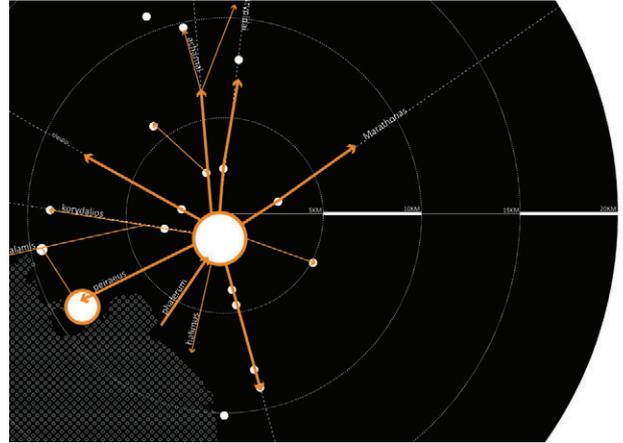




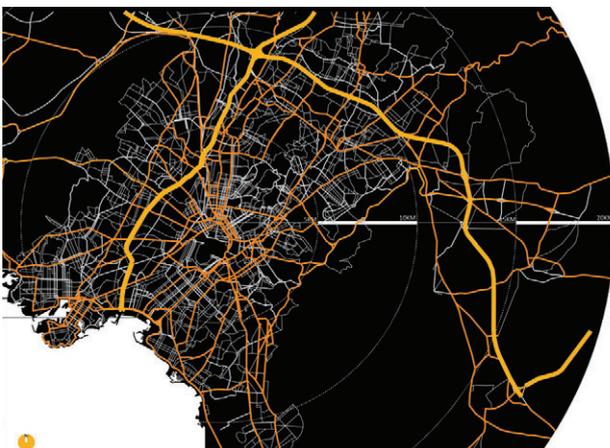
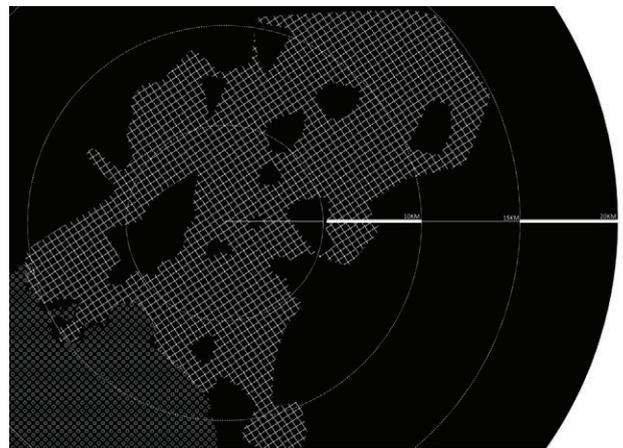
1 metropolitan scale - main metropolitan connections | Kifissou and Attici odos



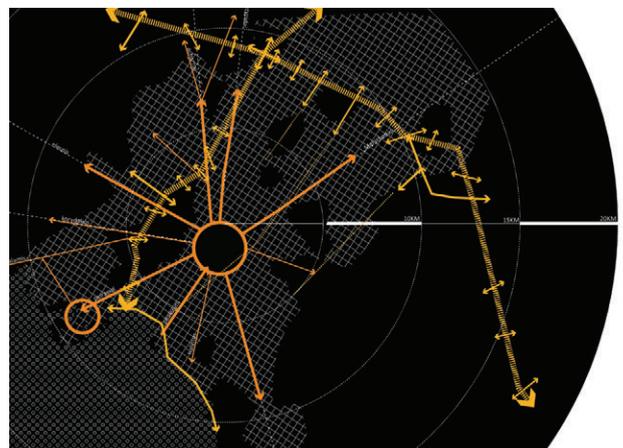
2 city scale - main urban connections corresponding to the main suburban connections of antiquity



3 neighbourhood scale - the rest of the street network



4 the hierarchy of the street network



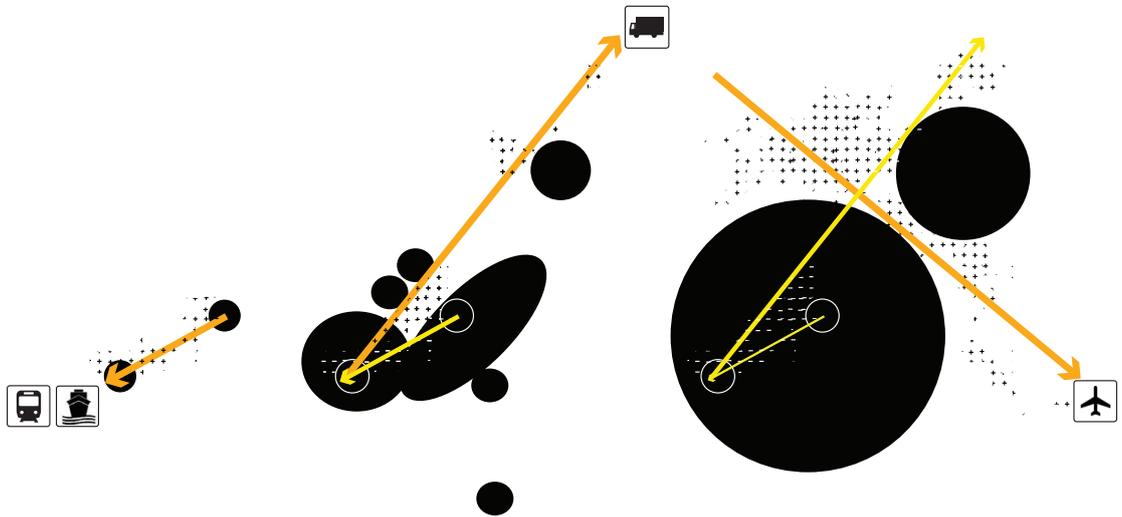
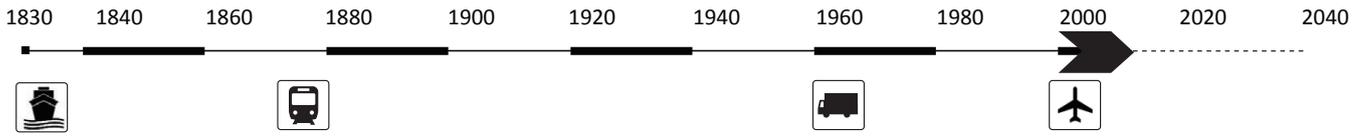
* 1. The formation of dross in Athens

> a. Hypothesis 1: Dross relates to territorial conditions

The first hypothesis of the analysis was that dross relates to territorial conditions. This means that specific characteristics of the territory relative to water, soil quality and hypsometric differences create different conditions that influence the growth of the city and therefore the formation of drosscapes. Through the analysis of the territory of Attica this hypothesis was confirmed, because we can observe that some areas due to these conditions were left out from the urbanization process and therefore became the residual, the leftover of the city. This residual, due to different reasons that link to “connectivity issues” was later undertaken by other uses creating the dross of Athens. These conditions in the case of Athens have to do with the existence of water and the quality of the fluvial soil. Examples of these areas are firstly the area along Piraeus Street and secondly the area of Eleonas. The main problem was the risk of flooding of these spaces that constituted them unsafe and therefore abandoned from the formal processes of urbanization. These leftovers spaces were later claimed by industrial activities or poor residential areas of immigrants.

> b. Hypothesis 2: Dross relates to infrastructure

The second hypothesis of the analysis was that dross relates to infrastructure. In other words the dynamics of the main infrastructural elements create some connectivity conditions that attract specific activities, like industries and services mainly related to the economical production of the era. The verification of this hypothesis was the key to understand the process of the formation of dross. The abandonment of the areas from the urbanization process is also explained by the dual character of infrastructural elements of high level connectivity. I mean that even though train lines and highways constitute links of the city with the rest of the world yet they also construct barriers in the neighborhood level. So, the dual character of these elements is the high connectivity in the national scale but low accessibility in the neighborhood scale.



 dross of accumulation
 dross of attrition



The process of formation of dross

in Athens and the cycle of attrition and accumulation represented in the historical development of the city

1. current dross



2. short term future dross



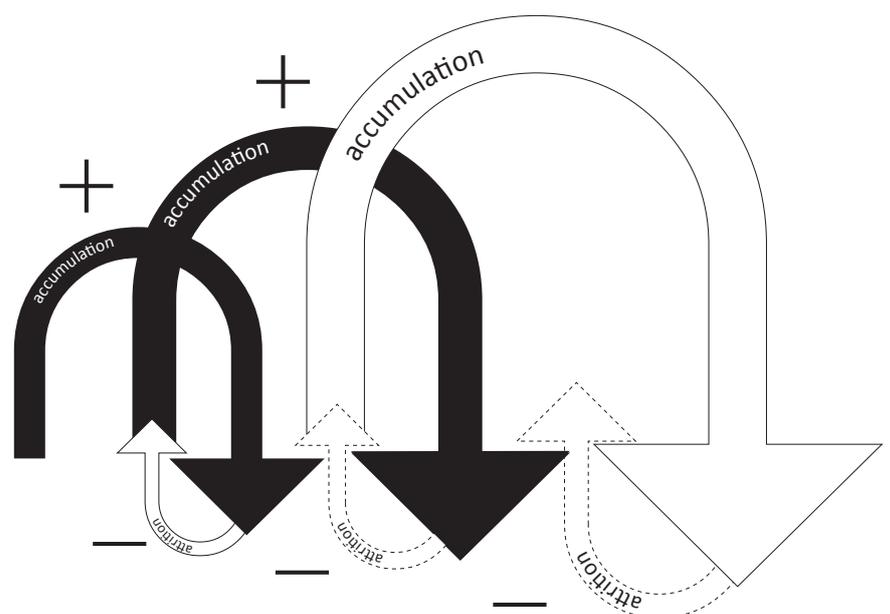
3. long term future dross

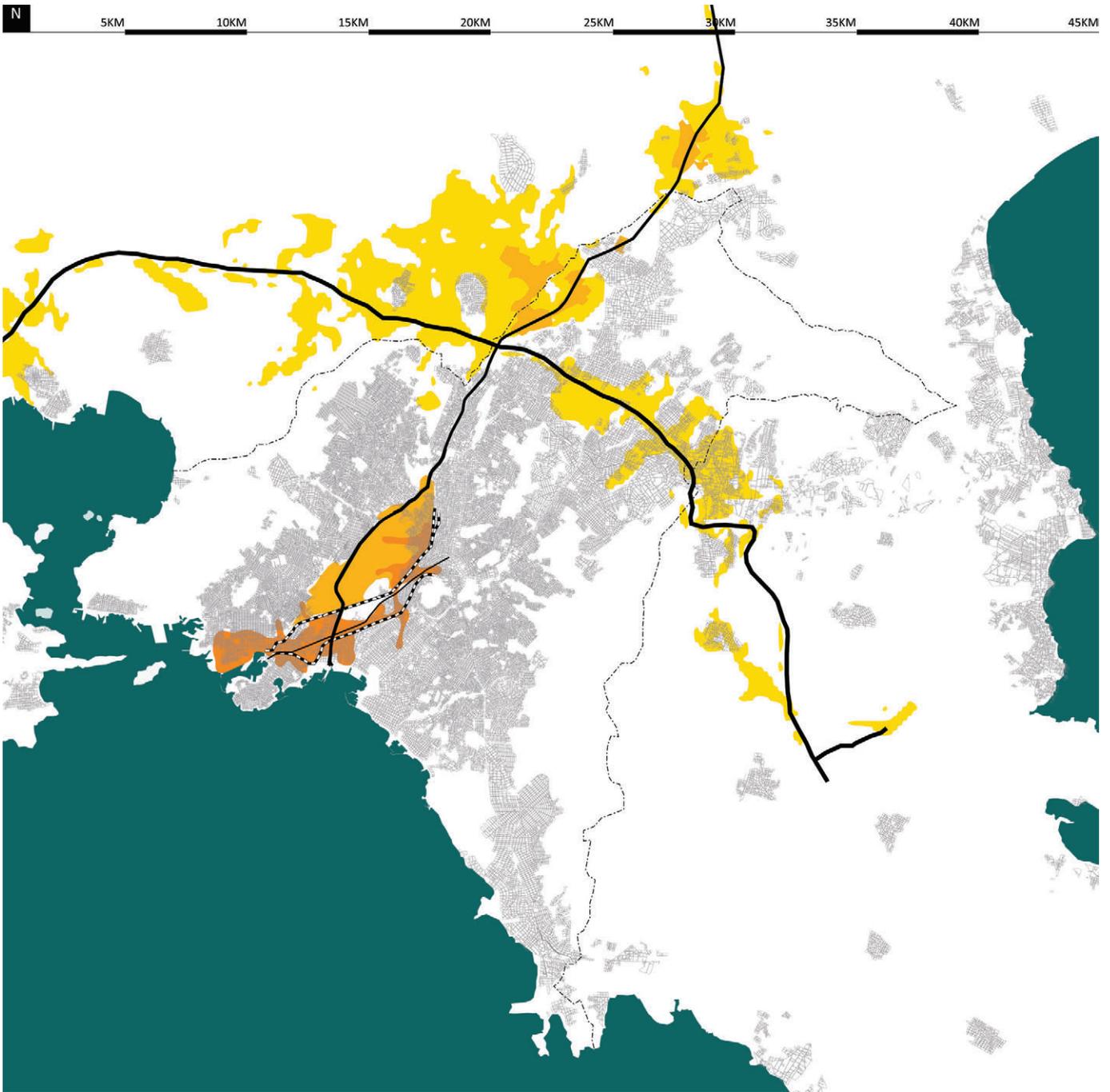


* 2. Typologies of dross

In the first chapter where the theoretical concept of dross is explained, it was mentioned that dross is formed mainly by two processes. The first process is the one of accumulation, which is the process of the city taking over more territory and relates to the sprawl in the contemporary urban conditions. The second process of formation of dross is the one of attrition, by which some areas of the city are being freed up, abandoned and wasted and nowadays these areas are mainly the post-industrial sites. In the case of Athens the first process of accumulation, relative to the city expansion or sprawl, should be searched mainly in the north east part of the Attica basin and more specifically along the highway of Attici odos that connects the city with the airport and since its construction attracts a lot of new development. The second process of attrition, or deindustrialization forms drosscape in the case of Athens mainly in the area in between the centres of the city of Athens and Piraeus and along the Kiffisios avenue where the main industrial areas of the city were located but now these areas are undergoing transformations. However, by studying the process of dross formation as a historical process and by trying to identify the dross of each era we can realize that these two processes that take place simultaneously can actually work in a circular processes. Meaning that what is the dross created through accumulation in one period of time is probable to be the dross of attrition of the future. This cycle of development and decay could be defined as the model of the formation of dross. Based on this model and on the findings from the historical analysis of the city I created three categories of drosscapes of the Attica territory: the dross of today, the dross of tomorrow and the dross of the day after.

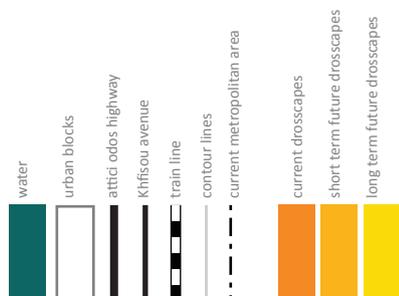
The fieldtrips took place during September and investigated mainly the three areas that constitute the current dross, the short-term dross and the long-term dross. The main areas that the study focused on were the Piraeus Street from the first categories of dross. Then the Eleonas area was visited, which used to be an old olive grove and from the 60's was illegally transformed into industrial area. This area belongs to the second category of dross, identified as short-term future dross. Then the area along Attici odos, which corresponds to the long-term future drosscape of the Attica territory, was visited by car, metro, train and bus from the city towards the east and the airport. However the main problem is that a long part of this route both the metro and the highway run in a lower level from the rest of the territory disconnected from the environment. In the parts that the environment is visible and especially at the exits of the highway the change in the territory is obvious.

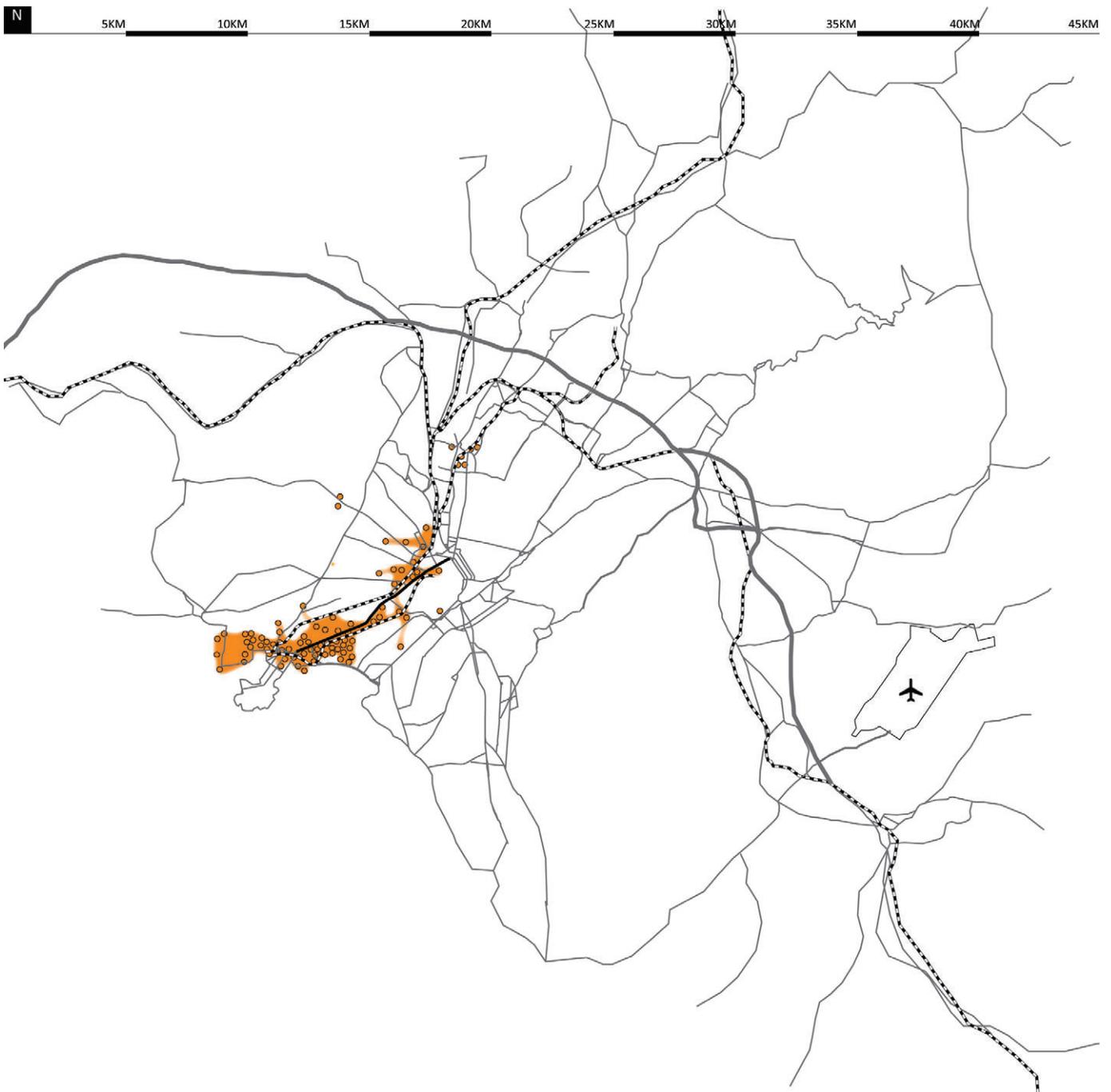




> the three drosscapes of Athens
and the relation with the urban areas

data source:
for urban blocks MAM 85

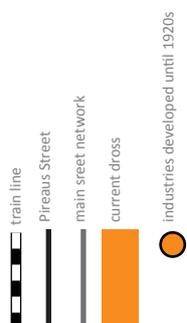




> a. Current drop
 deriving from the transformation of the industries
 of the 1920s developed along the train line and
 Piraeus Street

> a. current drop

Through the historical analysis we can observe first that the main suburban connection between the city of Athens and its port Piraeus, which was Piraeus Street, became the attractor for industrial activities in the first industrialization period from 1880's until 1920's. This was reinforced by the introduction of the train line running parallel to it and connecting the city with the port. I consider that this zone along the Piraeus Street was the drop created through the process of accumulation of that period and at that time this part of the territory was transformed from agricultural to industrial activities. Then with the rapid expansion of the city in the post-war period, between the 50's and 60's, the urban core expanded. Nowadays, this same area could be identified as the drop of attrition. The area is already reclaimed from the city and is under transformation. This time the transition is from industries to services: administration, commerce, education, leisure and culture.





> 1. Pireaus street

> 4. Pireaus street





> 2. Pireaus street

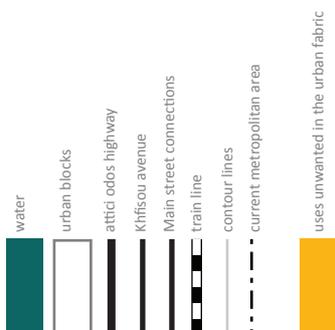
> 3. Pireaus street

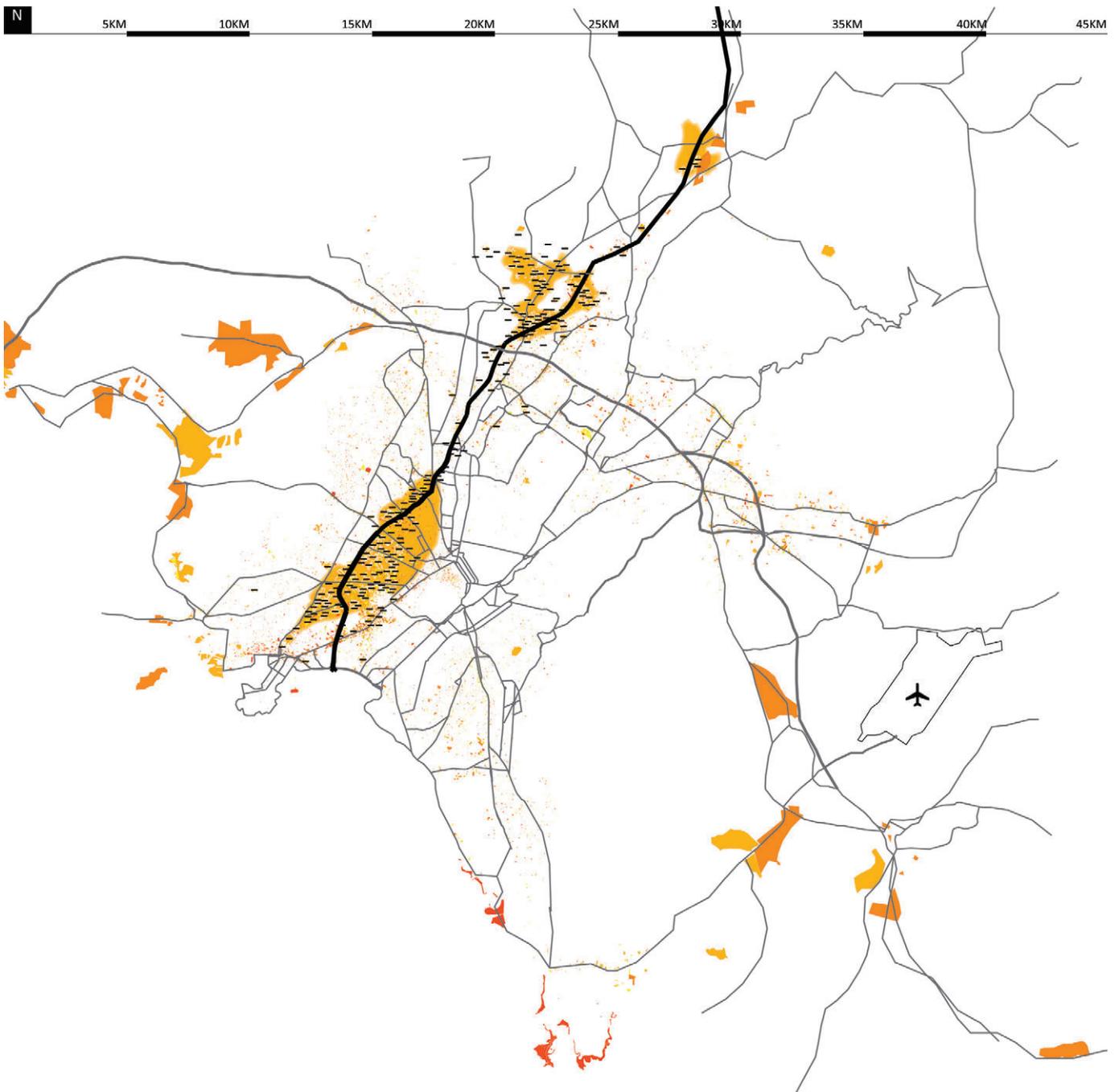




> areas with uses unwanted in the urban fabric that mainly correspond to the industries developed along the Kifissou avenue after 1960

data source:
 map G4.a "Land uses based on the codes of MAM" from the research program: "Strategic plan of Spatiakl development for Athens, Attica" First fase, Synopsis by the ministry of Environment, Spatial Planning and Public works and Metsobeio University of Athens, June 2004, for urban blocks Attico Metro, MAM 85, for contours: GYS,



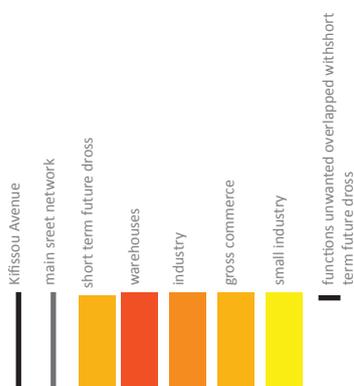


>b. Short-term future dross

that will probably derive from the transformation of the industries of the 1960s that were developed along Kifissou Avenue

> b. short-term future dross

In the 1960's the Kifissou Avenue was constructed parallel to the river Kifissos and connected the city with the rest of the country but also with the European highway network. This road was then the main suburban connection of the city and for the industries the transport of goods by road cost less than by train. So the role of the gate to the city plays at this era the Kifissou Avenue. In this time a law was activated further encouraging the industrial development. Therefore, along this axis industries were developed illegally, as it was illegal to build along the banks of the river. At this time this was the dross of accumulation, where the industries were developed. However they were not developed equally all along the axis but mainly in some parts that were free, as they were left out of the urbanization process due to the risk of flooding and the quality of the soil. If we learn from the history, we can consider as a trend the process explained for the dross of today and predict that in the near future these areas will be claimed from the city and they will be abandoned from industrial activities and transformed into services. So in the circular process of dross they will be the dross of tomorrow, in a horizon of 15-20 years. This hypothesis is verified by the ministry of Planning and the University of Athens that in 2000 they considered some of these areas as functions unwanted in the urban tissue.





> 9. Eleonas

> 11. Eleonas





> 10. Eleonas

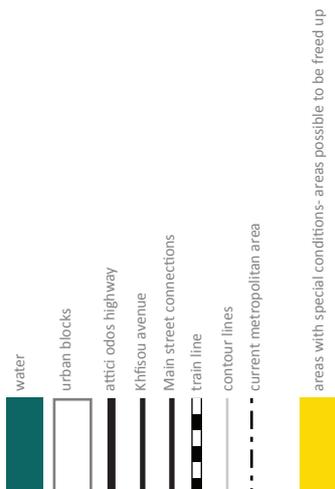
> 12. Eleonas

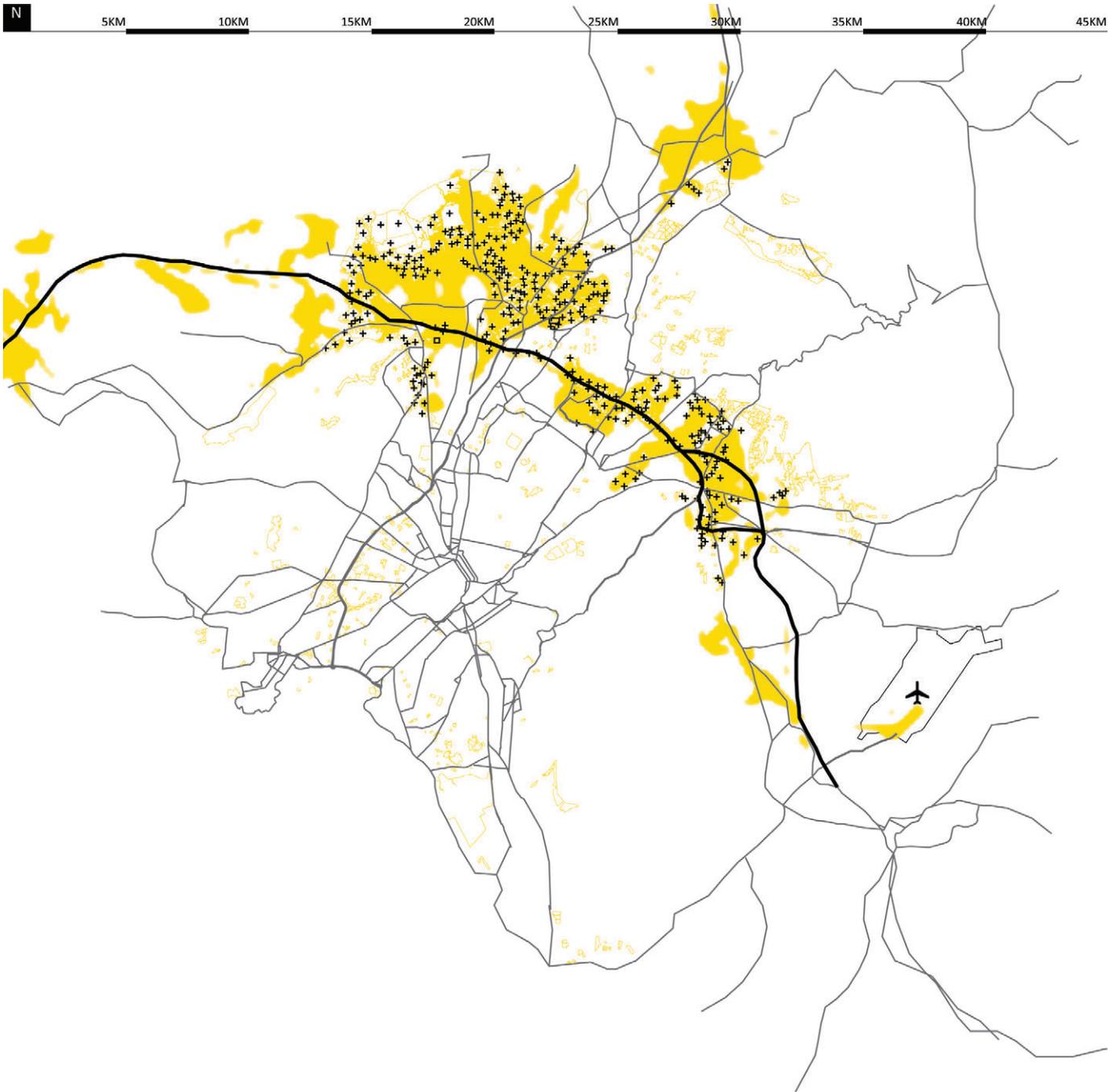




> areas with special conditions- areas possible to be freed up
 that mainly correspond to the newly developed areas along the attici odos highway possibly because of their change of use into urban use or to the industries developed along the Kifisou avenue after 1960 that will be freed up

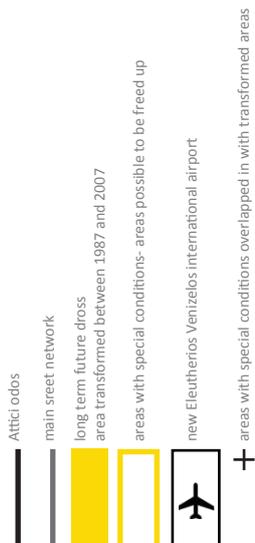
data source:
 map G4.a "Land uses based on the codes of MAM" from the research program: "Strategic plan of Spatiakl development for Athens, Attica" First fase, Synopsis by the ministry of Environment, Spatial Planning and Public works and Metsobeio University of Athens, June 2004,
 for urban blocks Attico Metro, MAM 85, for contours: GYS,





> c. Long-term future dross that will possibly derive from the transformation of the new developments of the 2000 that were developed along Attici odos

> c. long-term future dross



Attici odos, is a freeway, which was finalised in 2001 for the needs of the Olympic Games, and today connects the city with its new international airport. This highway is the current street of primary suburban importance and therefore could play an interesting role in defining the city's future. The dross of accumulation is now being formed along this highway and this could be proved by observing all the areas that were transformed from 1987 when the construction of the street initiated until 2007. Also if we observe the history of fires we could realise the pressure that development is putting along the main axis that was defined by the Olympic strategy. These new developments constitute sprawl but also services. If now we consider again the circular process of creation of dross we could claim that the same areas that are the current dross of accumulation is possible that they will constitute the dross of attrition in the long term future in a horizon of 50-60 years.



> 17. Part of atici odos and sububan railway

> 19. Ikea near the airport





> 18. Part of atici odos, view of the territory from the metro.

> 20. Mall near the airport





E. Dross as a potential: the case of Eleonas*



* 1. Dross as a potential: the case of Eleonas

* Dross as a potential

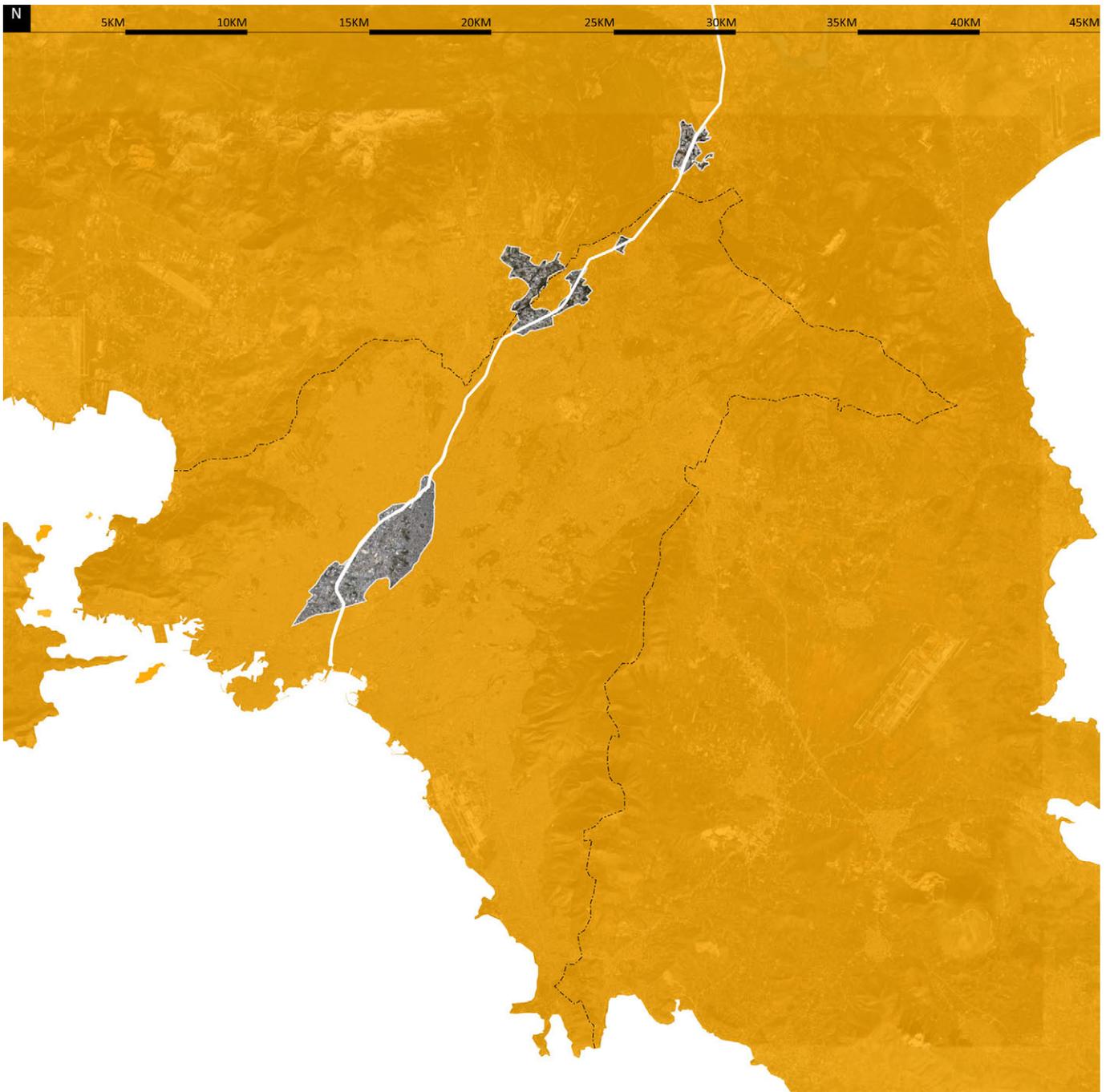
"The residuum is not inert", Pope

Pope finds in these "empty" spaces, in the formless residue the potential for resistance to the excessive organisation of form, to the absolutism of closed corporate "islands". In this programmatic and morphological void, traditional categories are dissolved and possibilities for alternatives emerge. (Doxiadis, 2001). Berger also suggests that drosscape requires design to be implemented as an activity that is capable of adapting to changing circumstances while at the same time avoiding being too-open ended as to succumb to future schemes that are better organized. (Berger, 2006)

The model of formation of dross in Athens speaks about cycles of development and decay that emerge around particular historical infrastructures and in sites of specific territorial conditions. At the end of each of these cycles we have a potential, an opportunity for the city. Often at the conclusion of an economic or social cycle, following on from a breakage in the modes of use of a space the porosity opens. This condition enables the rethinking of the city, starting off from the extension and the importance of the fracture (Viganó, 2006). Starting from this point of view, looking at the drosscapes identified from the analysis not as a problem but as a potential for the city, the design uses the method of the scenarios in order to investigate the potentialities and the risks and is not a blueprint masterplan. "Constructing scenarios means accepting the ignorance and constructing one or more hypothetical orders between the different phenomena that are involved in the city" (Secchi, 2007)

The category of dross further investigated is the short term future dross which is predicted that will be the area of the future process of attrition of Athens due to deindustrialization. The short term future dross is selected as a material for defining a strategy for the city of Athens with a horizon of 20 years. The specific area chosen for the design test is the area of Eleonas, which constitutes a big part of the short term future dross. The scenarios could then be applied to the rest of the areas of this typology of dross resulting in the function of the strategy.

In the first place, the findings of the fieldtrips at the area are presented, the area is described and its current condition is analyzed. Then the three scenarios are formulated: Scenario 0, Scenario 1: Athens un-do and Scenario 2: Athens Re-do.



1. current dross



2. short term future dross



3. long term future dross

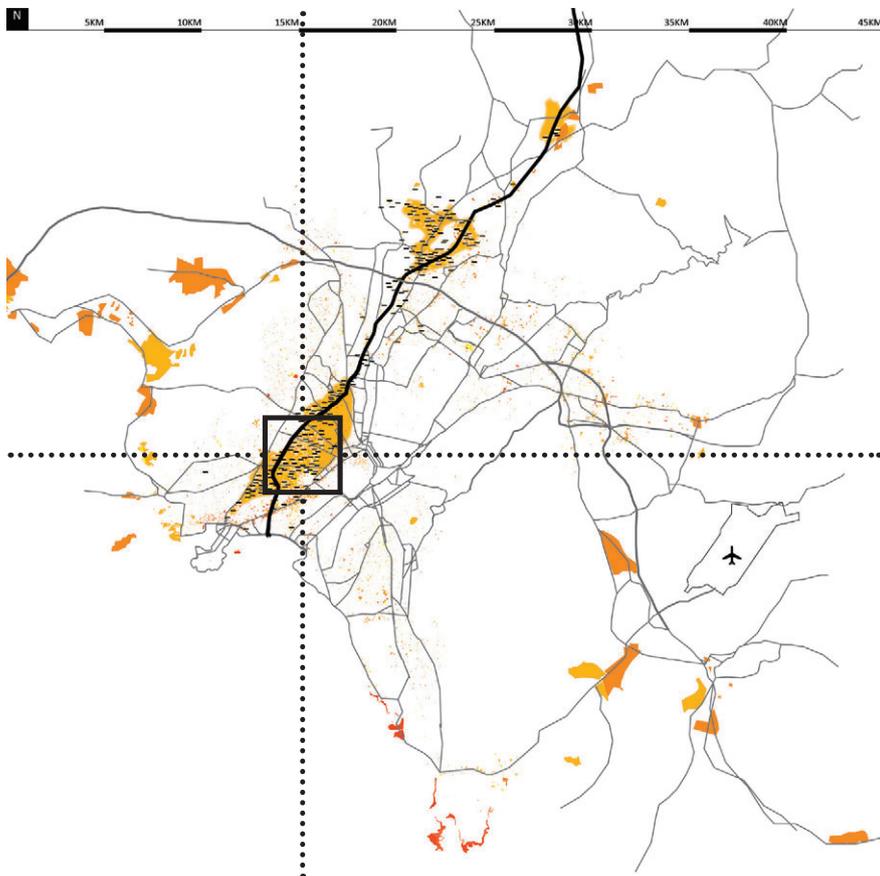


* 1. Dross as a potential: the case of Eleonas

* 1. The short term future dross: the case of Eleonas

Eleonas is one of the main areas that form the second category of dross created in the 60s along Kifissos avenue as dross of accumulation mainly for informal industrial activities and was predicted based on the analysis that it will be under transformation in the near future.

The area of Eleonas coincides with the Holy olive plantation of ancient Athens, which used to be a recreational area. It occupies an area of almost 900 hectares in a central location of the capital only two kilometers far from the city center. It comprises a "black hole" in the urban fabric of Athens, surrounded by cohesive residential fabric and it consists of parts, which are not included in the city plan, of the municipalities of Athens, Agios Ioannis Rentis, Tavros, Aigaleo and Peristeri. It is connected with the rest of the metropolitan area through Kifissou highway and the main urban axes that cross it: Athinon highway, Iera Odos, Petrou Ralli and Konstantinoupoleos. The area is characterized by complete anarchy from the urban-planning point of view due to lack of public space, street and infrastructural networks and existence of unwanted and polluting activities. However, the 50.000 workpeople in 2.400 industries and businesses, between which there are some included in the 100 most profit-making businesses of the country [in 1990] render the area an important center from an economical and business perspective. (Kandiloros K., 1996)





> aerial view of the area of Eleonas

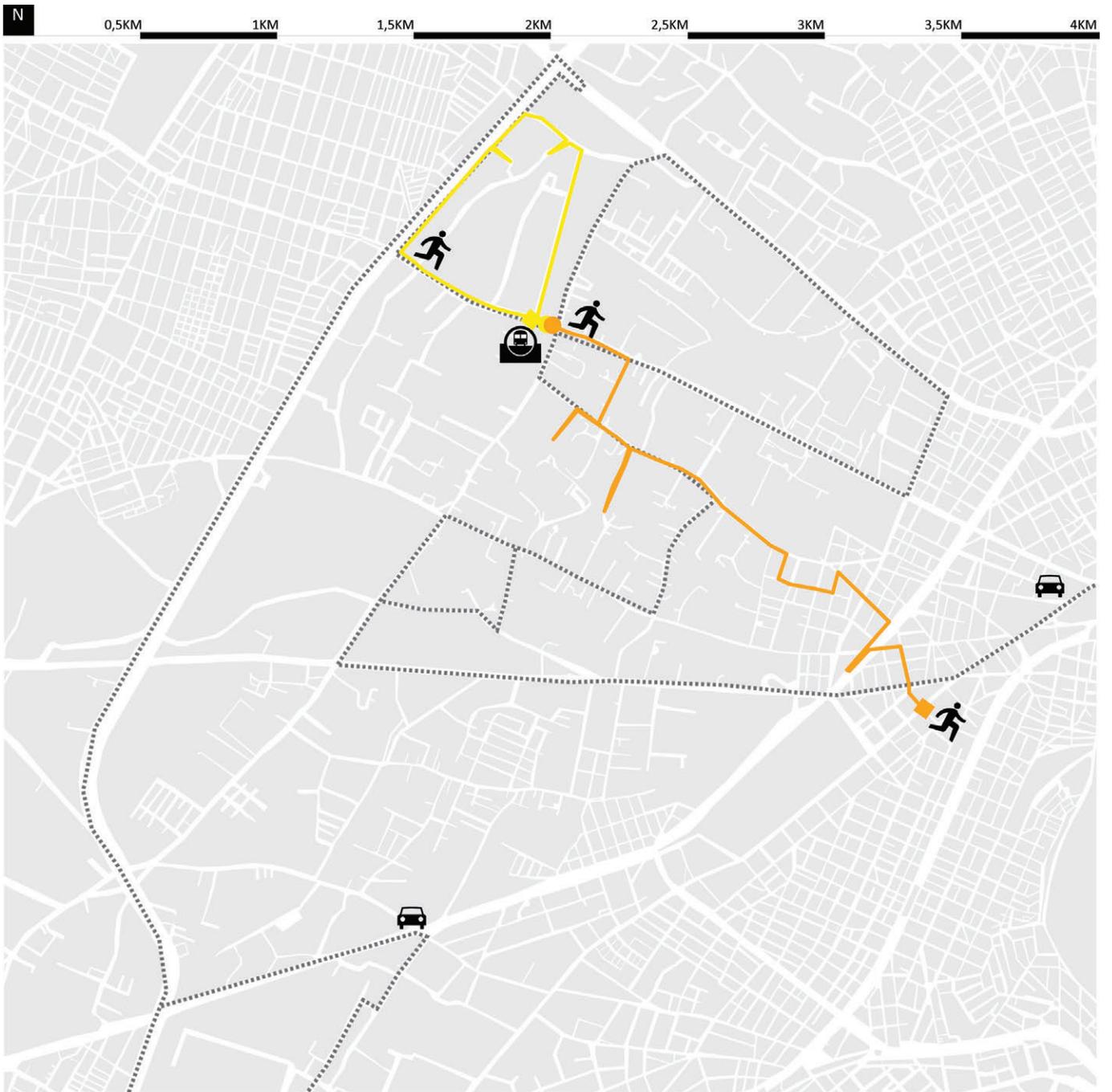
source: google earth

* 1. Dross as a potential: the case of Eleonas

> Fieldtrips at Eleonas

The visit had different levels of approach by arriving at the area of Eleonas by different means of transport: on foot, by car, or by public transport: bus, metro. The reason for that was to experience and study different levels of accessibility to these areas. Some of them were gated and inaccessible on foot. So all that was possible was observing them and taking photos from outside. However, the fact of lack of accessibility for pedestrians, the general disconnection of these areas from the surrounding fabric and the lack of connections in the local level was the main finding from the fieldtrips. This could be explained by different reasons. The work of analysis came to support this finding by adding the understanding that the creation of dross relates to the dynamics of the territory deriving from high connectivity street network and mainly suburban connections and gates to the city. This possibility attracts various uses mainly because of its connection with the outside of the city and this results in the creation of areas that lack connection with the rest of the urban fabric, even with the neighboring areas because they don't actually need for their function this connection. This fact however, observed by the point of view of step by step analysis and not from a bird's eye view, reveals the problematic function of these environments that fragment the city in this way and the bigger their scale, the biggest the problem. As far as scale is concerned, another problem observed is the grain size of these fabrics which highly differs from a fine grain urban fabric that leaves space for more permeability and mix of uses.

The area is part of the short term future dross. The typologies of dross identified in this area were based on the categories of Berger: waste landscapes of transition, waste landscapes of infrastructure and waste landscapes of contamination. The waste landscapes of transition were empty lots and construction sites and are areas being in transition and related to the speculations of the capital investment and the real estate. Then there were also several areas being part of the waste landscapes of infrastructure, mainly areas used like bus parking stations and train stations that are planned to be removed from the area. Finally, the main category of drosscape found in the area of Eleonas is the waste landscapes of contamination mainly related to the post-industrial sites. These were temporary plants of low quality built environment, warehouses and logistics-haulage, abandoned industries and a few remaining active industries that will probably move soon. These areas should be reclaimed or decontaminated prior to development. Apart from the drosscape in the area exist as well some services and commercial activities, a university and a few residences.



> the fieldtrips in the area of Eleonas



1



2



3



4



5



6



7



8



9



10



11



12



13



14



15



16



17



18



19



20



21



22



23



24



> route on foot day two
in the aerial photo is marked the location of the photos



1



2



3



4



5



6



7



8



9



10



11



12



13



14



15



16



17



18



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21



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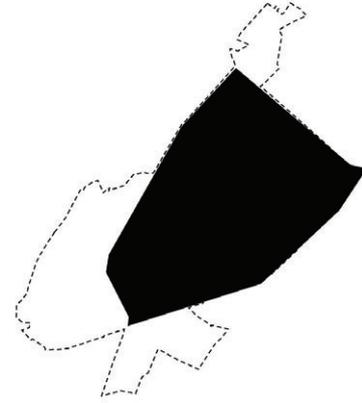
24

* 1. Dross as a potential: the case of Eleonas

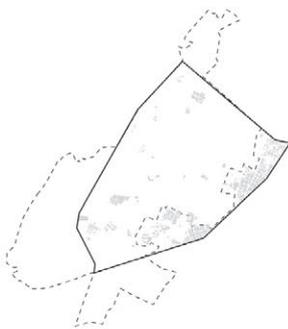
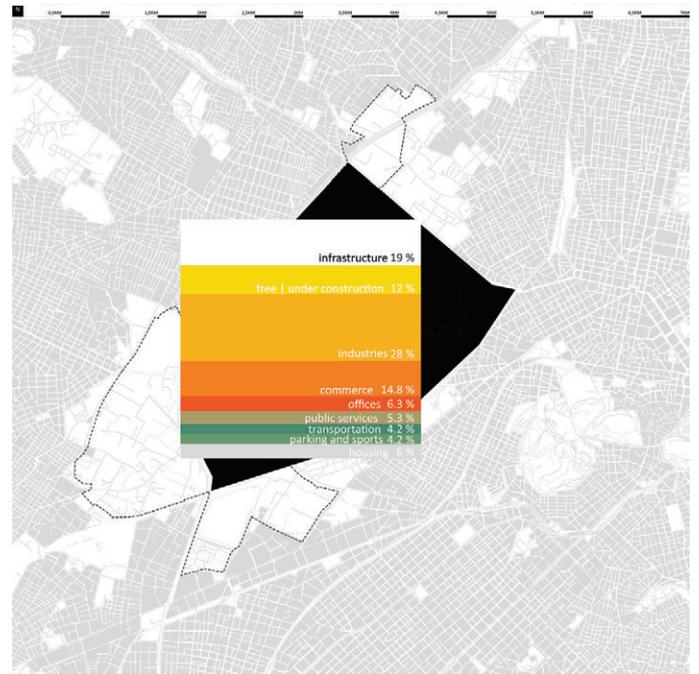
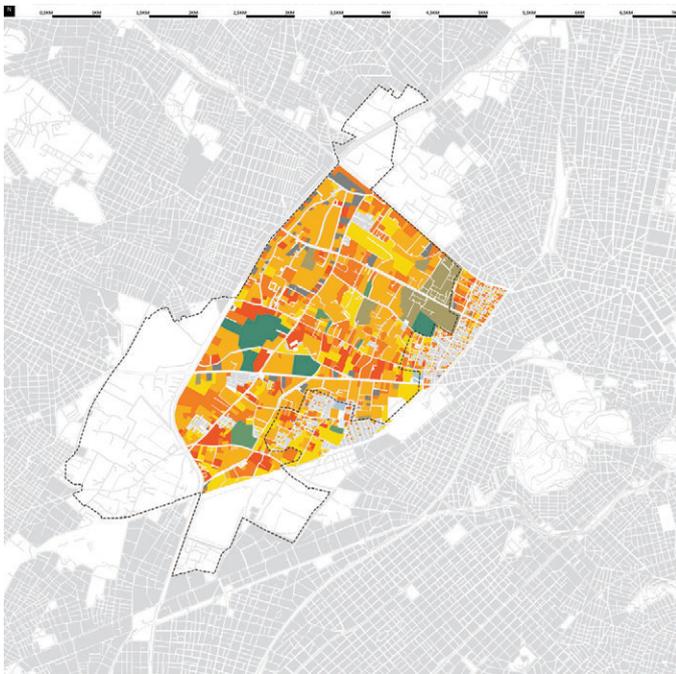
> Analysis of current condition

The analysis of the current condition was done in two ways: first by examining the current land use condition and calculating the existing spatial relations and percentages of the different programmes in the area and then by mapping the different elements of the area and understanding the different relations and characteristics of the site.

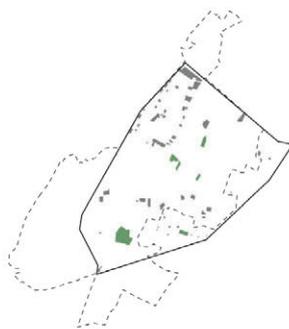
The analysis of the land use was based on the MAM of 97, which is the research of the company of Attiko metro and the most recent land use data base found. The total area studied was of 620 hectares. The analysis shows that in the area green areas do not exist and the predominant land use is the industrial with a percentage of 28%. However the existence of offices (6.3%) and commercial activities (15%) combined with the existence of 12 % of free and under construction sites indicates the transformation that has initiated to take place in the area. The commerce and services concentrates more along the axis of the city level street network. It is interesting also to notice the existence of transportations and public services and more specifically of the University of Agriculture which is near to the city center of Athens.



analysis of current



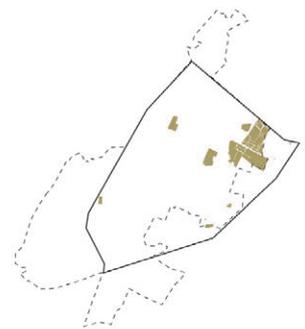
housing
379.207 m²
38 hectares
6 %



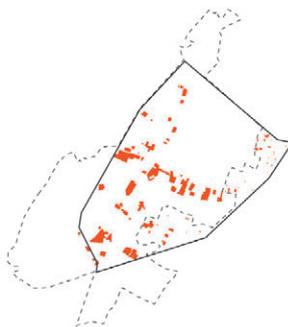
parking and sports
264.379 m²
26 hectares
4.2 %



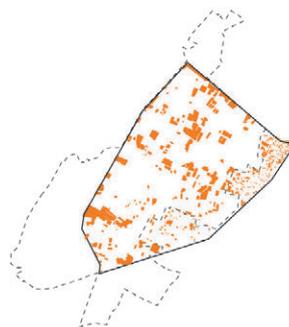
transportation
263.957 m²
26 hectares
4.2 %



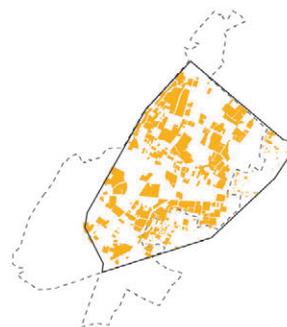
public services
333.496 m²
33 hectares
5.3 %



offices
387.264 m²
39 hectares
6.3 %



commerce
927.035 m²
92 hectares
14.8 %



industries
1.733.270 m²
173 hectares
28 %



free | construction
734.732 m²
73 hectares
12 %

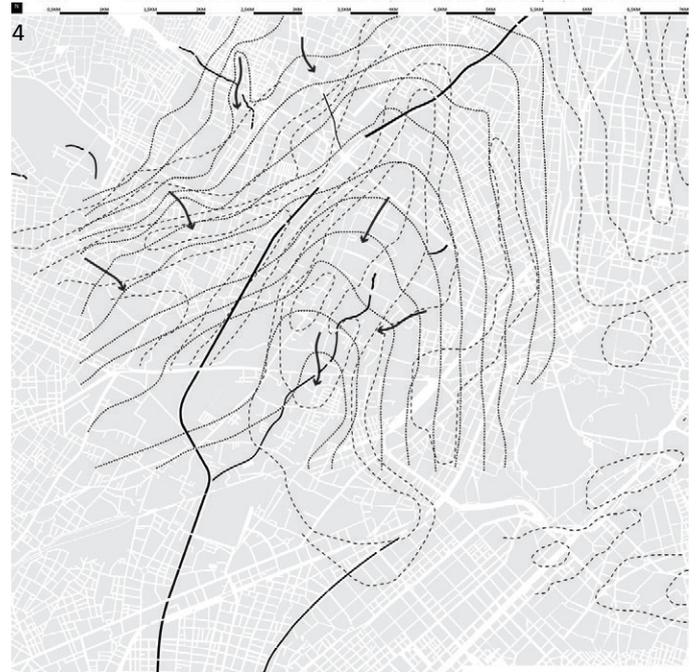
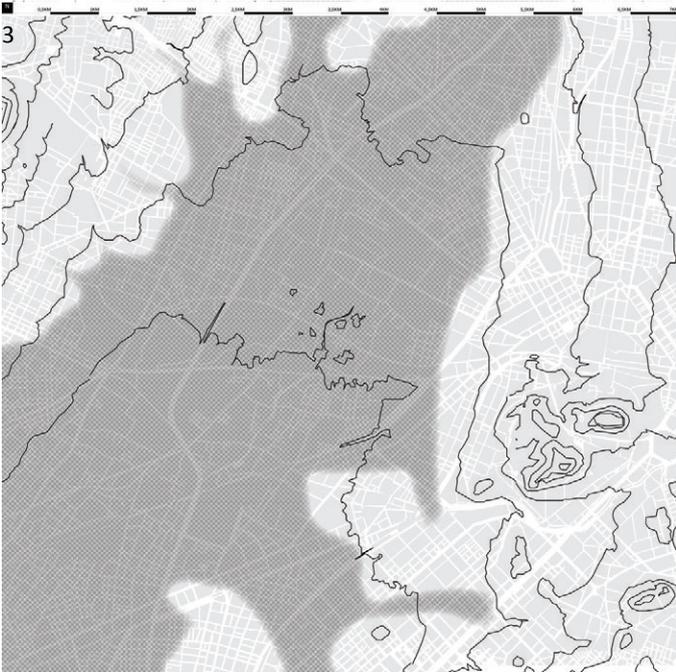
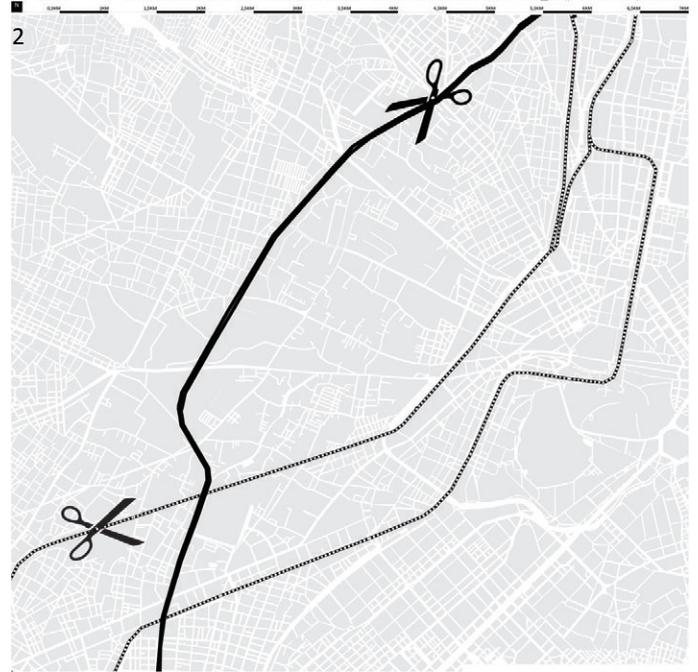
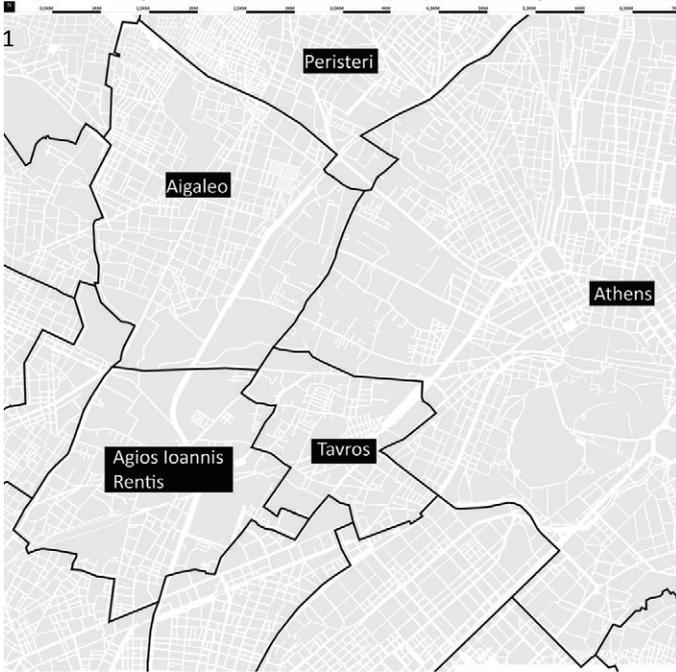
> analysis of the current condition
based on the land use
source of data: Attiko Metro S.A., MAM '97

* 1. Dross as a potential: the case of Eleonas

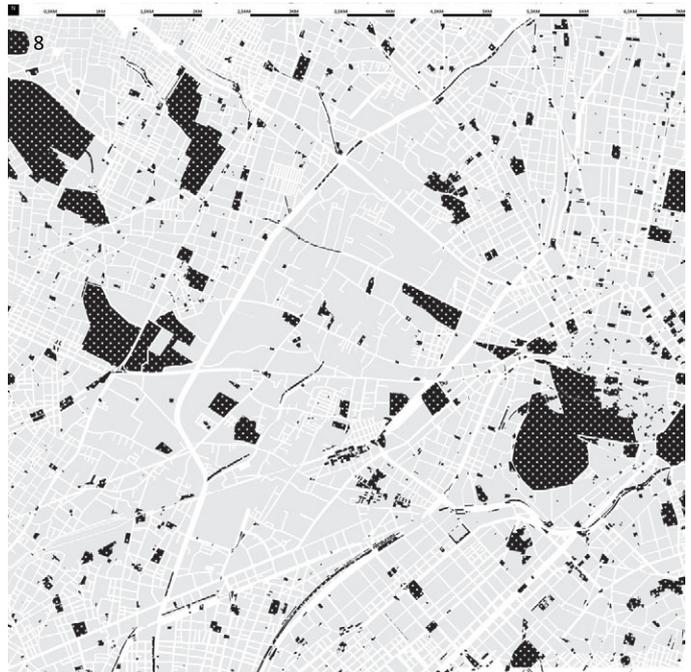
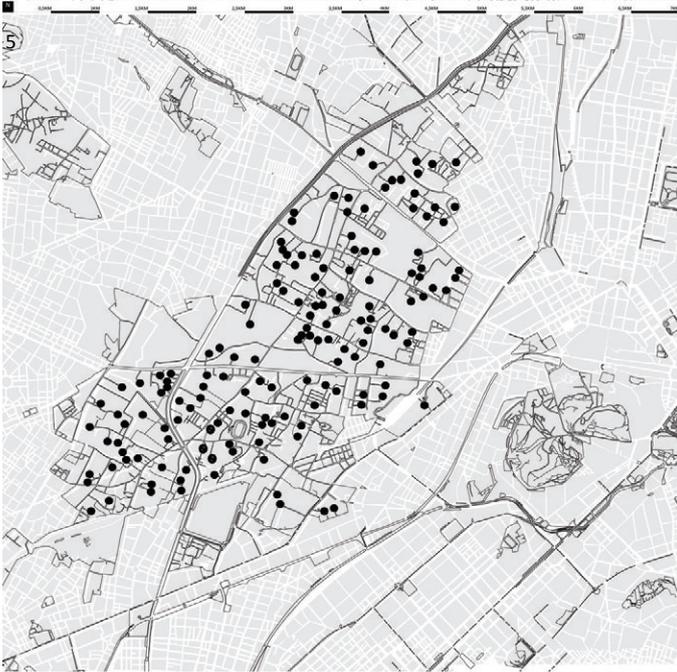
Eleonas belongs to five different municipalities one of which is the municipality of Athens. The existence of administrative borders hinders the realization of a common plan. If we study the topography we can realize that the area is almost flat and belongs to the lower part of the basin. Then, another important territorial element of the area is the water: the river of Kifissos is running partially under and partially in parallel with the highway while one of the last open remaining streams, the Profitis Daniil, runs parallel to Kifissos. It is important also to mention that the area has underground water and the constitution of soil is fluvial, which explains the risk of flooding.

The area is a void in the city and this is because it is disconnected from the neighboring urban fabric. This is mainly caused by two reasons, the first is the existence of two strong borders: the highway on the west part of the area and the train line on the east, which isolate the area. Then the second reason why Eleonas constitutes an island, being in a sense a side effect of the previous, is the existence of numerous dead ends which fragment the area without permitting flows of movement within its fabric. If we study the hierarchy of the street network of the area we will realize that there is the highly important not only for fragmenting but also for connecting the area highway; then there are three main urban connections crossing the area arriving axially from the city center and there is complete lack of the middle scale network while the local network consists only from the previously mentioned dead ends. The strong borders, the dead ends and the lack of the middle scale street network diminish the permeability and the porosity of the area and explain the formation of drosscape in the area.

Important elements are the University of Agriculture inside the area, the Academy of Plato and the Acropolis in vicinity, the cemetery on the south west, the market (Iachanagora), the maritime base and the only 2 kilometers distant city center of Athens. The green network around the area is lacking. We could mention the hill of the Acropolis and the cemetery as the two biggest existing green areas. The metro line has arrived in the area of Eleonas just in 2007; there is currently only one stop at the area. The important elements that are in proximity to the area in combination with the high accessibility the metro provides constitute future potentials.



1. administration borders
2. highway and train borders
3. territory: fluvial soil and contours
4. water: rivers, flow and underground water



- 5. dead ends
- 6. dross
- 7. important buildings
- 8. green network



- 9. hierarchy of the street network
- 10. buses routes
- 11. existing metro
- 12. proposed metro

ΕΞΑΤΜΙΣΕΙΣ
ANBA mufflers
ΚΑΤΑΛΥΤΕΣ
ΕΞΑΤΜΙΣΕΙΣ

ΕΞΑΤΜΙΣΕΙΣ
ΚΑΤΑΛΥΤΕΣ

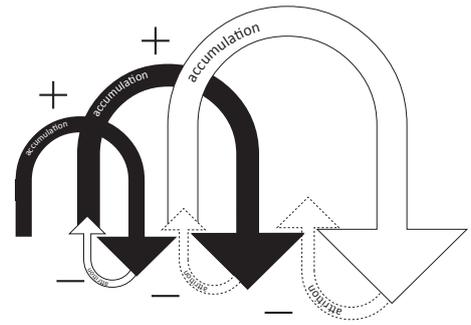




* 2. Scenarios

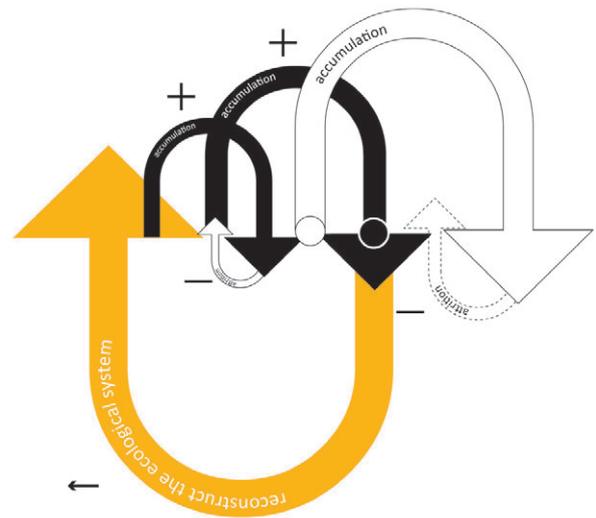
Formulating the scenarios

Scenario 0 explains what would be the future of the area without any intervention. In this scenario the current plans for the area and the program proposed are analyzed. Furthermore, scenario zero investigates a possible future of the area based on the current trends, the top down plans and the influence of the market in shaping the area. The other two scenarios were based on the risks and potentialities identified by the analysis of the existing condition and by scenario zero and they have a different focus.



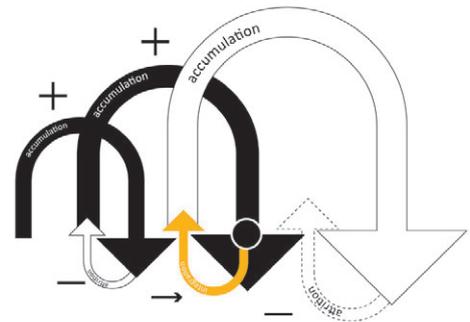
> Scenario 0

Scenario 1: Athens un-do is the scenario exploring the potentialities of the drosscape in reconstructing the ecological system of Attica and in dealing with the risk of flooding. This scenario is focusing in the metropolitan scale and expresses the bottom-up will. It puts in doubt the whole cycle of creation of dross and it intervenes in the process by an action that brings the drosscape back to the start, to its initial condition.

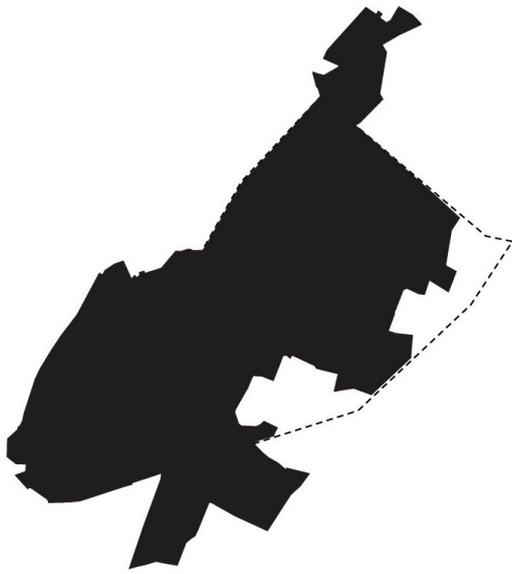


> Scenario 1: Athens Un-Do
[dross as a device for restructuring the metropolitan ecological system]

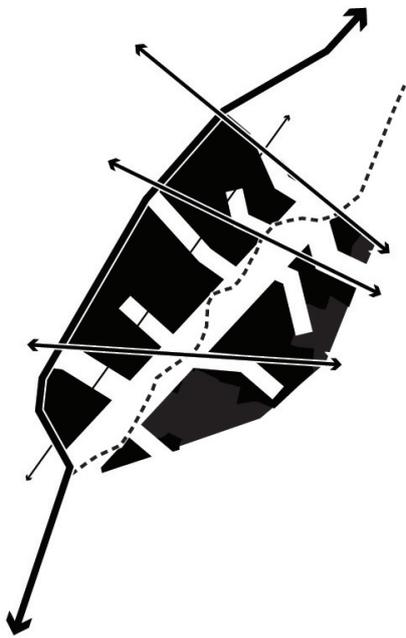
Scenario 2: Athens Re-do deals more with the potentialities of the dross constituting a new centrality for the city of Athens. This scenario is focusing both at the dynamics of the local scale and the metropolitan scale and is attempting to deal with both the bottom up and the top down processes shaping the territory. This scenario is redefining the rubric of formation of dross by transforming the upcoming process of attrition of the area into a process of integration.



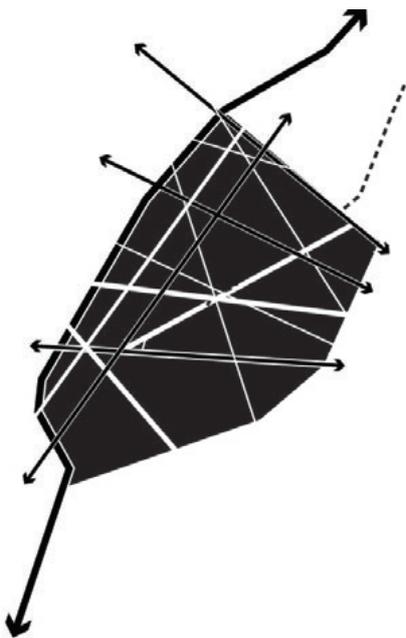
> Scenario 2 : Athens Re-do
[dross as a new centrality]



source: www.flickr.com



source: <http://salata.wordpress.com/2007/10/>



source: <http://salata.wordpress.com/2007/10/>

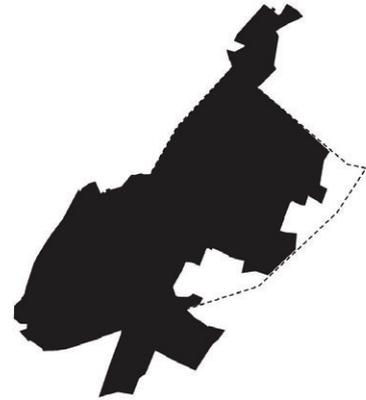
* 2. Scenarios

* 2. Scenario 0

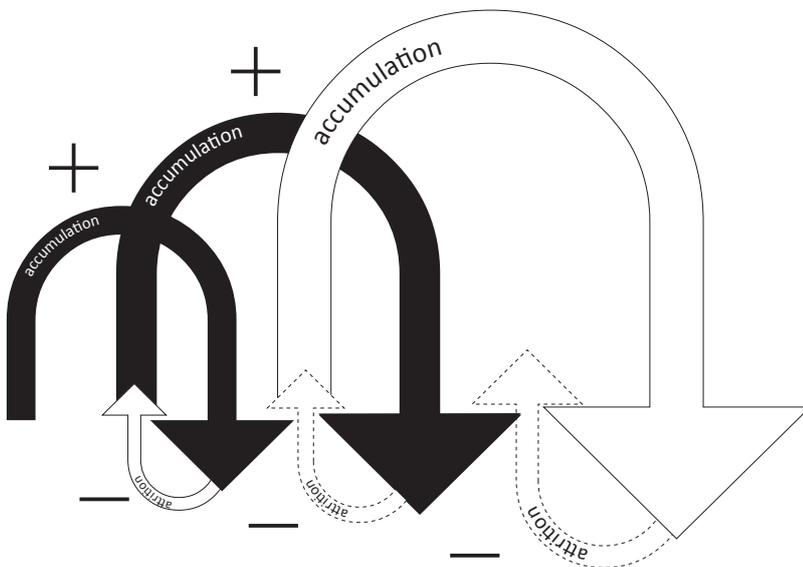
> The plan of 1995

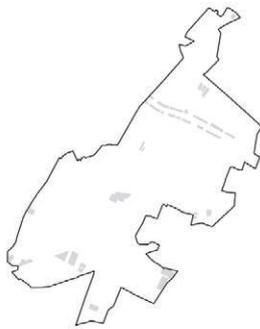
The studies for the planning of Eleonas initiated in 1984 and in 1991 they conclude with the decree [Π.Δ. ΦΕΚ 74Δ] with which the area is included in the city plan. The regulations of the decree of 1991 meet a general disagreement that had as a result the suspension of its application and the initiation of attempts to revise it. This results in November 1995 in the approval of intervention in the area, with general agreement, that started to be applied and that had as a main goal the integration of the area in the urban fabric under specific terms and conditions, so as to spread in the whole of the basin its expected step-up. (Kandiloros K., 1996)

The analysis of the plan of 1995 that was realized with the same method as the current condition: by examining the proposed land use and calculating the proposed spatial relations and percentages of the different program in the area. The main elements of the proposal are the following. Firstly, the plan decided the creation of a big green area of 240 hectares that would set off the historical elements of the area [holy street (Iera Odos), archeological sites, churches etc.]and it would be selectively framed with educational and recreational facilities in order to remain functional and active. The park could be realized in the freed up space from removed warehouses and military camps. Secondly, the plan reorganized the land uses in the area by creating immiscibly industrial zones (14% of the area) with the aim to protect the industrial activities from the competitive tertiary activities, a business center (24% of the area) with low building rules in order to avoid high concentration of activities. It was also decided to remove within 5 years all the polluting activities like tanneries and foundries while maintaining the public services occupying a 5% of the area. An essential element was the improvement of circulation and the arrangement of the infrastructural network in an area of 100 hectares and the development of public transport (and metro). Last but not least, the plan reports that the actions of the application for the area were already assigned and the creation of an organization for the development is considered a precondition for the implementation of the intervention, whose completion would require time, money, power and mainly coordination, control, flexibility and determination. (Kandiloros K., 1996)



plan of 1995

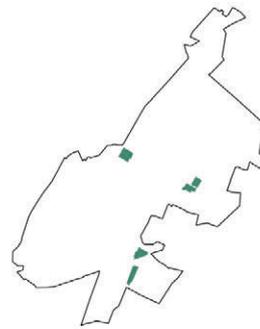




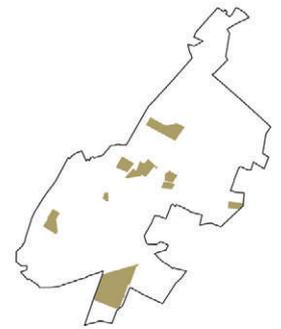
housing
305.188 m²
31 hectares
3.6%



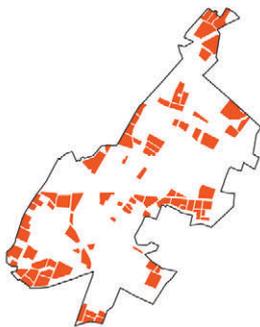
green
2.410.478 m²
240 hectares
28%



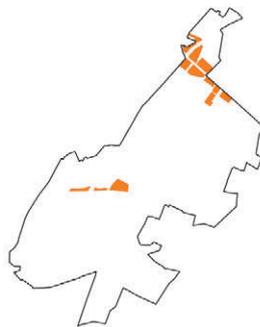
transportation
109.564 m²
11 hectares
1.3%



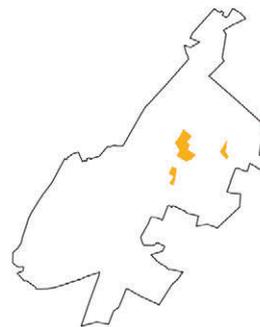
public services
601873.18m²
60 hectares
7%



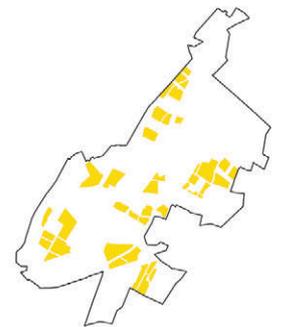
b. business
1.728.534m²
172 hectares
20%



c. business [CBD]
269.357m²
27 hectares
3.2%



big industries
124.717m²
13 hectares
1.5%



industry
1.161.572 m²
116 hectares
13.6%

> analysis of the plan of 1995
based on the land use

* 2. Scenarios

The plan of 1995 was only partly applied due to lack of organization and the pressure of private interests. The main problem of the plan was that even though it was defining a new green area of adequate size of 240 hectares, feasible to be realized in theory through expropriation, the park created was not cohesive enough and didn't have a concrete structure. The fragmentation of the green areas therefore made possible that these parcels of land could be claimed for other interests related to the forces of the market rather than the commonweal. This is proved by the case of the sport field of PAO that is decided to be constructed in the part of Eleonas that belongs to the municipality of Athens. In 1992 there was a research program for the urban planning and regeneration of the area of Eleonas (EXOA 1992) and in 2006 the private organization "Double regeneration" (diplis anaplasis) was founded having as a specific goal the development of a new stadium and a mall in the area in a plot that was designated for the park based on the plan of 1995.

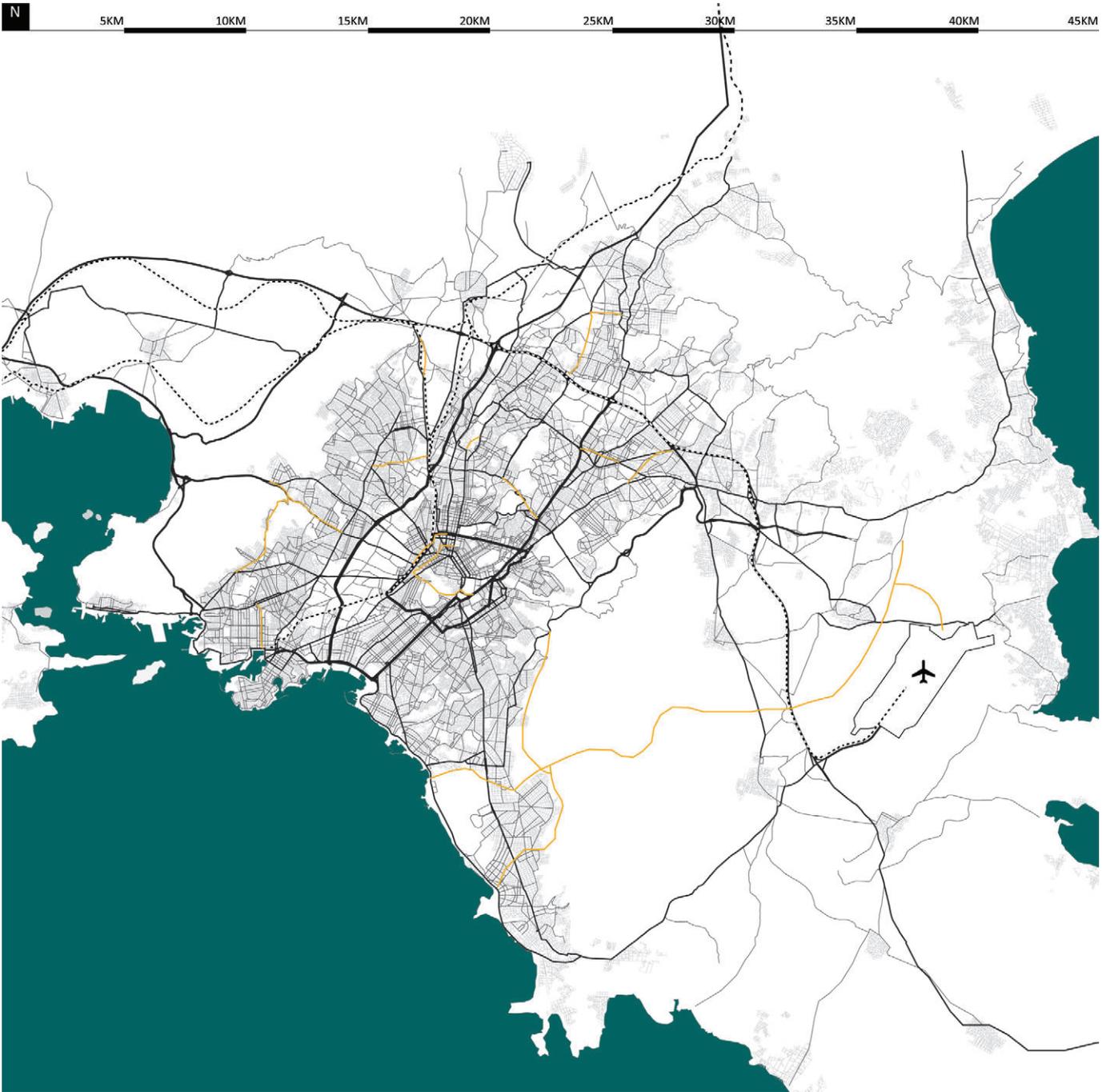
The plan of 1995 doesn't correspond to the current needs and conditions, also because the industrial zones defined by the plan could not be sustained economically anymore in such a central district and are incompatible with other urban functions due to the pollution. This is proved by the previous analysis of the creation of dross but also in reality most of the big industries of the area are already transferred or pressed to do so by high taxes. Therefore in the following two scenarios industrial activities will not be considered as a proposed land use.

The metro line has arrived in the area of Eleonas just in 2007; there is currently only one stop at the area. However the metro company announced, as part of the new strategic plan of the city, the creation of new metro lines. With the new plans the area will be crossed by 3 more metro lines and one of them will be the round line connecting with the rest of the metro system. Furthermore new roads are planned that will complete the metropolitan street network. It is not sure if all of them will be constructed due to the fact that some of the environmental studies have not been completed for the application of these plans and one of them is a tunnel under the mountain Hymettus which is an environmentally protected site. One of the plans for extending the city scale street network is arriving at the area of Eleonas increasing accessibility and connectivity to the neighboring area of Egaleo.



> the current condition, scenario 0 based on the plan of 1995 and current trend for the area of Eleonas that belongs to the municipality of Athens

source : <http://indy.gr/analysis/o-elainas-me-eikones>

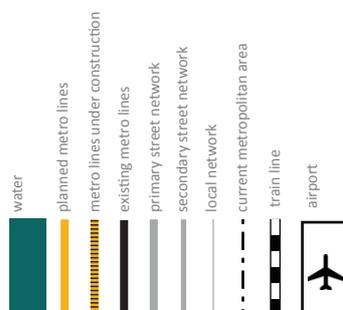


> existing hierarchy of the street network and planned new connections

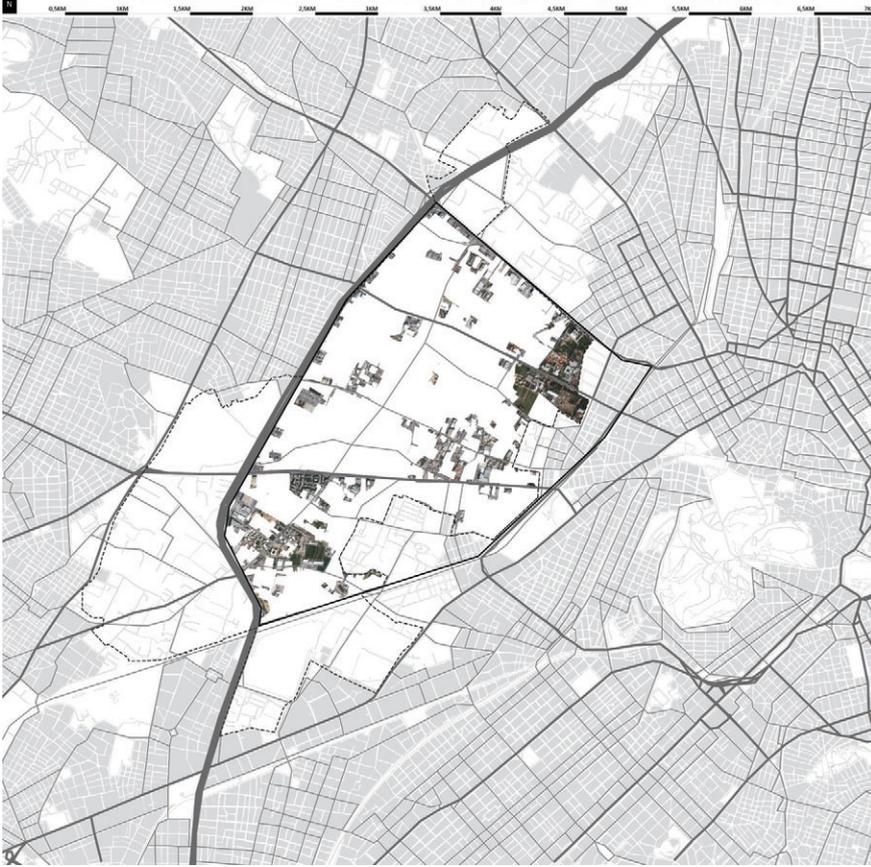




> existing and proposed metro lines
source data : Attiko Metro S.A.



* 2. Scenarios



> what to keep

> Starting point: What to keep

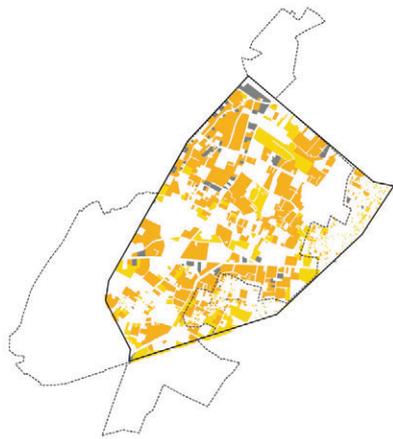
An analysis of what are the important elements to be kept in the area was undertaken in order to identify the starting point for the design. The method used was *reductio ad absurdum* using the previous analysis of the area. From the previous analysis there was evidence on which areas could be considered possible for transformation or in need for change. If we started eliminating all these areas we could discover what could remain in the area and with further evaluation what should be preserved. The first step was to eliminate from the map all the areas named *drosscape* based on the analysis. These are more specifically the areas with function unwanted to urban fabric and the areas with special conditions. Second step was to eliminate all the areas that were green on the plan of 1995, because it means that these areas were able to be expropriated. In the case that these areas were already green or had another related function, they were kept or considered based on the different scenarios. Third step was to eliminate all the areas that based on the current land use plan are industries, areas under transformation and parking places. This is because based on the initial hypothesis this area is part of the short term future *drosscape* and is predicted that in the next 15-20 years these areas will enter the phase of attrition and all the industrial related activities would be in decline. Finally, if we eliminate all these three elements: *drosscape*, green from the plan of 1995 and current industries, we have the parts to be reserved. These parts coincide more or less with the areas that were kept also in the plan of 1995 and more specifically are the University Agriculture, some residential areas and some commercial and services activities.



dross



green areas based on the plan of 1995



current industrial activities and sites under construction



overlap of the three

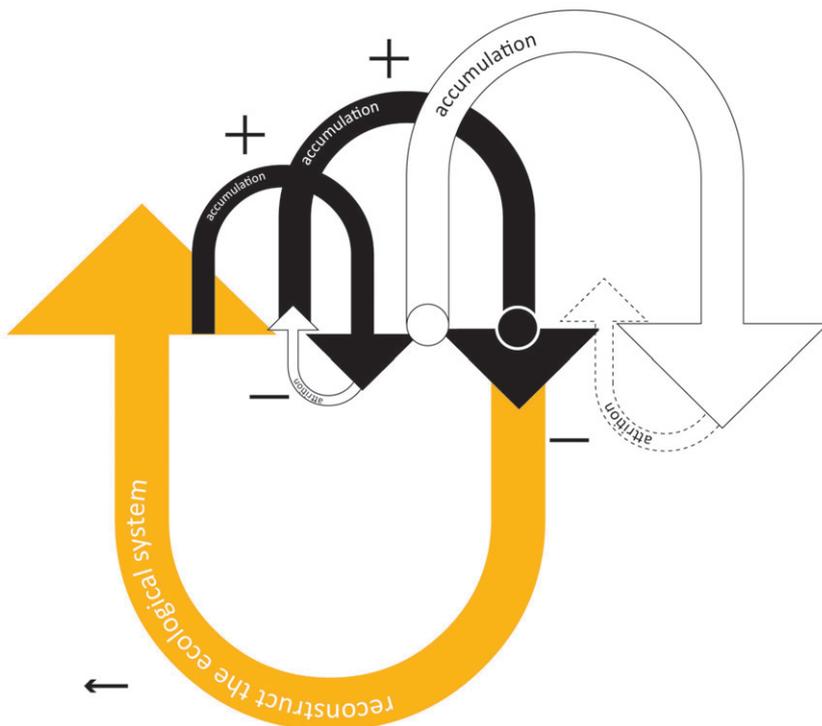
* 2. Scenarios

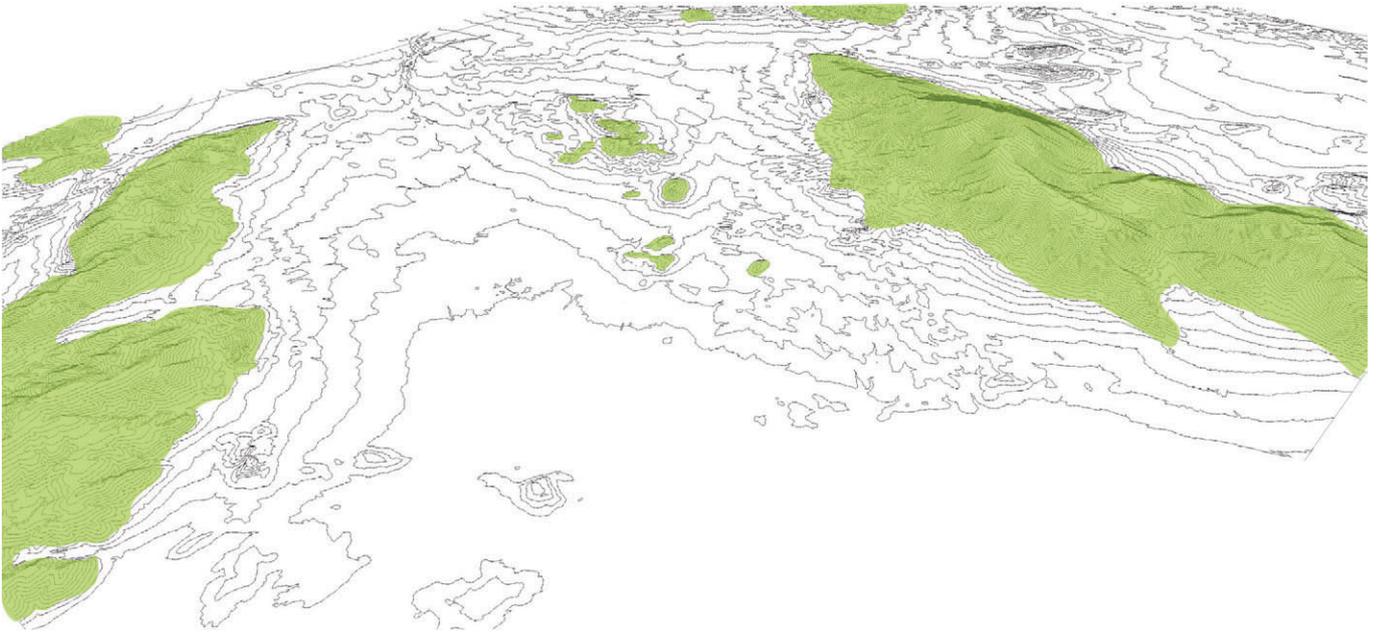
* 3. Scenario 1: Athens Un-do

[dross as a device for restructuring the metropolitan ecological system]

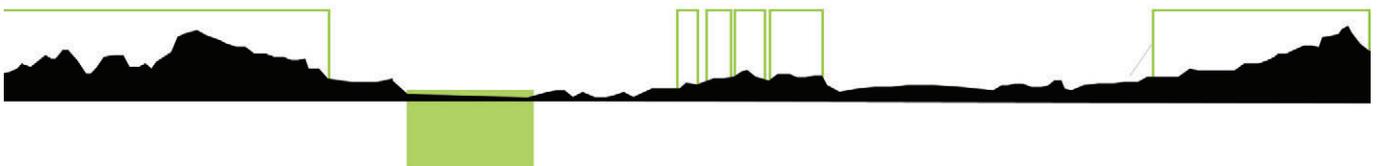
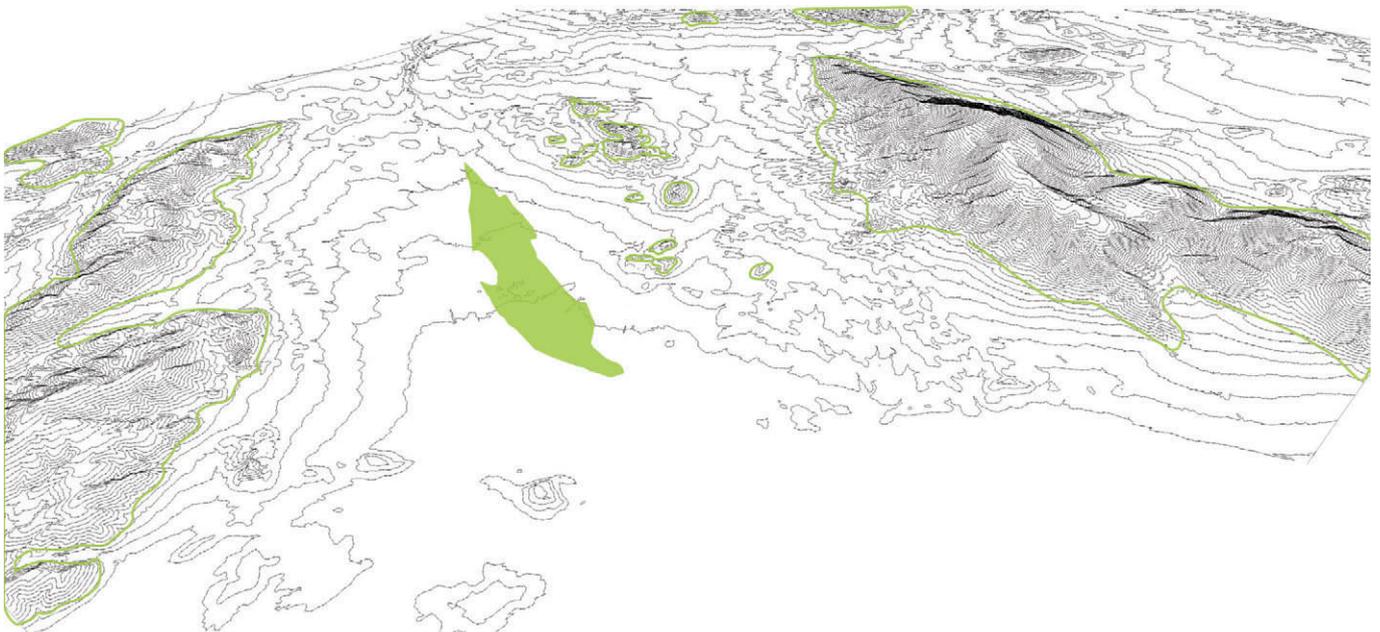
The scenario Athens Un-Do is the one exploring the potentialities of the dross as a device for restructuring the metropolitan ecological system. This scenario is actually an action scenario. This means that in the recycling process of the drosscapes in the territory, which came up from the analysis, the un-do scenario acts by breaking and redefining this cycle of creation of residual spaces. In this scenario we reflect and evaluate the rubric and we act in order to redirect the future of drosscapes in another direction than the one predefined. So based on the analysis a landscape that had been accumulated to the city in a previous period will be the landscape of attrition in the next. In this moment in the process we intervene with this scenario and by this action the aim is the reconstruction of the basic ecological connections, the return to the systemic conditions of the territory that were disrupted from the process of urbanization. So in that sense, this scenario is attempting to break the cycle of accumulation and attrition and use the space of the predicted attrition as an opportunity to rebalance the city-nature relation as it should be in a "good city". As Kevin Lynch defines it: "The good city is one in which the continuity of complex ecology is maintained while progressive change is permitted." (Lynch, 1981) This implies that we should aim at the integration of the drosscape in order to maintain the continuity of the city but also leave the space for progressive change in order for the urban system to work in a natural balance.

This research initiated with the study of drosscapes and at this point this scenario is attempting to come back to the proposal of Berger on how to deal with drosscapes. Berger suggests that "drosscape demands a strategically phased implementation of design that other "clean" or "green" types of urbanization lack because they are not immediately wholly occupiable. Sites formerly containing industrial or manufacturing facilities, for instance, have soil, water and building contamination problems left over from chemicals and hazardous materials. This condition presents a novel set of challenges which must face the spatio-temporary dimension of redevelopment as a site is decontaminated, re-regulated or otherwise transformed for reuse over time. The adaptability and occupation of drosscapes depend upon qualities associated with contamination, health, safety and reprogramming." (Berger, 2006)





> existing metropolitan green on the higher parts of the territory



> proposed metropolitan green on the lower part of the territory

* 2. Scenarios

This scenario is also the one focusing on the reuse of the drosscape for the metropolitan scale. A re-use that should be directly related to the metropolitan system and a new function for the areas in question that would give them a coherent identity and importance in the metropolitan area. This reuse is being possible due to the characteristics of the drosscape as a short-term investment which leads in low quality built environment with unstable and provisional materials. In the case of the study area of Eleonas this function would be a metropolitan park. This reuse could be applied to other areas of the short-term future dross once they aim at completing the ecological connection and after further study. Furthermore, this scenario represents the bottom up processes and reflects the public desire, in contrast with the next scenario which is an extrapolation of the trend and the market.

In the specific area of Eleonas this scenario has multidimensional importance. The bottom up approach is verified by the declaration of the inhabitants for the creation of a metropolitan park in Athens and by the several manifestations for transforming the area in "green and not concrete". The "citizens' committee for saving Eleonas" demand the immediate expropriation not only of the areas that were provisioned in the plan of 1995 but also of new ones in order to improve the balance of the future and acquire concentrated green in the area. (www.eleonas.wordpress.com, 2009)

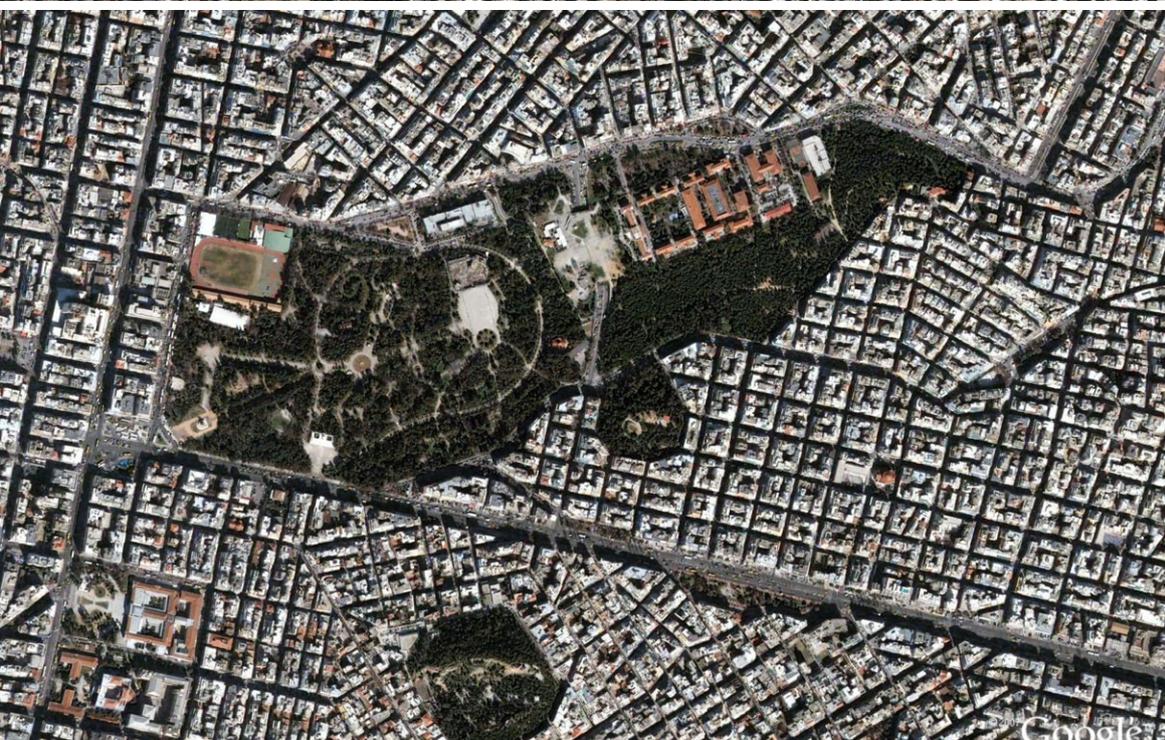
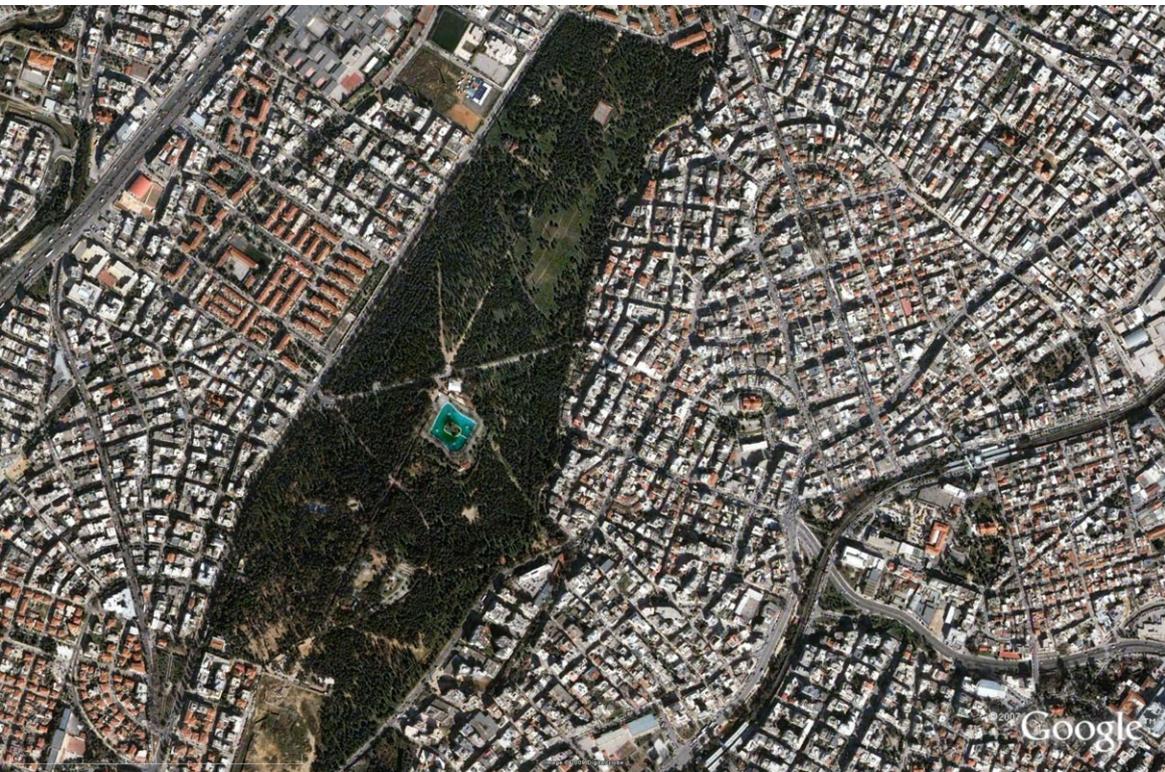
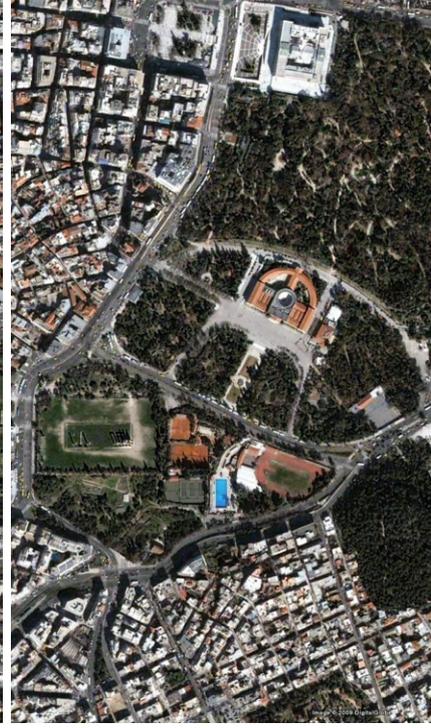
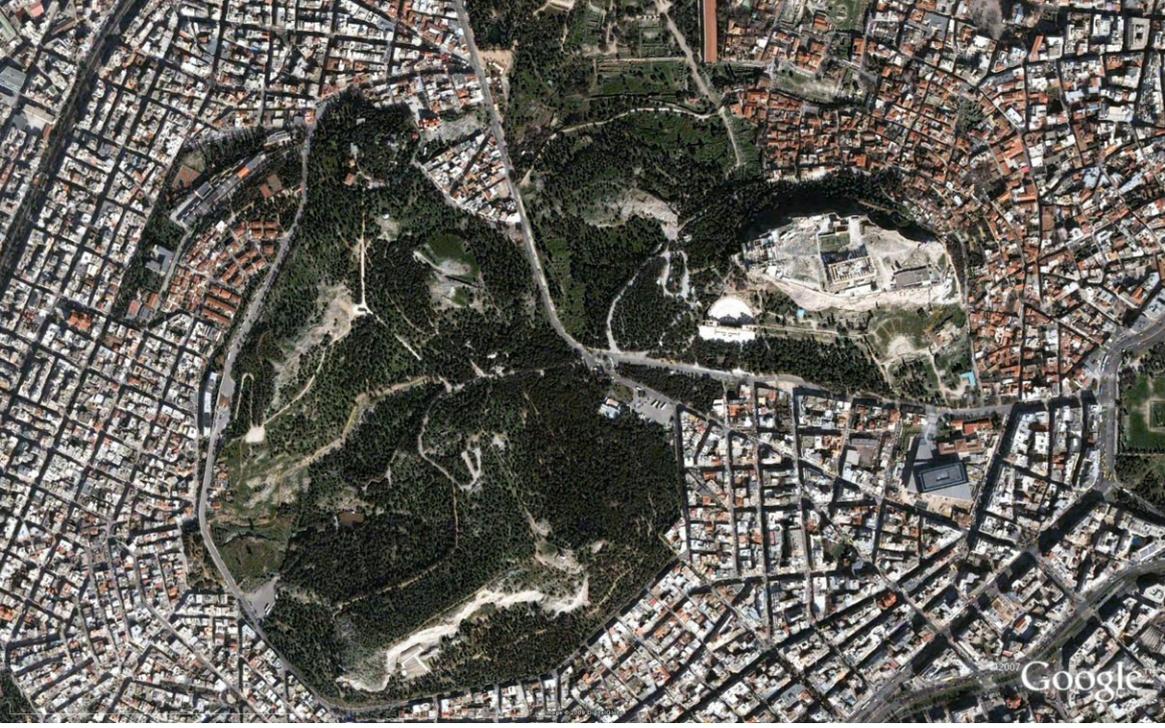
The area of Eleonas, used to be since the Antiquity and olive grove and an ecological reserve of great importance for the Attica basin, which means that the un-do scenario would bring the area back to its initial natural condition, un-doing the damage and the pollution caused to the environment due to the installation in the area of the industries and the warehouses. Based on the study of the territorial conditions the area is in the lowest part of the basin, with a fluvial soil and with the existence of streams and underground water. All these facts, lead to the high risk of flooding in the area, which becomes even higher when all the natural elements, like green and water are violated and constitutes a future threat for the case of over-construction of the area without any provision for the ecological system.

> From Grey Greek city to Green Greek city

The lack of green areas, especially the ones of metropolitan scale, consists one of the main problems of the contemporary Greek cities which leads to the degradation of the urban environment and reflects in everyday urban life. In the urban complex of Athens this lack of open air public spaces and green spaces, especially in the densely populated areas, and their connection with the surrounding mountains and the waterfront is one of the major problems of the city. The lack of green spaces is confirmed if we compare the percentages of green space per inhabitant in Athens with other European cities according to the Ministry of Spatial Planning and Public Works [ΥΠΕΧΩΔΕ 1994]. (Polizos G., 2006). In addition, the imaginaire of the city, since the 60s when the big urban expansion took place, is strongly related to this lack of green areas and the inhabitants often refer to Athens as the "concrete city". (Κοττώνης, 2006)

In order to be able to reconstruct the systemic relations of the territory, it was essential to study the existing green system in the metropolitan scale. The first and obvious observation of the existing green in the territory, that was also a result from the comparative analysis of the territory and the land uses, is the fact that the only parks of metropolitan scale exist on higher parts of the territory. This means that the only metropolitan parks Athens has are the mountains that surround the basin and the row of hills that constitute also the mental division of east and west Attica. If we have a closer look in these hills we could observe how the city is densely built around them drowning everything in concrete but the higher part that are not easily habitable and suitable for urban use and therefore luckily reserved as green.

> aerial view of the existing metropolitan green in Athens, The pressure of urbanisation around the surviving hills is obvious



* 2. Scenarios

The areas of metropolitan green are of great importance not only from the social point of view but also from the environmental. So, on the one hand metropolitan parks offer the possibilities for development of different kind of human activities, as part of the open public space network, which is of great importance from the social point of view. On the other hand, they are of significant positive contribution to the climate and atmospheric conditions of the territory, because they facilitate the movement of the air mass improving the microclimate and reducing the pollution. (Polizos G., 2006). Furthermore, the addition of large scale green areas in the metropolitan green system of Athens could have a beneficiary effect on the climate of the city by decreasing the temperature. This is extremely important especially if we take into consideration the unbearable conditions of life due to high temperatures in the Greek metropolises during the summer period. Based on the "atlas of the real world" Greece is the first in the world concerning the death of people killed by extreme temperatures between 1975 and 2000. (Dorling D., 2008). In addition, the importance of the existence of green is further evaluated positively if we consider the role of the green in sustaining the rain fall. This means that by combining the green strategy with a blue strategy and if we provision giving space to the rivers and the streams combined with water storage areas we could reduce if not eliminate the risk of flooding.

If we compare other European metropolitan parks based on their size in combination with their proximity to city centre we could realise what could be a logical size of a metropolitan park for Athens in this location and proximity to the city centre of Athens. From this comparison we could understand that Eleonas with size of 900 hectares and located only 2 kilometres from the city centre may be too large to be transformed all into a metropolitan park, therefore it is decided to transform the area only partially into green. Furthermore if we compare the size of Eleonas with the rest of the metropolitan parks of Athens basin we could realise the difference in scale.

However, the really small percentage of green per inhabitant in the Greek capital [2.55 m²/inh] explains that maybe the size of the existing green areas is not satisfying the needs of the city. By observing the metropolitan green system as a whole we can realize that these metropolitan parks are not sufficient to construct a well functioning system as a lot of links are missing especially in the west part of the basin and a lot of stepping stones of metropolitan scale parks are lacking in order to make the network function. This is further emphasized if we take into consideration the low percentages of green space in Athens in relation to other European cities. If we attempt to transform the short term future dross into metropolitan green for Athens we could manage to reconstruct the missing ecological links on the west side of the basin. Furthermore, by this action Athens could have 9.15 square meters per inhabitant reaching the green percentages of Rome and London.



> size comparison of Eleonas and the existing metropolitan parks of Athens
 > comparison of the area of Eleonas with other metropolitan parks based on the size and the distance from the city centre



city	park	size	distance from the city center
Amsterdam	BeatrixPark	43 hectares	3km
Amsterdam	Rembrandt park	63 hectares	3km
Paris	Parc de la Villette	64 hectares	5km
Milan	Parco Sempione	90 hectares	1km
The Hague	Haagsche Bos	125 hectares	0.5km
Paris	Eiffel Tower	160 hectares	3km
Berlin	Tiergarten	350 hectares	2.5 km



city	park	size	distance from the city center
Barcelona	Parc de Montjuïc	360 hectares	2km



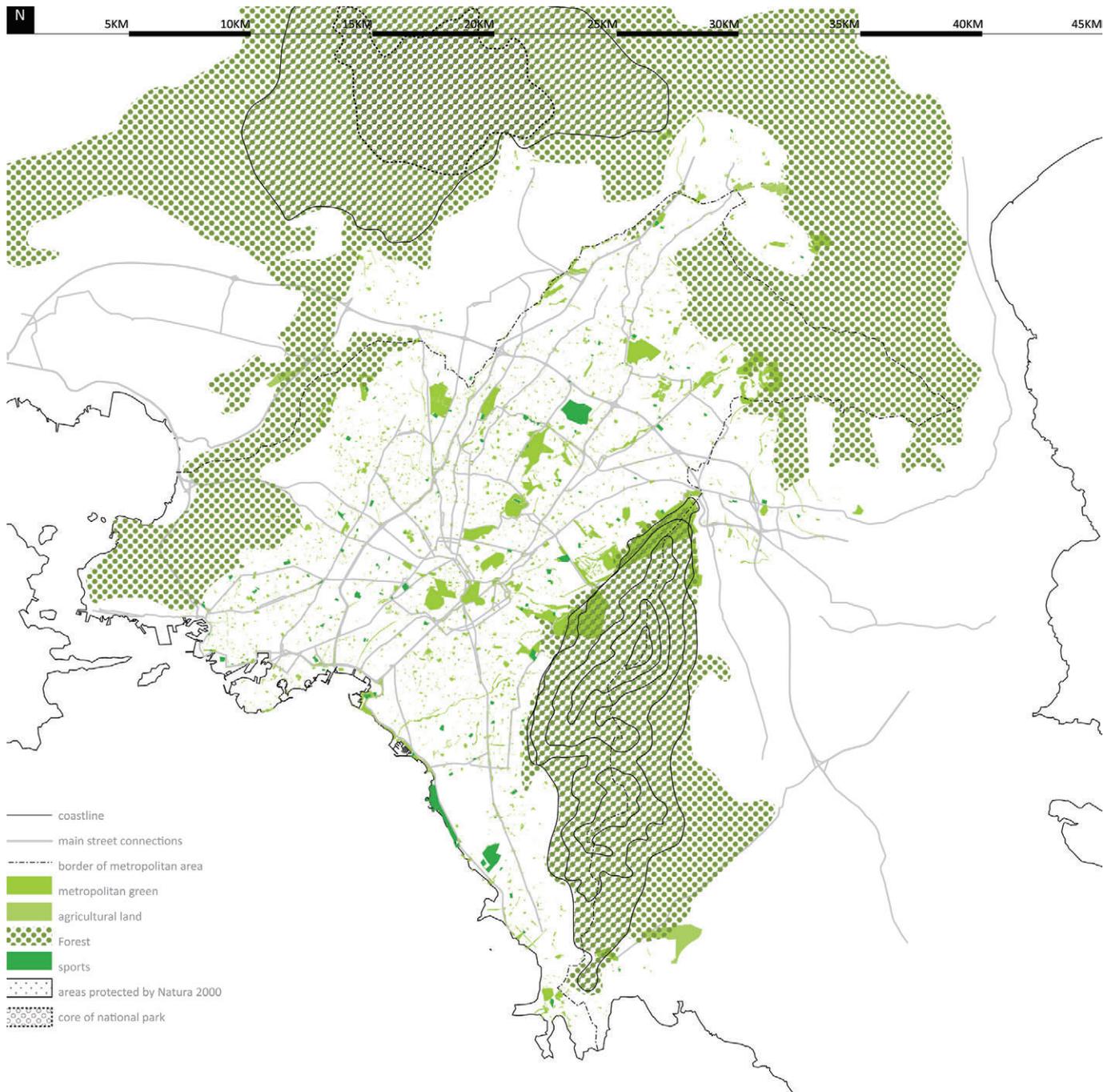
New York	Central Park	360 hectares	6km
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Paris	Versailles	560 hectares	17km
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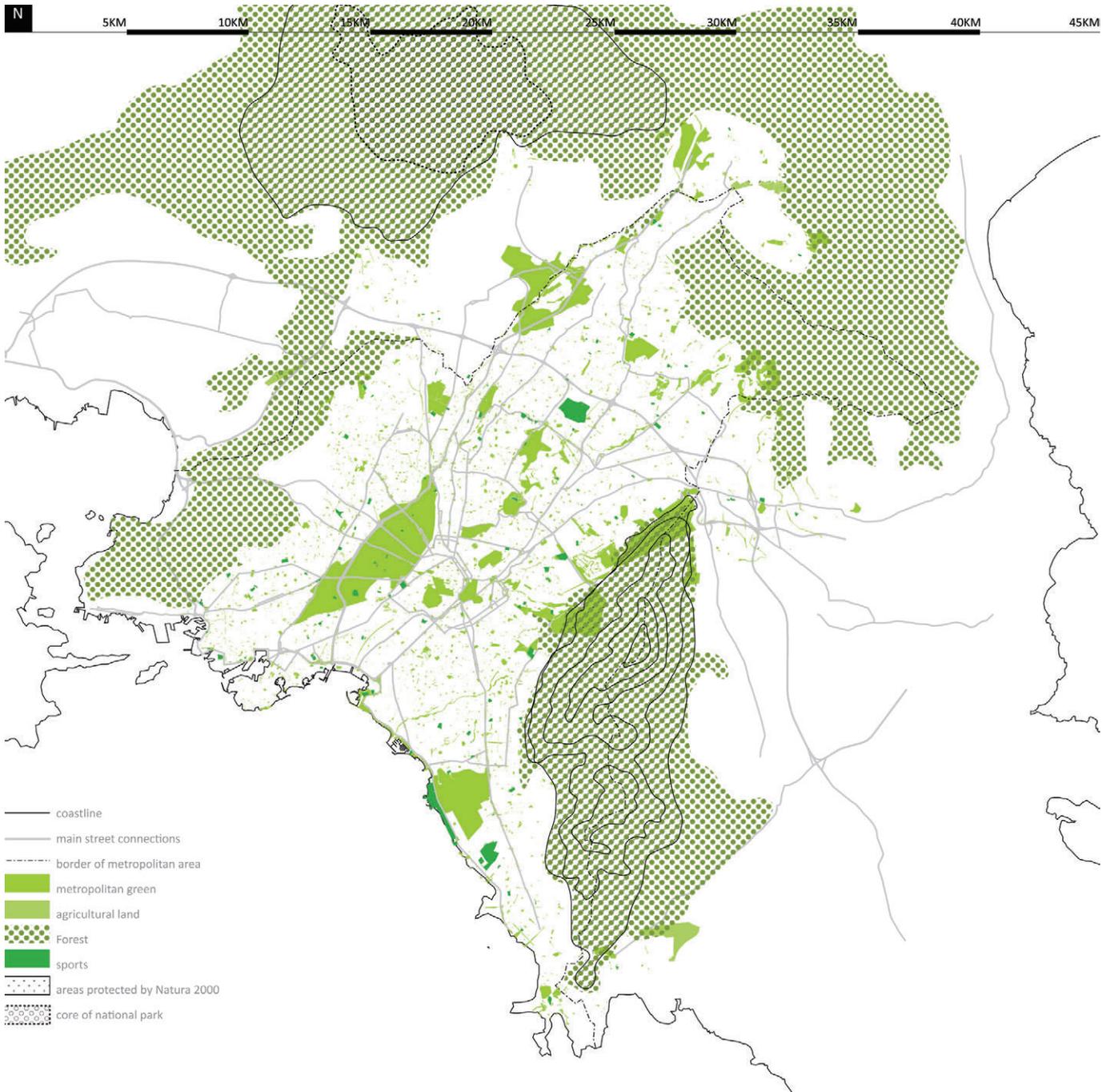
Athens	Eleonas	850 hectares	2 km
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> existing metropolitan green system and with obvious lack on the west part of the basin and in the south

> comparison of Athens with other European cities based on the percentages of green per inhabitant | source: ΥΠΕΧΩΔΕ 1994





> proposed metropolitan green system
 > comparison of Athens with other European cities
 based on the percentages of green per inhabitant
 if we consider green the area of the short term future cross



Paris
 8.54 m²/inh



Rome
 9 m²/inh



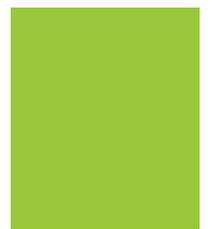
London
 9 m²/inh



Athens
 9.15 m²/inh



Berlin
 13 m²/inh



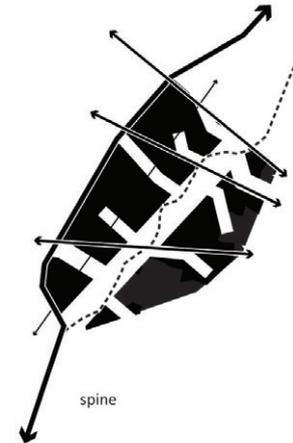
Amsterdam
 27 m²/inh

* 2. Scenarios

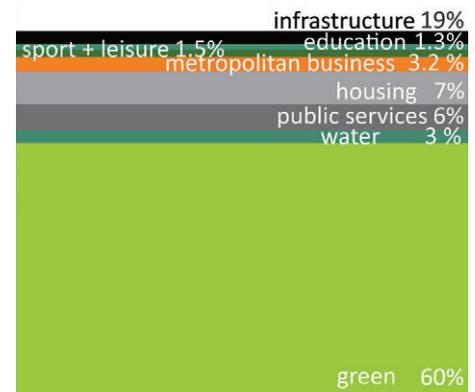
> Design Test

The first principle coming out of the analysis of the metropolitan green system of Athens is to transform into green the west and lower part of the territory in contrast to the existence currently of all the green spaces on the hills. This decision could have several positive effects; the social aspect is that we could have a more accessible green area for the inhabitants that could be used more easily for different activities; the territorial aspect is that we could reconstruct the missing links of the ecological system on the west part of the basin and in addition with a combined green and blue strategy we could simultaneously manage to deal with the risks of flooding. The second principle resulting from the analysis of scenario zero is that the green should have a concrete and clearly defined structure in order to avoid the effect of fragmentation of the green areas that could result in their weakness and the claim of these areas of application of other uses. The third principle is that before the application of the design and the redevelopment of the area it needs to be decontaminated; this is essential due to the pollution deriving from the previous industrial activities taking place in the area. The program is based on the program of the plan of 1995, however the industrial activities are completely removed and their space is used to maximize the existence of green in the area.

The strategy of the spine initiates from the water. The green is designed in a shape of a spine following the principle of a cohesive green structure and a linear park is created having as backbone the existing stream of Profitis Daniil. So the green is designed around the water, which is given more space and also water storage areas are created in order to deal with the risk of flooding in the periods of heavy rainfall. The spine is created by using the parcels defined as unwanted based on the analysis and extends the green structure also in the other direction making this green structure function as a step stone in the metropolitan ecological system connecting the green hills of the basin with the mountain Aigaleo on the west. The program of the park relates to educational, recreational and cultural activities, developed in dipolar structures; the two poles of each structure are located in the two banks of the stream in order to generate connecting movements and link the two sides of the water avoiding it from functioning as a limit. The activities are accessible by using the existing street that is parallel to Kifissos highway. The strategy works with a strong intervention in the center of the area with the spine park functioning like a pole and the border is left free to be broken by the energy and pressure generated from the surrounding neighbourhoods.



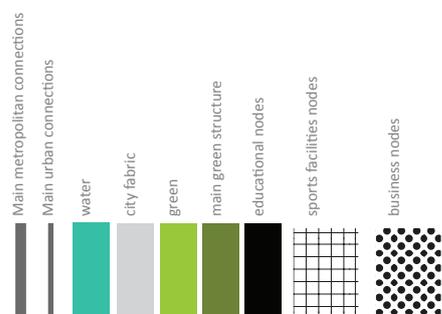
Spine

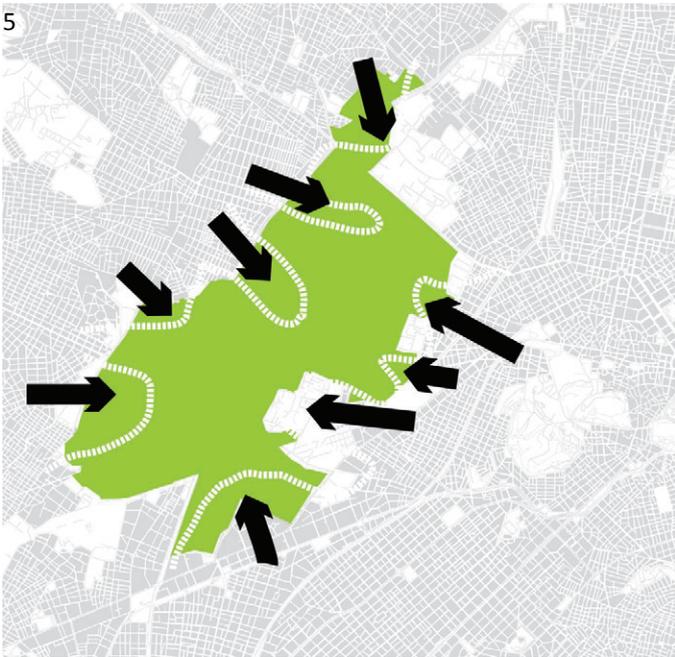
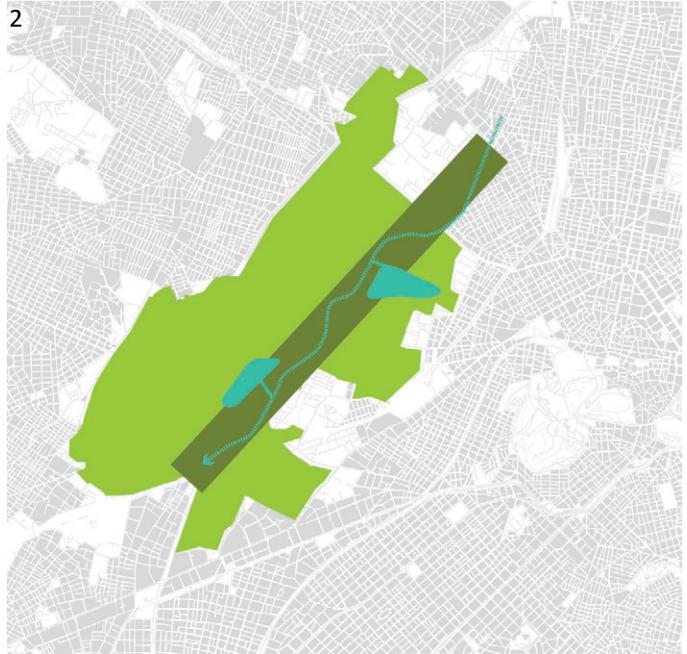


> Programm



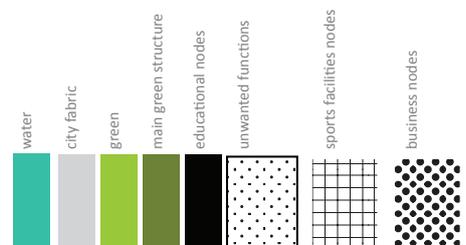
> Strategic diagram

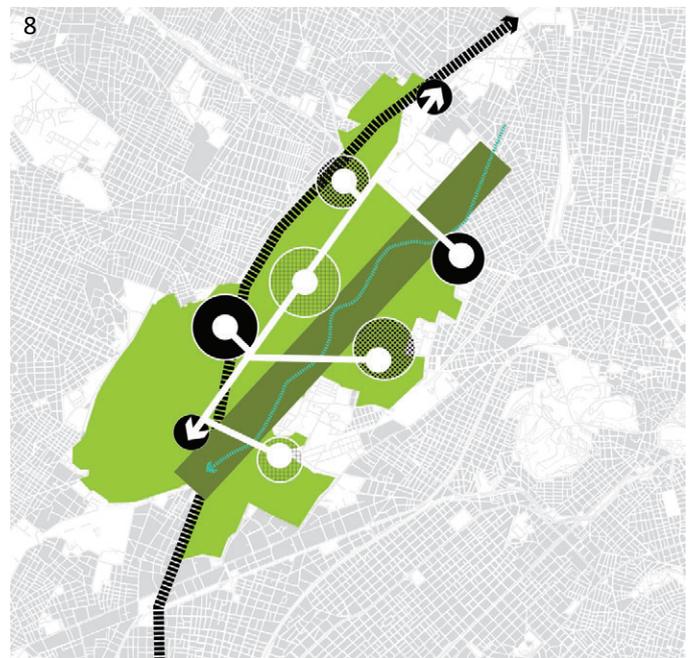
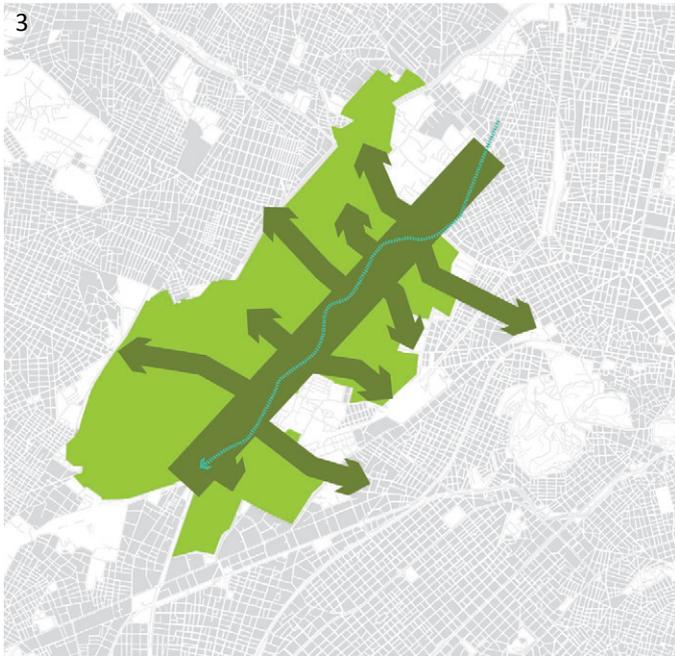




> Strategy

1. water as the backbone
2. water storage
3. green spine
4. dross used to create the green spine
5. reclaiming the border
6. invasion of urban fabric in the area
7. bipoles of program crossing the water
8. accessibility





0 km

5 km

* 2. Scenarios

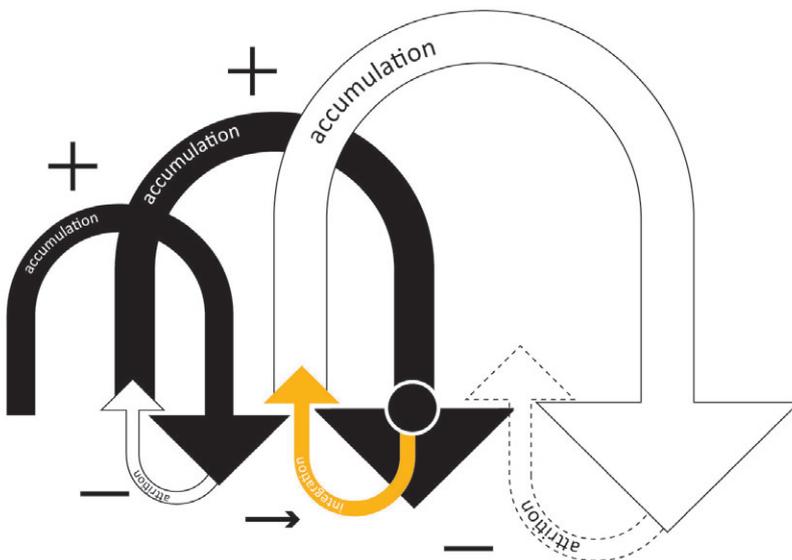
* 4. Scenario 3: Athens Re-do

[dross as a new centrality]

> Dross vs. Centralities

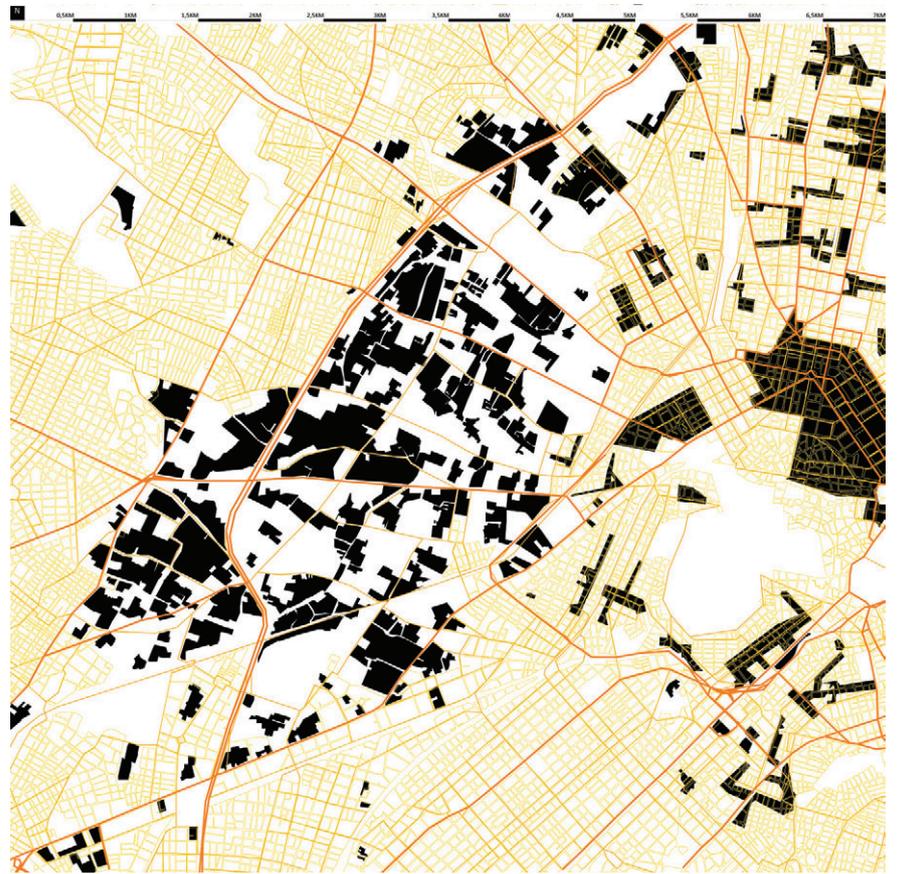
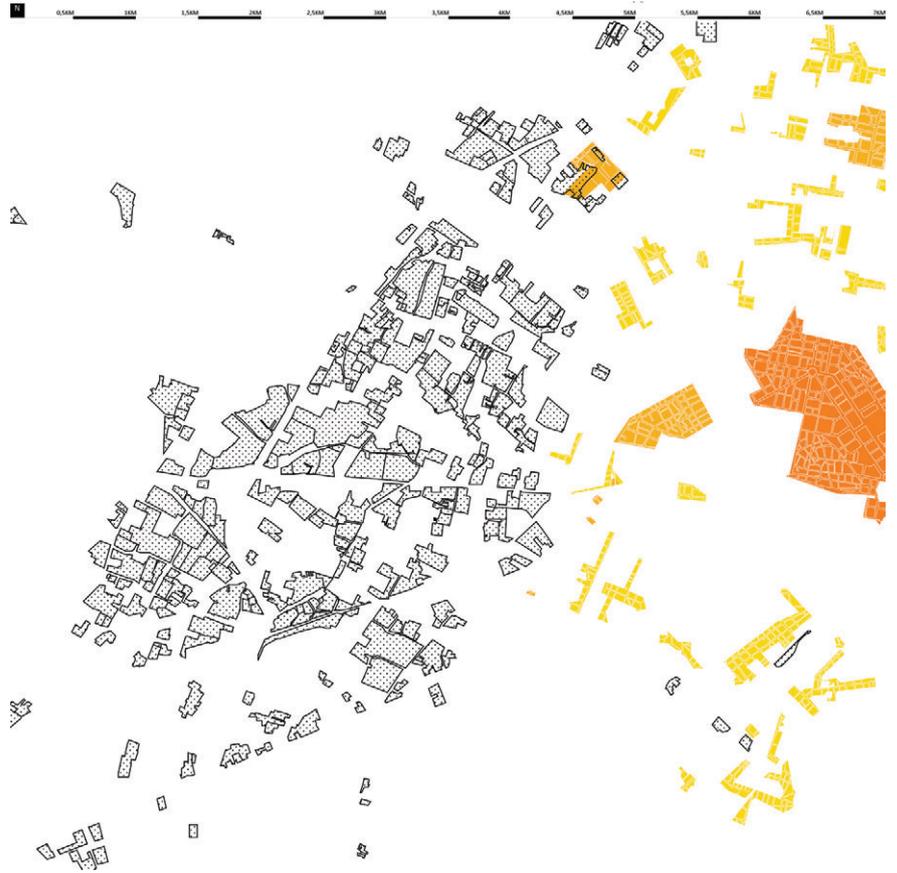
From the analysis it becomes clear that the process of creation of the areas identified as dross is mainly related with the dynamics of the infrastructural elements. We understood that the dynamics of a highway and of the metropolitan grid have an effect defining the future of some areas directly related to these connections and in parallel blocking the connection of these areas with the surrounding fabric. This understanding leads us to formulate a scenario that will test the future of dross by examining different possibilities for these areas in relation to their connectivity with the metropolitan and the local street network.

If we observe the first map in the area of Eleonas where the centralities of the neighborhood, district and city scale are marked and also all the dross areas are marked in the same way as fragments in a blank surface we cannot realize what is the main difference of these parcels. They seem areas of similar size and their location or other characteristics do not constitute an element of differentiation and any of these areas could have the meaning of a center or a leftover for Athens. If however look at the second map where both the center and the dross areas are overlapped with the street network it directly becomes obvious and clear what defines the centrality and differentiated it from the dross. The centralities are crossed by different levels of infrastructure: the city scale network, the district network and the neighborhood network and as a result are connected to the rest of the city with different networks and in different speeds. However, the dross areas remain black because none of the networks crosses these areas, which means they are completely disconnected from the rest of the city and they depend only on the connection to the highway. Their main difference is that the centres relate to regions of the globe, the metropolis, the urban centre and the local area simultaneously, while dross may relate only to a region of the metropolis. (Read) Therefore the centers constitute places where we can experience the layering of different networks and flows of different scales and 'speeds' simultaneously, while dross could be considered a non-place lacking this stratification of different infrastructure or grids.



> Dross and centralities of neighborhood, district and city scale
> Dross vs centralities: the distinctive effect of connection and disconnection to diverse levels of the street network

- Main metropolitan connections
- Main urban connections
- Main local connections
- city centre
- district centre
- neighborhood centre
- dross - unwanted functions
- areas of dross and centralities



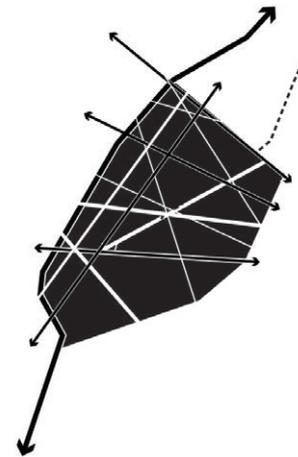
* 2. Scenarios

The implications for a conceptualization of centrality are very significant indeed. Instead of centrality being something to do with density and with agglomeration, suddenly it has much more to do with differently scaled strata of movement or connection and the way they 'interface' with each other. (Read) Based on this definition what drosscapes are deficient in is not the proximity but the topological notion of depth and this is what needs to be reconstructed in order to regenerate the area and transform it from dross into centrality, from non-place into place, from residual into center.

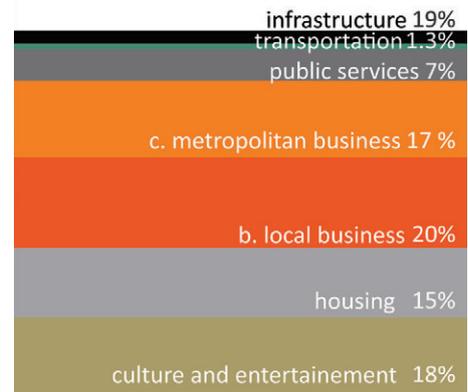
In this scenario we attempt to create in the studied areas the centrality effect as a result of the combined connectivity of the different networks and scales ranging from metropolitan to local. For that reason the neighbourhood street network is constructed, the pedestrian permeability is enhanced and the mix of uses and the public character of the area are reinforced. This scenario is interpreting differently the cycle of formation of drosscapes that was the conclusion of the analysis. It is attempting to take advantage of the opportunity of the areas that are undergoing or are predicted to go through the attrition process, the areas that are under decline and abandonment and transform them in areas integrated in the urban system. There is an attempt to redirect and control the process of attrition and transform it into a process of integration and this integration is achieved by the transformation of dross form residual into centrality in the way explained before.

> Design Test

The principal that is a starting point for the design test is to transform the dross form residual to centrality. This is succeeded by reconstructing the topological depth of the area through the connection of these peripheral fragments with different scale networks and with different speeds. Through that action we attempt to regenerate fine grain activities and city life in these areas that they currently lack. In the analysis of the current condition we observed the strong limits of the highway and the train line which rendered the area of Eleonas an enclave. This scenario is first working with the border of the area and trying to overcome the enclave condition by eliminating one of the borders. In order to open up the area and render the dynamics of the neighbouring centralities more effective the train line is being redirected parallel to the highway on the west. In the design test the construction of the centrality is attempted through the extension of the existing networks in the surrounding fabric in a "Haussmanian" approach. This means that the different networks of neighbourhood scale, district scale and city scale invade in the area in the form of long axes. In the points of intersection they create the dynamics of centres.



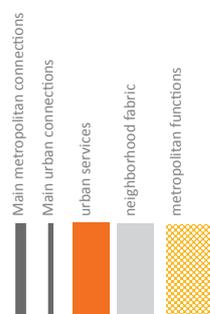
Haussmann

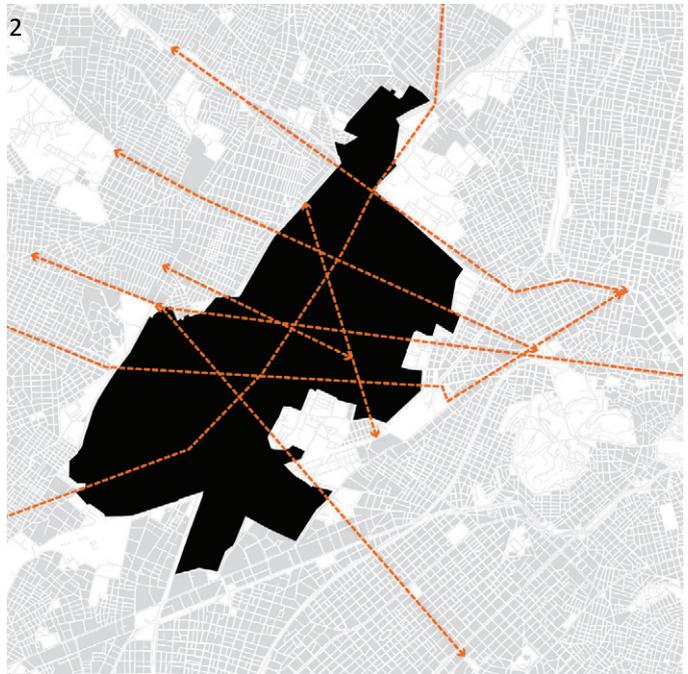


> Programm



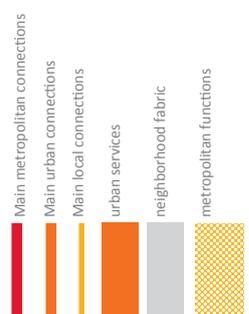
> Strategic diagram

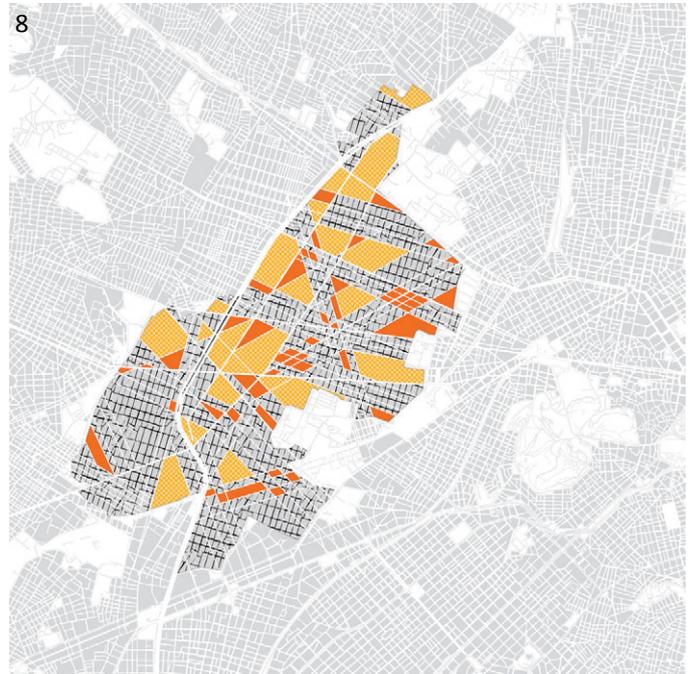




> Haussmann

1. extending neighborhood network
2. extending city network
3. exits from the highway and metropolitan network
4. all the networks
5. neighborhood fabric
6. city functions in relation to the urban connections
7. metropolitan functions the dynamics of the highway
8. all the different functions





0 km

5 km

* 2. Scenarios

> Evaluation + design principles

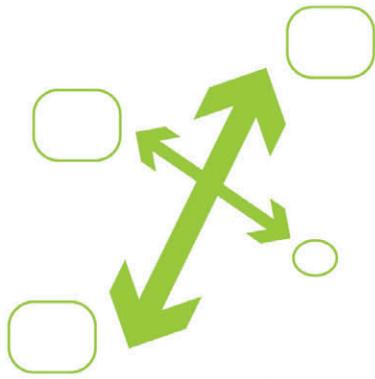
The first scenario explored the potentialities of the wasted landscapes of Athens to re-establish the systemic ecological connections of the territory. The calculation of the contribution in green space in Athens by the reuse of the short term future drosscape is evaluated positively, as the city with this action reaches the standards of other European cities by 9.15 m² of metropolitan green per inhabitant. Furthermore, the location of short term future dross in the lower part of the territory offers possibilities for a combined strategy of green and water dealing with the risks of flooding. However, from the design test comes up that starting a green strategy from the water could also create some problems. This is because first a river can constitute a spatial limit and second because other possibilities for positioning a metropolitan green structure with more benefits should be considered.

The second scenario tests the possibility of dross transforming into a centrality. The continuation of the neighbouring fabric and the extension of the city scale infrastructure are considered essential to construct the centrality effect and urban life in the area. However, the design of the missing infrastructural links should follow the logic of the existing city structure and should not be foreign to its form. Furthermore, the metropolitan connection to the highway and its dynamics are not integrated in the area and are kept in a linear development of metropolitan functions parallel to the highway. This could be considered as another a failure of this scenario in terms of integration that the principles for a strategy should try to overcome.

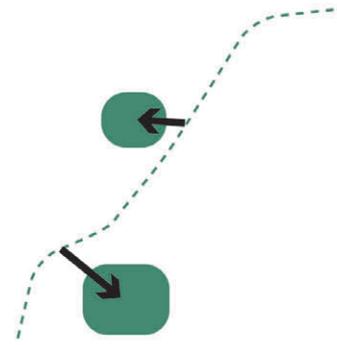
After evaluating the exploration of the risks and the potentials with the previous testing we can define design principles that aim at the reuse of dross as the device for integration between the metropolitan and the local scale. Some of the principles used for the design tests are considered valuable for a strategy of integration and therefore kept. In addition, new principles arise after considering the problems identified in the design test. The principles refer to issues of ecological equilibrium of the territory and the creation of new centralities in the abandoned areas, leading in a strategy of integration between the metropolitan and the local.

Design Principles:

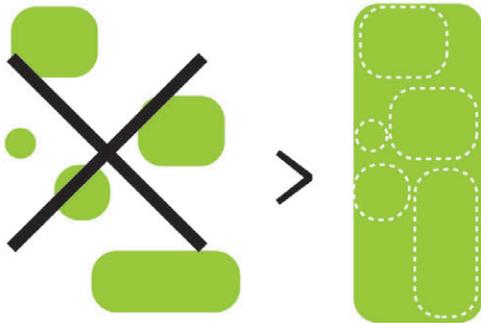
1. Strengthen and complete the ecological connections. Based on the needs of the metropolitan green system of Athens priority should be given in the west part of the basin and in the lower parts of the territory in contrast to the existence currently of all the green spaces on the higher parts.
2. Avoid fragmentation of the green areas due to risk of being claimed for other uses. Instead concentrate the green space and form a concrete structure that could serve both the metropolitan and the local scale.
3. Combine the green with a blue strategy. Create water storage areas where needed to avoid the risk of flooding. Define their location based on the existing water system.
4. Attach green areas to the highway.
5. Break the enclave conditions by eliminating or overcoming borders and elements consisting spatial limits..
6. Reestablish the connection with the neighboring city fabric.
7. Redirect the dynamics of the highway.
8. Enhance local, city and metropolitan accessibility and create a new centrality with connection to different scale networks with different speeds.



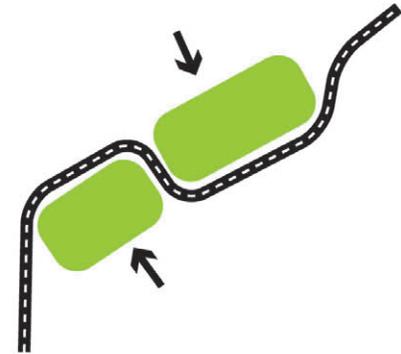
1. Strengthen and complete the ecological connections



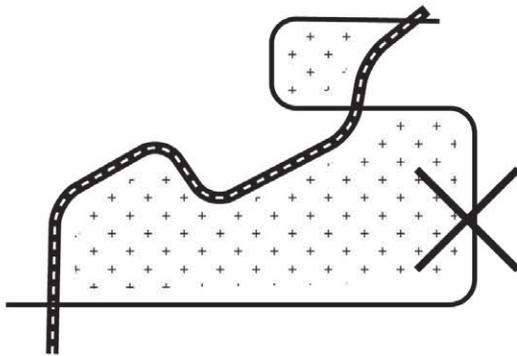
2. Create water storage areas to deal with the risk of flooding.



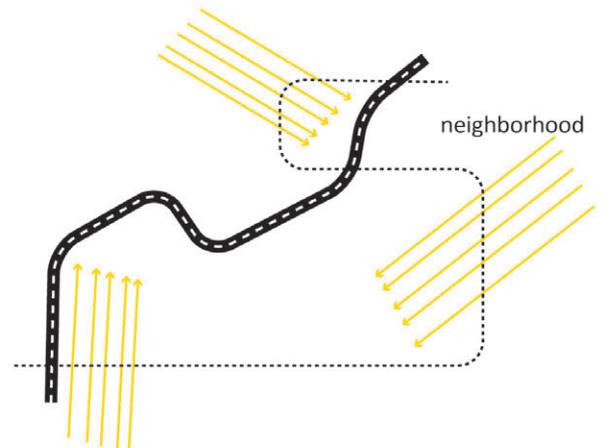
3. Avoid fragmentation of the green areas. form a concrete green structure



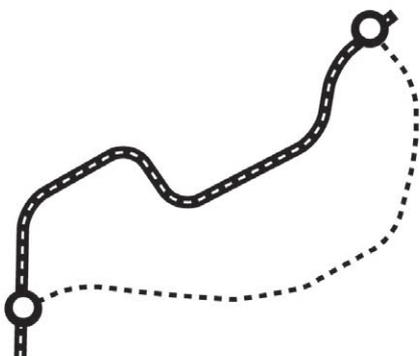
4. Attach green areas to the highway.



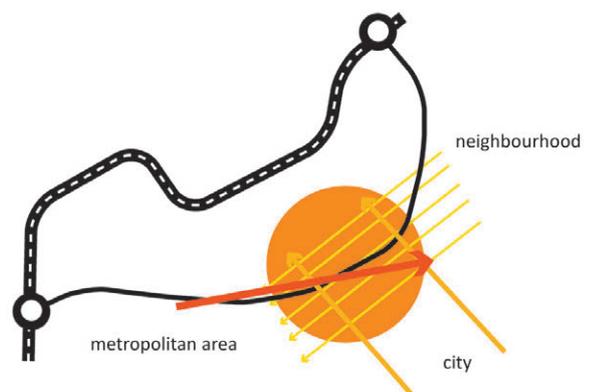
5. Break the enclave conditions



6. Reestablish the connection with the neighbouring fabric



7. Redirect the dynamics of the highway.



8. Enhance local, city and metropolitan accessibility and create a new centrality.



G. Design Proposal: Defragmenting Athens*



* 3. Design Proposal: De-fragmenting Athens

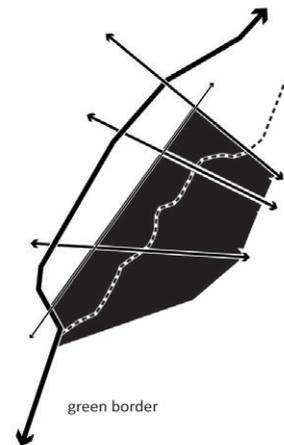
* Design Proposal: De-fragmenting Athens

[dross as a device for integration between the metropolitan and the local]

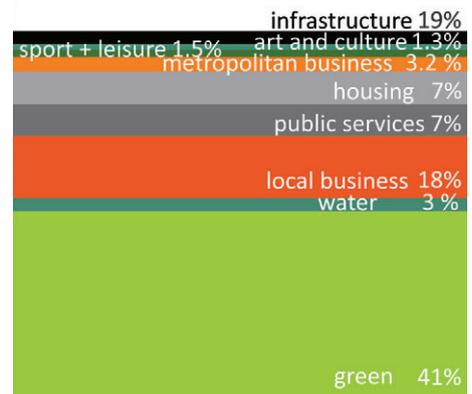
The design proposal derives by the application of the aforementioned design principles in the area of Eleonas. The initial aim of the design is the integration of the metropolitan and the local. It is attempting to combine and use the findings from the previous scenarios and their design tests. It aims not only at the reuse of dross as a device for reconstructing the ecological system but also at the creation of new centralities in the area.

The green in the area is forming a coherent and compact structure that has the significance of a metropolitan park for the city of Athens. The process of decontamination of the area, which is necessitated by the previous polluting activities in the area, gives the possibility of creating a new topography to the previous flat area. The green area is between the two waterways the river Kifissos and the stream Profitis Daniil. Water storage areas for each of the waterways is designed based on the territory and the water streaming and prevents the risk of flooding. The park has a linear structure that is following the south north direction creating a basic ecological connection that the metropolitan green system is currently lacking. The park is designed by stripes developed perpendicular to each main axis. They serve at connecting it with the big green elements existing in the surrounding territory. The stripes accommodate different kind of green and a variety of program that will maintain the use of the park. The program includes city scale facilities like the University of Agriculture, the PAO stadium, a museum, a botanical garden, the cemetery as well as local functions like sports' fields, playgrounds and squares. Furthermore, the historical monuments like the academy of Plato and the byzantine churches are integrated in the park through a historical route. The aim is to realise a park that could be a large recognisable object of a metropolitan scale and simultaneously a local garden for the neighbouring districts. This park could be used from a variety of users from tourists to local inhabitants. The new metropolitan park is situated next to the highway. This park has the benefit, creating a buffer zone between the city and the highway and therefore avoiding the creation of non-places along the metropolitan scale network. This decision is also important because the green area functions as an attractor for the neighbourhood that renders the border of the highway more permeable. In addition, the highway becomes a greenway optimising the view while entering the city.

The area has a potential due to the proximity to the city center, only 3km distance, to become a new central business district for the city of Athens. The design first breaks the current enclave situation of the area by redirecting the train line parallel to Kifissos avenue. The decision of positioning the metropolitan park attached to the highway offers the possibility of redirecting the dynamics of the highway for functions of metropolitan scale in proximity to the city centre. This in combination with the removal of the train line-border provides fertile ground for generating new centralities connected to all the scales and speeds. The reconstruction of the street network is based on the principal of completing the existing system. If we analyse the street network of the city we can realise that all the city scale connections are axially developed to the city centre and the district scale urban tissue is developed with a grid pattern of 50meters to 50 meters blocks arranged perpendicular to the main axes. This means that the main district connections constitute concentric circles having as a centre the city centre of Athens. So the city scale network as well as the neighbourhood scale network is designed following the existing structure. One of the concentric circles is becoming the extension of the inner city ring and the area becomes part of the city centre, something that was not possible before due to the existence of the train line. The program is applied following the logic of the concentric circles, however without forming zoning but just a general rule that could be differentiated in the vertical axis and with exceptions generating a mix use. The program includes diverse uses ranging from public functions like Ministries, administration buildings, offices and services, commerce and residencies.



Greenway

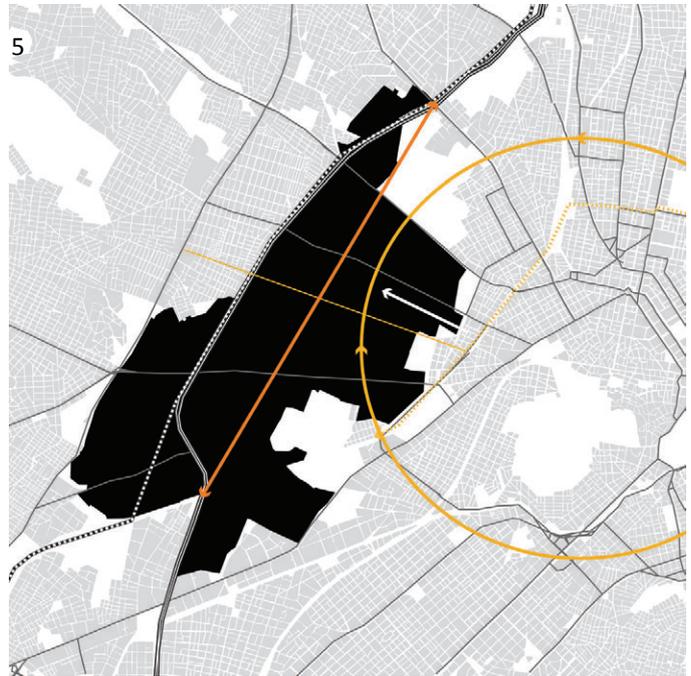
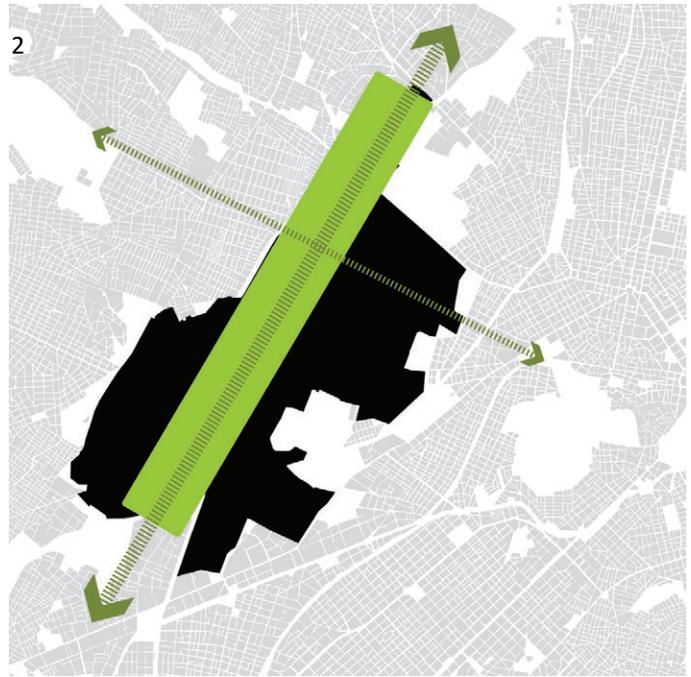


program



> Strategic diagram

- new train line
- primary street network
- secondary street network
- green connections
- waterways
- water storage areas
- urban fabric
- metropolitan park
- existing green elements
- area of Eleonas



> Greenway and extending the centrality

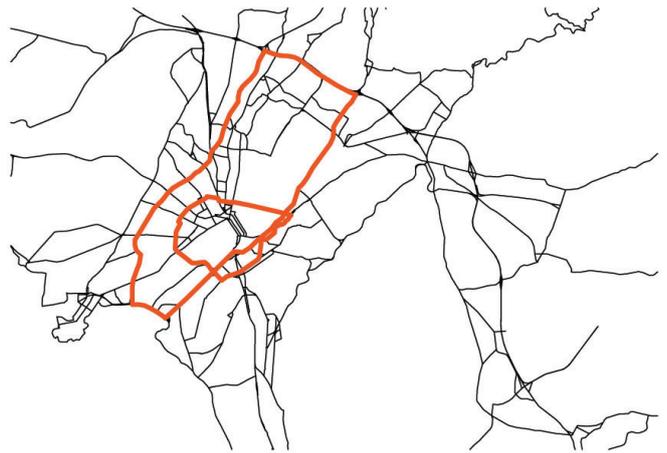
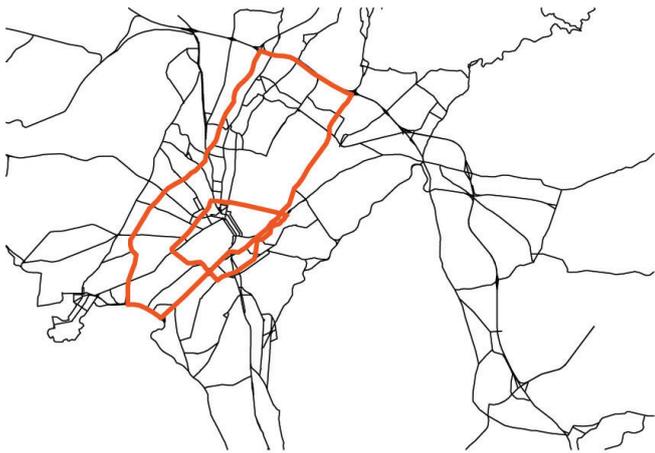
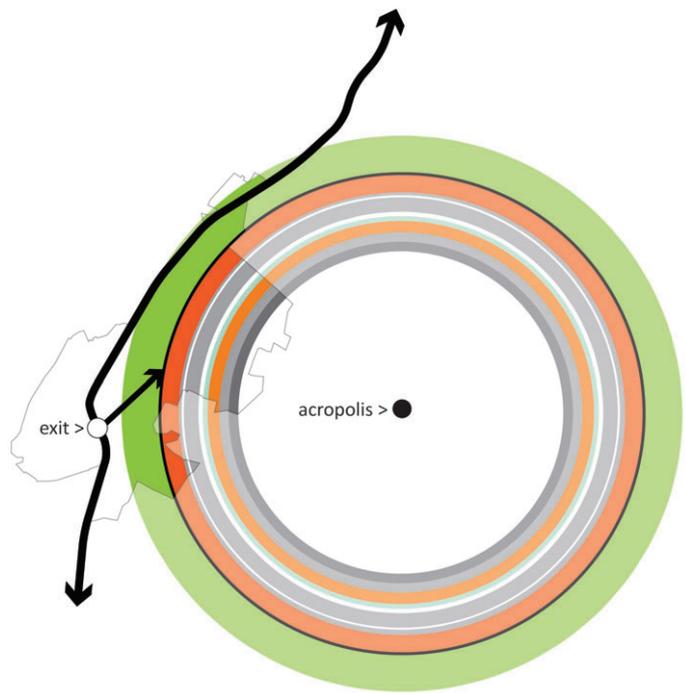
1. eliminating the border of the train line
2. the dynamics of the centralities
3. redirecting the effect of the highway and connecting to the city
4. the cbd ditached from the highway
5. the linear park parallel to the highway
6. the water storage
7. extending the neighborhood network
8. green, metropolitan and local

- Main urban connections
- new ring road
- neighborhood connections
- new train line
- primary street network
- secondary street network
- ecological connections
- green connections
- waterways
- water storage areas
- urban fabric
- metropolitan park
- existing green elements
- area of Eleonas
- new centrality



0 km

5 km



up
 > reading the city structure, the radial network
 > applying the program following the structure

down:
 > the existing city rings
 > the proposed city ring



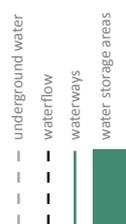
> the design proposal with the metropolitan park and the new centrality

- new train line
- primary street network
- secondary street network
- urban fabric
- waterways
- water storage areas
- metropolitan park
- stripes of diverse green
- existing green elements
- proposed urban fabric



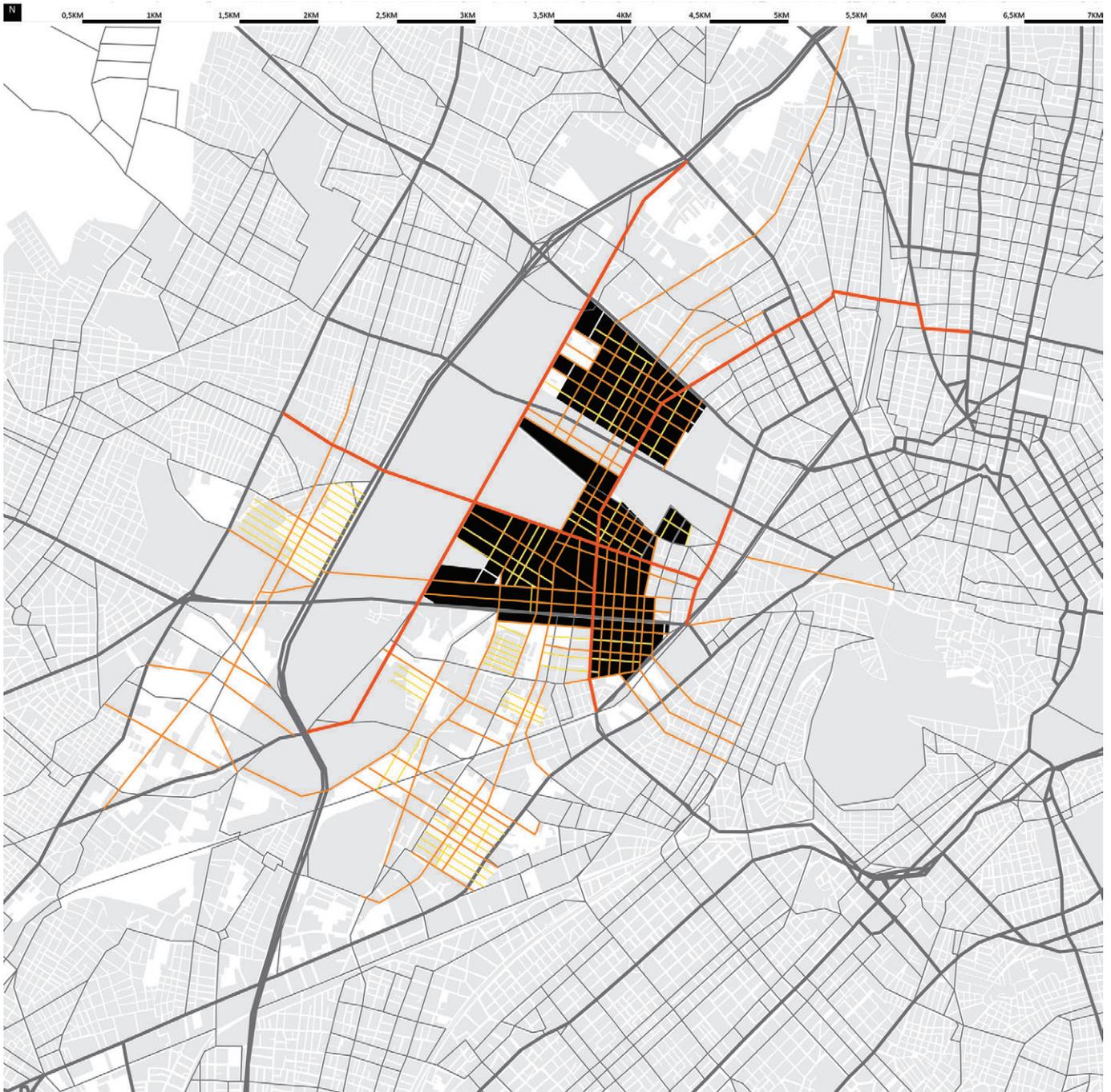
This is the green structure and the design of the metropolitan park. In the first map we can observe the complete design of the element and its relation with the rest of the metropolitan green areas. The design aims at maintaining the ecological connections from north to south and east to west. In the opposite page the first diagram concerns the green not having a strict border but having a gradient from the park towards the city centre. This is a tool for avoiding the creation of a strong border to the green area: differentiate the block types on their footprint in order to create diversity of typologies and also make the transition from the city center to the park more evident while traversing the area. By augmenting the height limit the density of the area and the application of program could be maintained. Then we can observe how the design was based on integrating the existing green elements in the surrounding area and the new program included in the park. Finally, we can see how the design of the water storage was effectuated based on the water flows and the underground water.

- urban fabric
- waterways
- water storage areas
- metropolitan park
- stripes of diverse green
- existing green elements integrated in the park
- existing green







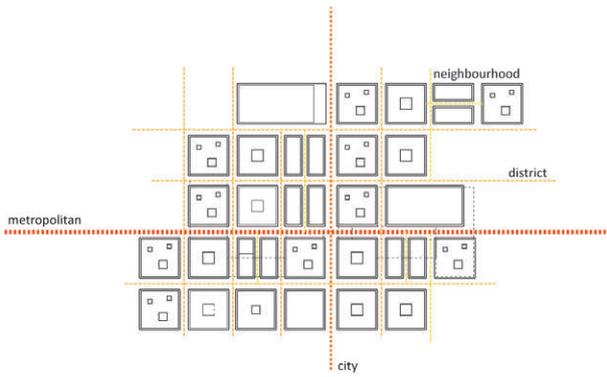
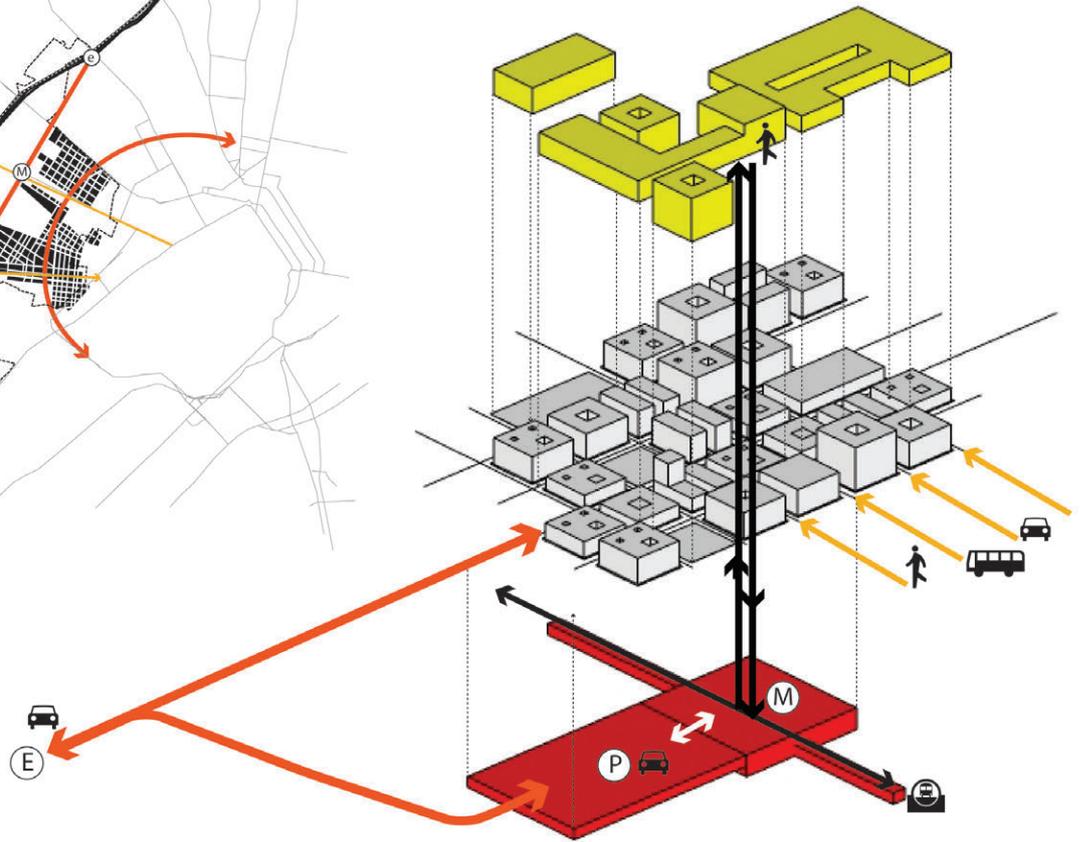


The design of the new centrality is succeeded with the introduction in the area of street network of metropolitan, city and neighborhood level following the city's structure . The design was based on completing the missing links of the existing city network.

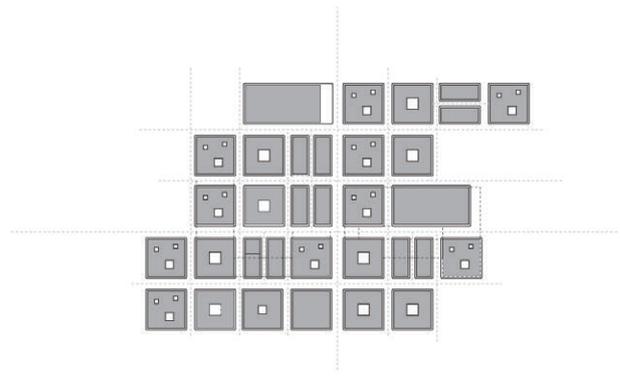
In the opposite page we can see a diagram concerning the integration of the different scales in the multi modal nodes of the area. The typology of blocks integrates vertically the scales and the basic rule is to keep the city grid even in areas with pressure for metropolitan functions: services, commerce that need a bigger footprint. This typology is a tool for maintaining the fine grain activity, all level of flows and activities and a vivid urban street life.

- proposed primary street network
- proposed secondary street network
- proposed tertiary street network
- existing primary street network
- existing secondary street network
- proposed urban fabric
- existing urban fabric

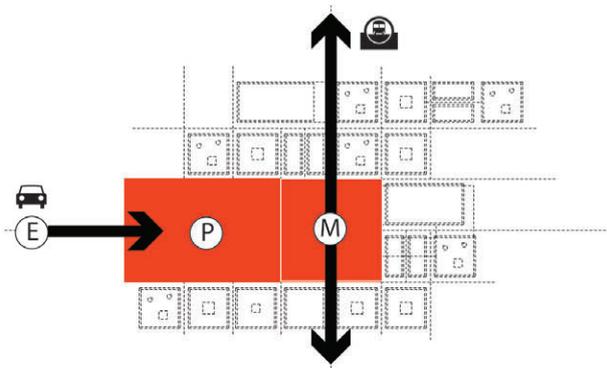




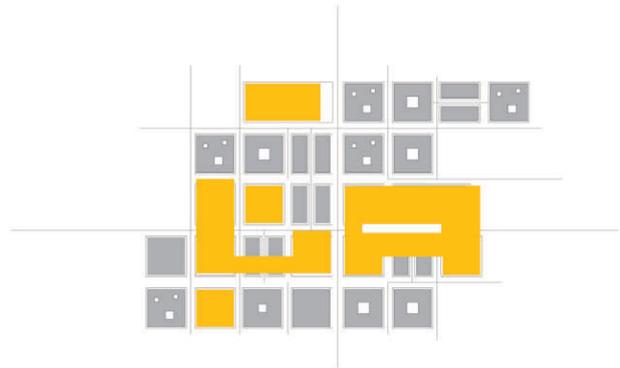
street network hierarchy



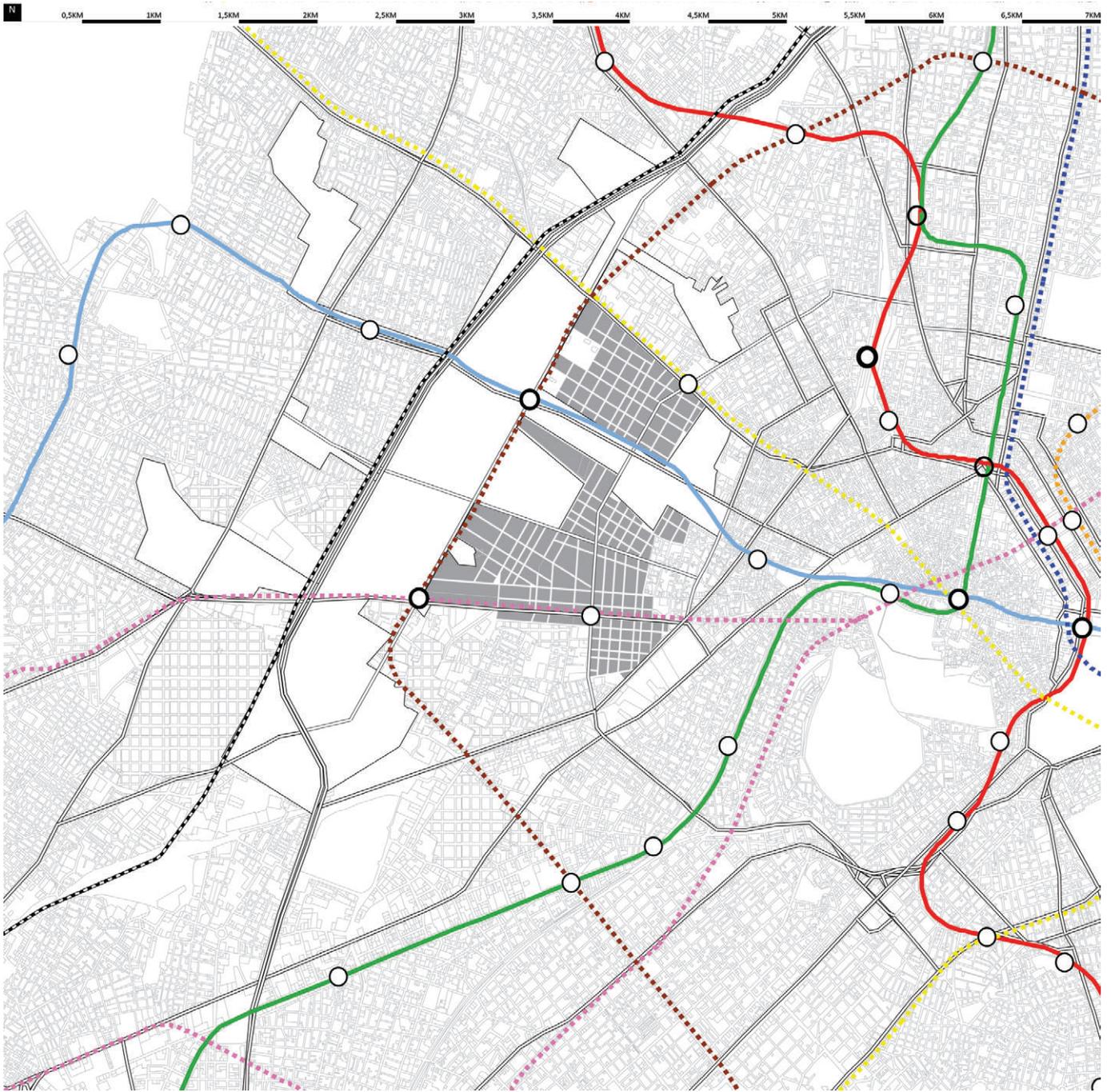
city scale _ ground level



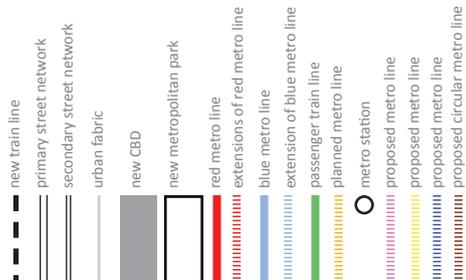
metropolitan scale _ underground level

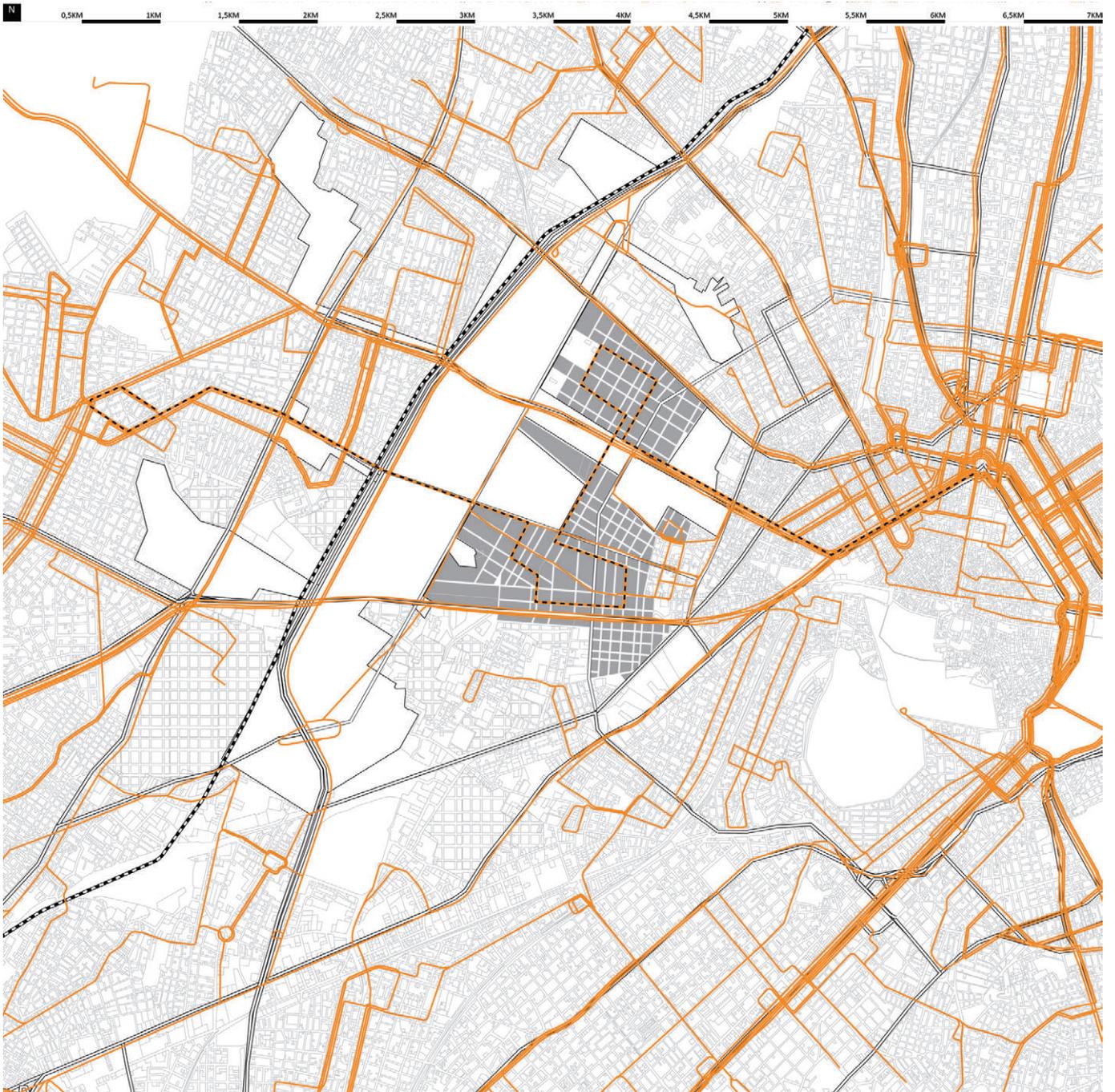


metropolitan scale _ upper level



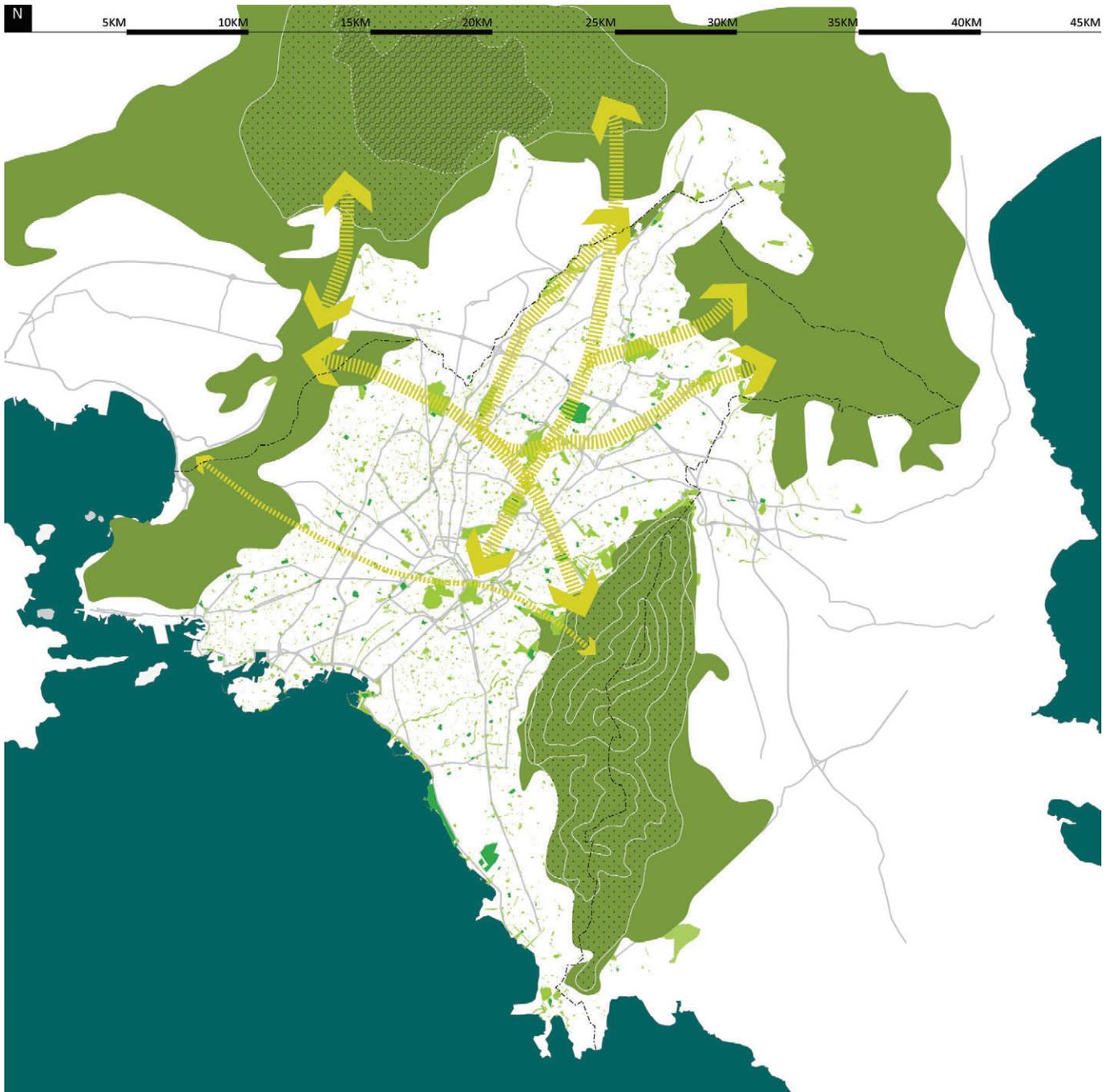
> the existing and the proposed metro lines following the plan of attiko metro





> the existing and the proposed bus routes serving the new centrality and increasing the public transport accessibility of the area

- new train line
- primary street network
- secondary street network
- urban fabric
- new CBD
- new metropolitan park
- current bus routes
- proposed buses routes

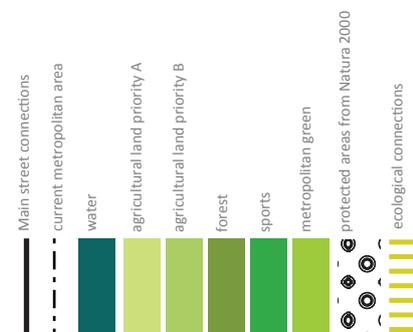


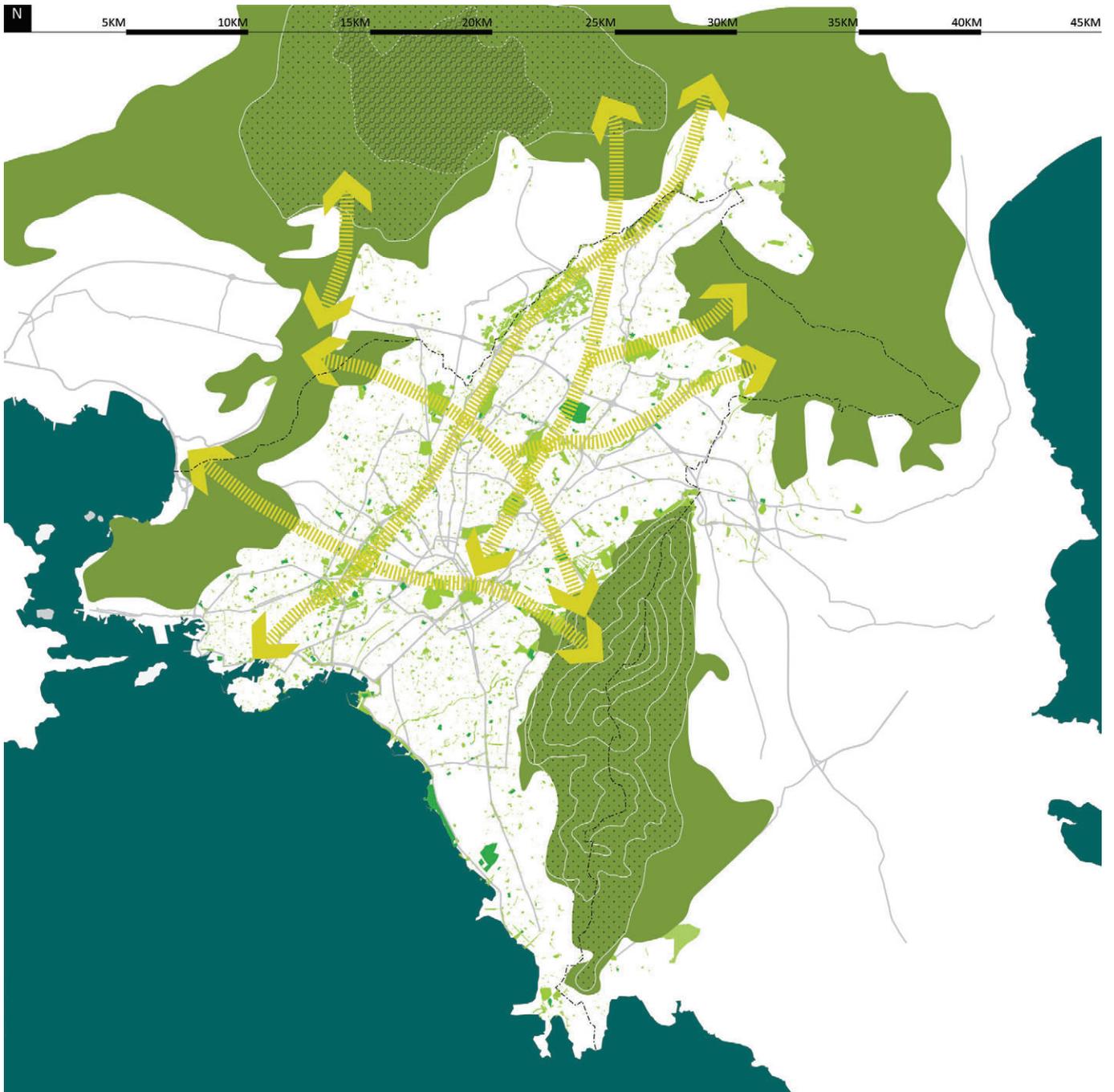
> Evaluation

> The ecological connections before the proposal

The design is evaluated by applying it in the metropolitan scale. The hypothesis is that the principles of design can also be applied in other areas of wasted landscapes presenting similar characteristics. By applying the principles to the rest of the areas of the short term future dross of Athens we could generate a strategy concerning the whole territory. The effectiveness of the strategy in the metropolitan scale could be evaluated by comparing the existing situation with the proposed. The comparison takes two directions the metropolitan green system with the ecological connections and the street network composed by the infrastructure of different scales ranging from metropolitan to local.

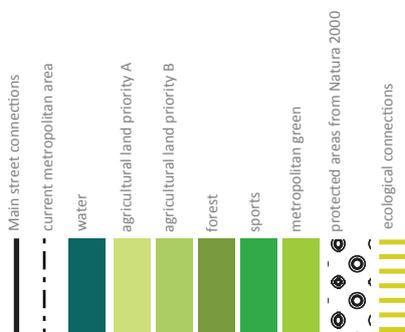
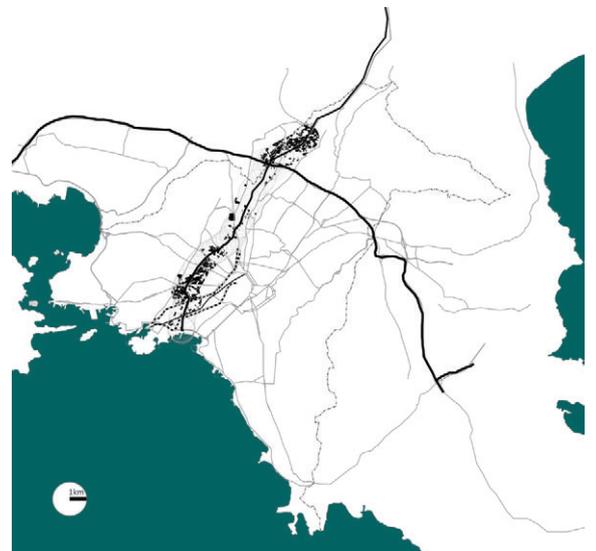
As far as the green strategy is concerned, the green area that is proven essential for completing the metropolitan green system and reconstructing the ecological relations of the territory while in parallel dealing with the risks of flooding is maintained. This is succeeded by selecting all the drosscape that is within a distance of a radius of 1kilometer from the highway of Kifissos. By this action the important ecological connections from north to south are created and the west part of the city, which is the one

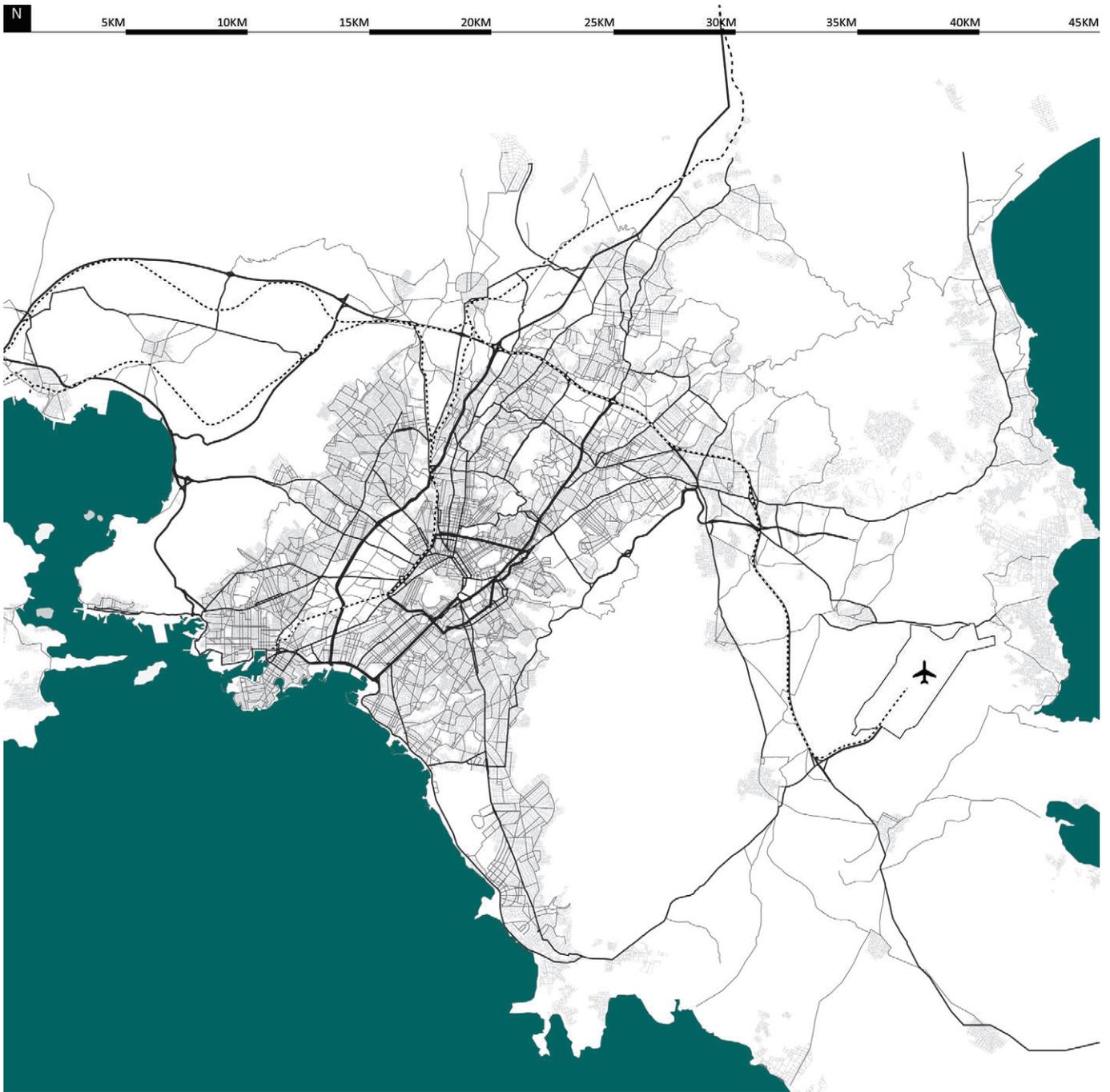




> Completing the metropolitan green system and the ecological connections after the proposal

> selection of the short term future drop within 1km radius from Kifissos highway

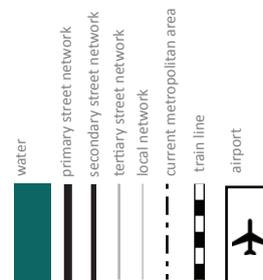


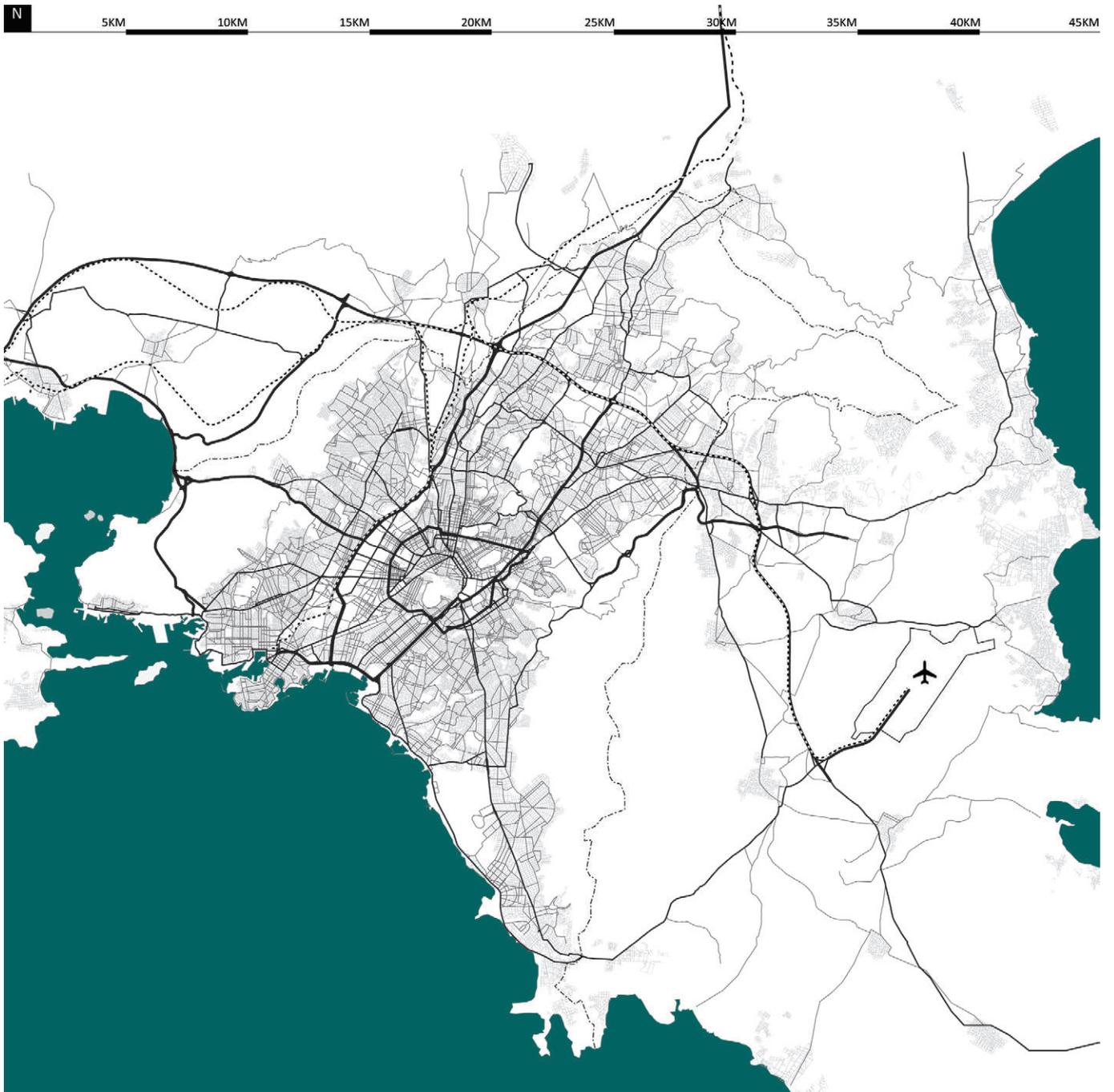


> The hierarchy of the existing street network

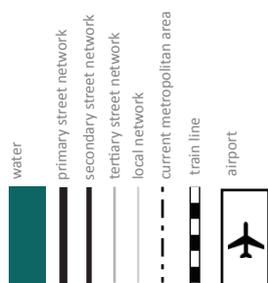
most lacking in green but also the lower topographically, gains some green. This linear structure with strong existence in the city is avoiding the risk of fragmentation of green. By comparing the existing with the proposed it becomes clear how the strategy is effective in completing the metropolitan green system and providing the missing ecological connections. It also increases the low rate of green space per inhabitant that is a major problem for Athens.

As far as the infrastructural strategy is concerned, the creation of new centralities is feasible and the integration between the metropolitan and the local is successful. The ring of the city centre is being extended, something that is now possible due to the redirected train line, entering the area of design and generating the centrality effect. This is not a strategy easily applicable to other areas and is feasible due to the specific characteristics and location of the area of Eleonas. However, it has significance importance for the metropolis because it is extending the city centre and is creating a new central business district. The principle of creating centralities even of district scale by extending the street network of different levels is important for the integration and the regeneration of the wasted landscapes that offer a potentiality for the city.





> The reconstruction of the street network, the redirection of the train line and the new ring of the city centre







H. Conclusions*

> Conclusions

This study initiated from an interest on the theme of dross. Dross is the residual of the urban processes, the left-over, in other words the waste landscapes of the territory. The process of formation of wastelands relates to two processes, the process of accumulation and the process of attrition. Accumulation is the process of the urban expanding, the process of the city taking over more territory. It is the development, which in the current era could be identified in the phenomenon of “sprawl” and dispersed territories. Attrition is the process of abandonment, the process of the urban forming black holes, and the process of decay which in the actual city could be observed in the post industrial sites.

The analysis aimed at identifying the dross areas while looking at the factors contributing to their formation and trying to predict the future waste landscape within the specific territory of Athens. I have attempted to understand the form of the city as a whole by studying its spatial conditions and mainly the wastelands and brownfields and their relation to the rest of the urban fabric. The analysis had as a starting point two hypotheses for the formation of the residual spaces. The first hypothesis regards that the formation of these fractures relates to the territorial conditions. Hence, the first part of the analysis of Athens relates to the study of topography, geology, water and the relational study of the territory with the land uses. The second hypothesis links the formation of the residual spaces to the infrastructure. In order to investigate this, it was thought important to study the history of the city by mapping the evolution of the urban, the infrastructural changes and the industrial activities. A historical analysis was deemed essential, since only by understanding the past a prediction about the future can be attempted. It was categorized in four periods: the first investigated the classical Athens of the 5th century B.C. The rest (1833-1940 – Capital Athens, 1941-1985 – Post-war Athens and 1985-2009 – Olympic Athens) studied the contemporary city since 1833 when Athens became the capital of Greece.

By observing the city’s development through time I formulated a model upon which I could make my hypothesis for the future drosscapes of the Athenian territory. The two processes of attrition and accumulation, if looked at a specific point in time, could be identified as two different procedures with diverse locational patterns. Yet, by having an overall view of the changes in the territory from a historical perspective I came to realize that the process of formation of dross actually works in a circular process, meaning that what used to be the dross of accumulation in one era becomes the dross of attrition in the next one. I regard this cycle of development and decay to be the main finding of the analysis and may be defined as the model of formation of dross. Based on this understanding I was allowed to identify and predict the three typologies of dross landscapes of Athens: the current dross, the short term future dross and the long term future dross.

The current dross are the industries developed in the city between 1880’s and 1920’s. The industrial activity of that era appeared mainly along the Piraeus Street and the first train line. Nowadays, the area is already reclaimed from the city and is under transformation. It could be identified as the current dross. The circle of formation of dross has been completed as both the processes of accumulation and attrition have taken place here. The short term future dross includes the industrial activities that were developed mainly illegally during the 60’s along Kifissou Avenue. Kifissou Avenue was constructed parallel to the river Kifissos and connected the city with the rest of the country but also with the European highway network. The industrial activities

are unwanted in the contemporary urban fabric and we could predict that the area will enter the process of attrition in a horizon of 15-20 years. The long term future dross concerns the territory that has been transformed between 1987 and 2007. This transformation takes place along Attici odos, a freeway, which was finalized in 2001 for the needs of the Olympic Games, and today connects the city with its new international airport. This area is currently under the process of accumulation and it is possible that it will constitute the dross of attrition in a horizon of 50-60 years.

These three typologies were accumulated in the city in different periods, with diverse functions and in different locations. However they share two common attributes. Firstly, they constitute the lowest part of the territory. It is of a particular constitution of soil and renders them susceptible to the risk of flooding. Therefore these areas were left out from the urbanization processes in the first place. This verifies the first hypothesis of the analysis that dross relates to territorial condition. Secondly, when they were developed and accumulated to the city, they were linked to the main means of transportation of the era and to the most important metropolitan street network connection of that time. Consecutively, this verifies the fact that the formation of dross relates to specific dynamics that the big infrastructural elements generate in a territory.

By looking at the drosscapes as a potential for the city, the design used the method of scenarios in order to investigate potentialities and risks. For the construction of the scenarios I selected the short term future dross of Athens which, at the moment, is the one offering a potential for the city. I further investigated a particular area which is a subset of that dross. Three scenarios were formulated: Scenario 0, Scenario 1: Athens un-do and Scenario 2: Athens Re-do. Scenario 0 explains what would be the future of the area without any intervention. Scenario 1 explores the potentialities of the drosscape by reconstructing the ecological system of Attica while dealing with the risk of flooding. Scenario 2 looks at the potentialities of the dross as a new centrality for the city of Athens.

From the construction of the aforementioned scenarios several risks and potentials were understood so that an intervention may be attempted. One option is that dross is reused in order to reconstruct the basic ecological connections. A second potential is that dross could constitute a new centrality for the city. These two opportunities may be combined in an integration strategy. A particular risk when dealing with fracture relates to the condition of fragmentation that usually characterizes these areas; it is essential to deal with the factors that separate the area with the rest of the city and attempt to re-establish the missing links. Another risk, common when dealing with dross, is the contamination of the soil resulting from previous high polluting activities, which should be dealt with reclamation of the site prior to development. Based on the evaluation, design principles were defined that could be used for the design proposal aiming at a strategy that regards dross as a device for integration between the metropolitan and the local scale. The design proposal is evaluated by applying it to the whole territory and comparing the metropolitan area before and after the proposal.

To conclude, dross emerges naturally in parallel with the urban development, but what is important is to recognize it and try to predict its future formation in order to be able to intervene. The dross in the process of decay offers potentialities for the city that could be taken advantage of (or not). These spaces offer the ground for massive change and the opportunity for a new future of a city if viewed holistically within a specific strategy for the entire territory and not as isolated fragments.

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