

## ON THE QUESTION OF LIMITS

The role of ecotones in the management and reintegration of transforming urban environments.  
Urban ecotones as territorial indicators and interfaces of urban reconfiguration.

*An applied study of the urban regional mosaic of the city of Thessaloniki, Greece*

*BOOK II - ANALYSIS ATLAS*

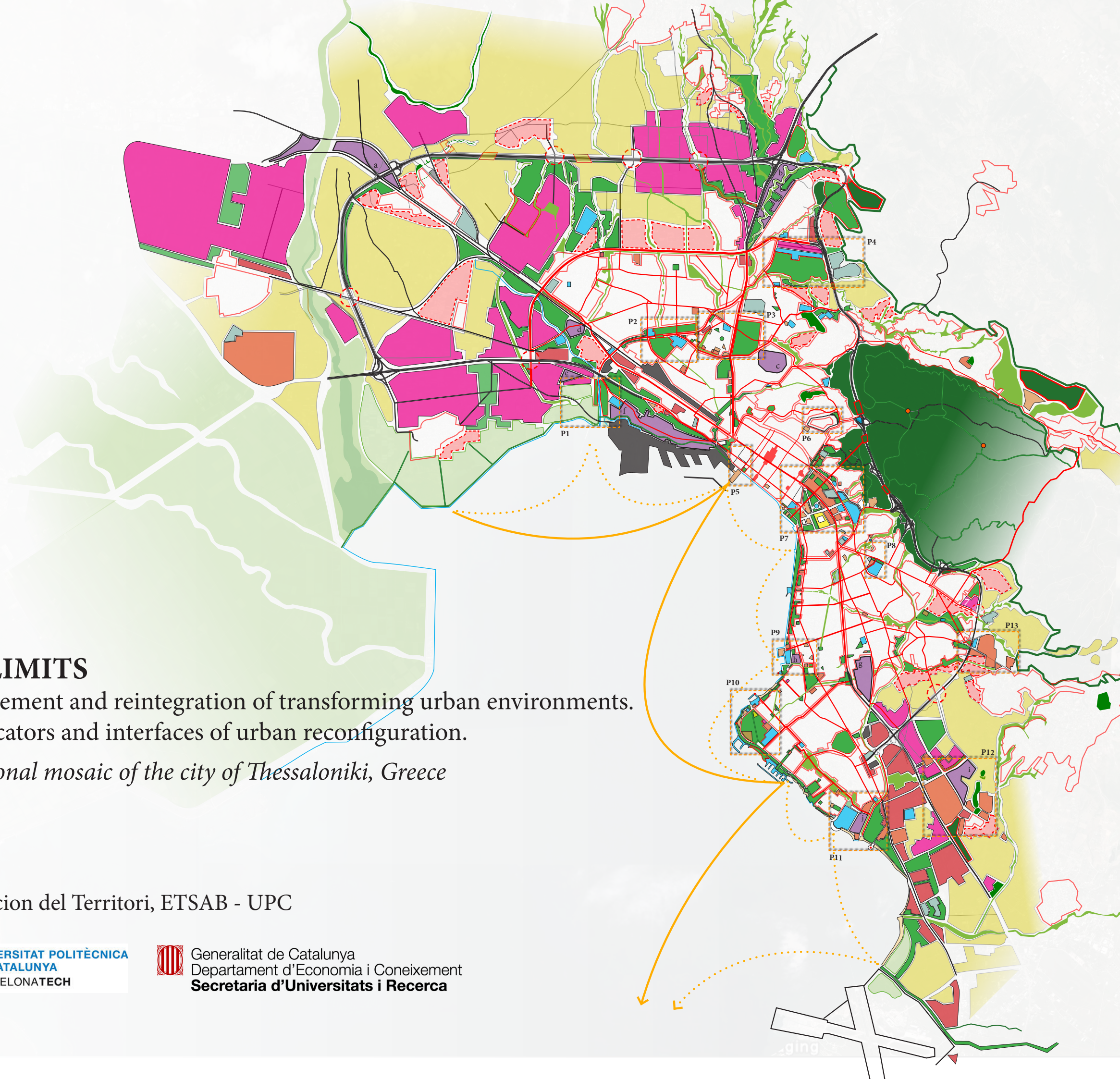
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location



#### **iv. The regional canal of Thessaloniki** *An urban spine for the entire East Thessaloniki*

View of East Thessaloniki from the Anatolia Campus property in 1928. (source: Anatolia College Digital Archives)





The regional canal is an artificial canal with a total length of 8,3km running through the urban fabric of four municipalities (Thessaloniki, Trindria, Pilea, Kalamaria) in a N-S direction and connecting the forest of Sheikh-Sou with the southeastern coastal front. The canal was built as part of the flood prevention infrastructure for the eastern regions of the city of Thessaloniki marking a considerable incision on the urban fabric (running between Thessaloniki and Pylaia) and serving as the eastern limit for edification. Its construction was completed in 1956 by the M.O.M.A (Mixed Corps of Machinery for Reconstruction) a military engineer unit, active in the 50s, that completed various infrastructure works, mostly of roadwork nature.

The artificial canal is surrounded by land that was used to form the canal banks either by human intervention (infills/ embankments) or utilizing parts of the existing topography. Thus for the greatest part, the area that surrounds the canal takes the form of a lineal green zone, that crosses the east and south-east Thessaloniki and at the same time provides connection between the forest and the sea. This green trail, with a dense and natural vegetation in some parts and less dense in others, has taken with the pass of time a natural character, giving the impression today of a remnant of a natural space and of the old topography, partly integrated inside the urban fabric or in direct connection with it.

From a spatial perspective, the regional canal takes the form of a *green corridor* connecting on one front the forest park of the city with the sea, and on a parallel front connecting with other important smaller green corridors that are formed by the remaining and existing streams inside the urban fabric and the adjacent

peri-urban space. The actual range of influence of the canal thus is that of the entire east urban district of Thessaloniki, and more specifically for the sum of the eastern and southern part of the city. Today the area is detached from the urban fabric and neglected in many parts, having been converted partially into a dumpsite at numerous locations, and at most parts far from anything resembling a quality green space.

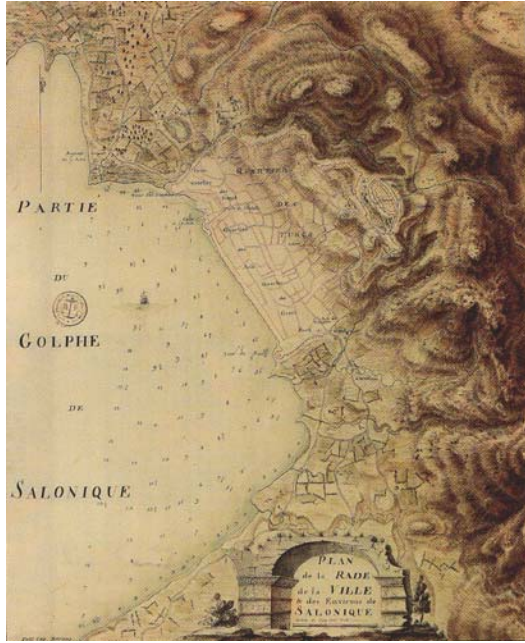
The northern part of the canal is surrounded by urban fabric of high densities and heights. In some districts the densities pass the 500 res/Ha while the average stays around 300 res/Ha. Many of these high densities areas are in direct contact with the regional canal area. Heading toward the south, the municipality of Thessaloniki, the density drops but still remains in the region of 200res/Ha. On the contrary on the side of the Municipality of Pylaia the densities are lower 100-200 res/ha on the west of the canal and 100 res/Ha on the east side. In the area of the municipality of Kalamaria the densities are relatively lower compared to Thessaloniki, between 100-200 res/Ha<sup>1</sup>.

Concerning the hydrological functioning of the Regional canal, the Regional Trench receives the waters from the streams of Krioneri, Konstantinidi, Kiverneiyou and Ntepo for the upstream sections of these torrents, and channels them to the sea in the area of Mikra. A big water reservoir is located at the beginning of the Regional canal on the lower side of Ring Road, in the Krioneri area and is connected with the Regional Canal.

1. Y.IIE.XQ.A.E & O.R.Th (2008) Environmental and Sustainability Indicators for the city of Thessaloniki



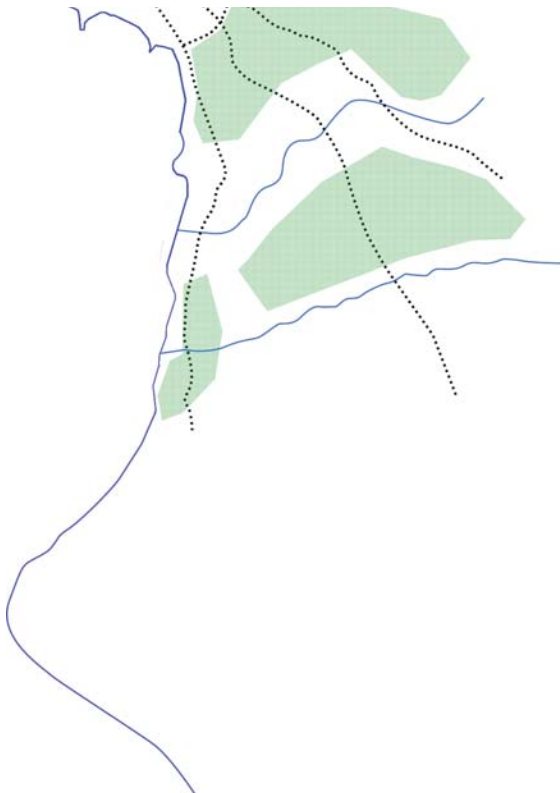
## The evolution of the territory



1784

*"Plan de la Rade de la Ville & Environs de Salonique"*

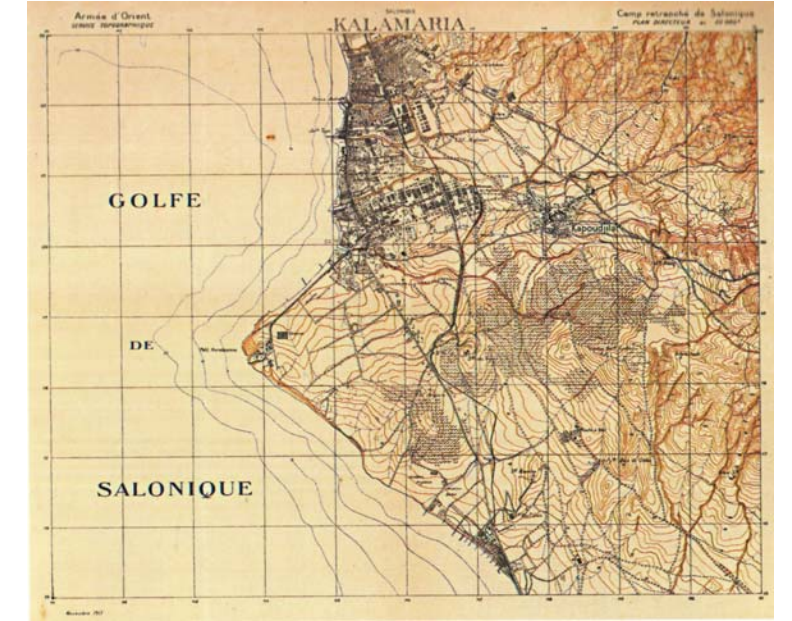
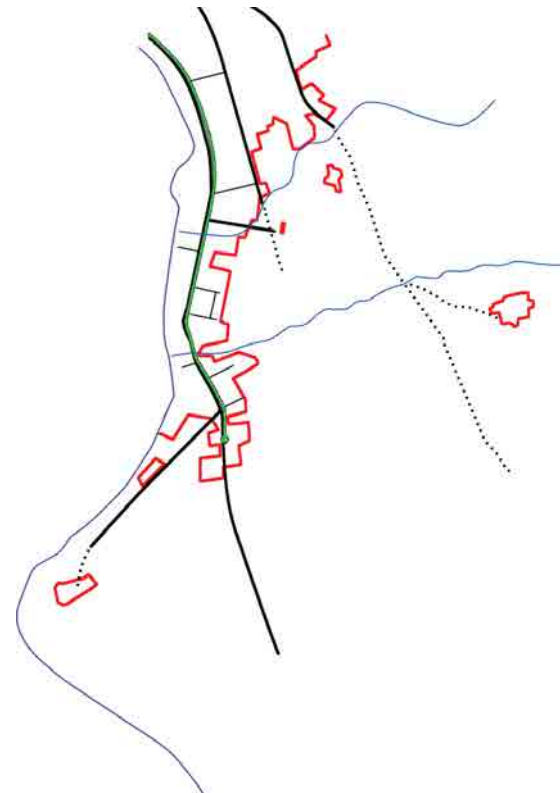
Colour map showing various details about the lands outside the eastern wall. The local streams that crossed came down from the mountain can be seen, forming a plain of alluvial deposits over the years. The local paths can also be seen that come out of the city walls and head towards the various cultivated lands as well as nearby settlements further in the south.



1909

*"Map of Salonica and Surrounding Country"*

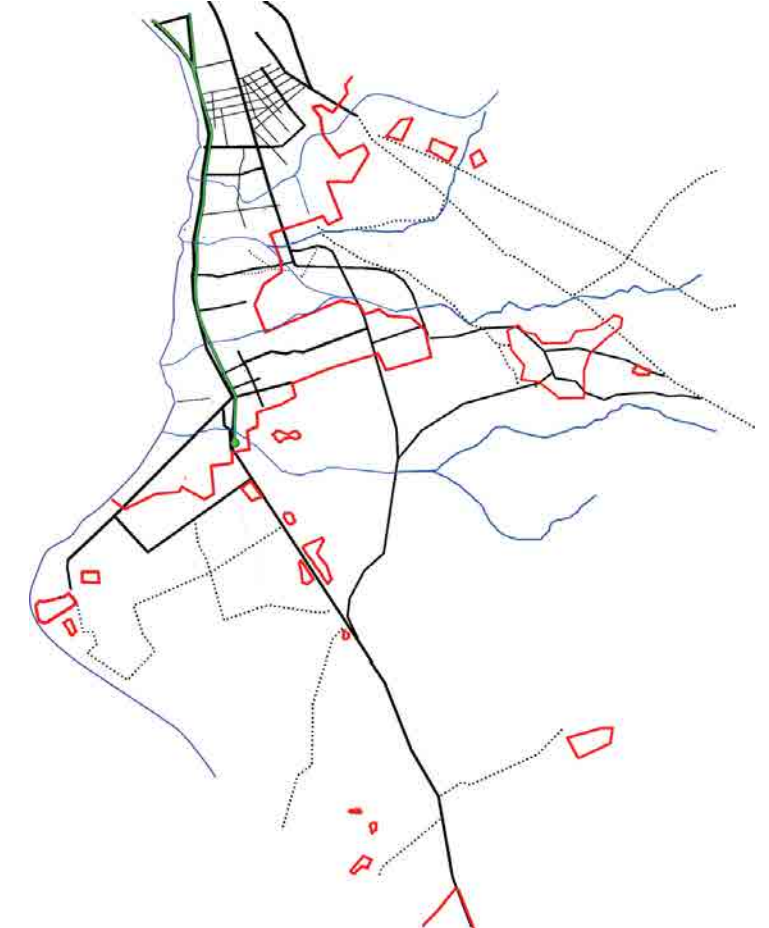
British Military Map that shows many details of the eastern extensions of the city. The city expands along the seafront road with the neighbourhood of Eksoches (Εξοχός) and an initial grid makes its appearance in the adjacent area to the 3rd Military Cops area. The tramline along the seafront road and its end/terminal (Depot) can also be seen. The streams are also visible with the open plain still unoccupied and with many cultivations present on the southern side. The Mikra Point Battery with its barracks can also be seen on the Karabournaki cape on the south and out of city area.



1917

*"Salonique - Kalamaria"*

French military map that shows the area the named Kalamaria (referring to areas SE of the historic centre). The map shows interesting details for the development and expansion of the city towards the SE, giving an accurate impression of the city during the WWI period. Military camps, allied forces installations and airports can be seen dotting the landscape. The streams are still untouched to a great extent and a considerable forest area can also be seen occupying the current area of Panorama heading towards the sea.







1940

*“Umgebungskarte von Saloniki”*

German map showing thoroughly the new settlements of the newly arrived refugees, as well as many toponyms of the area. Many of these toponyms remain up to this day, while others have changed or disappeared altogether. The creation of these new settlements gave ground to a new expansion towards the east on the axis towards Pylaia, and Kalamaria on the southern front. The streams can still be seen but now under pressure from neighbouring building activity.

1955 & 1956

*Aerial photo & Map of the Ministry of Social Welfare / Department of Settlements*

The post-war reality and conditions was bound to affect the city's development. All changes though were results of partial and punctual interventions and not of wider city plans, resulting to the shrinking of coordinated urban planning and the domination of an improvised expansion based on principles of autofinancing, encouraged by the increase of building ratios inside the city plan area. This kind of expansion though propagated with little respect for public spaces or ecological integration and continuity, resulting in the infill of the majority of city streams and the eradication of green areas. Rational planning solutions like the construction of the regional canal and the construction of the new seafront, both projects undertaken by military corps were bound to affect drastically the functioning of the city .

1980

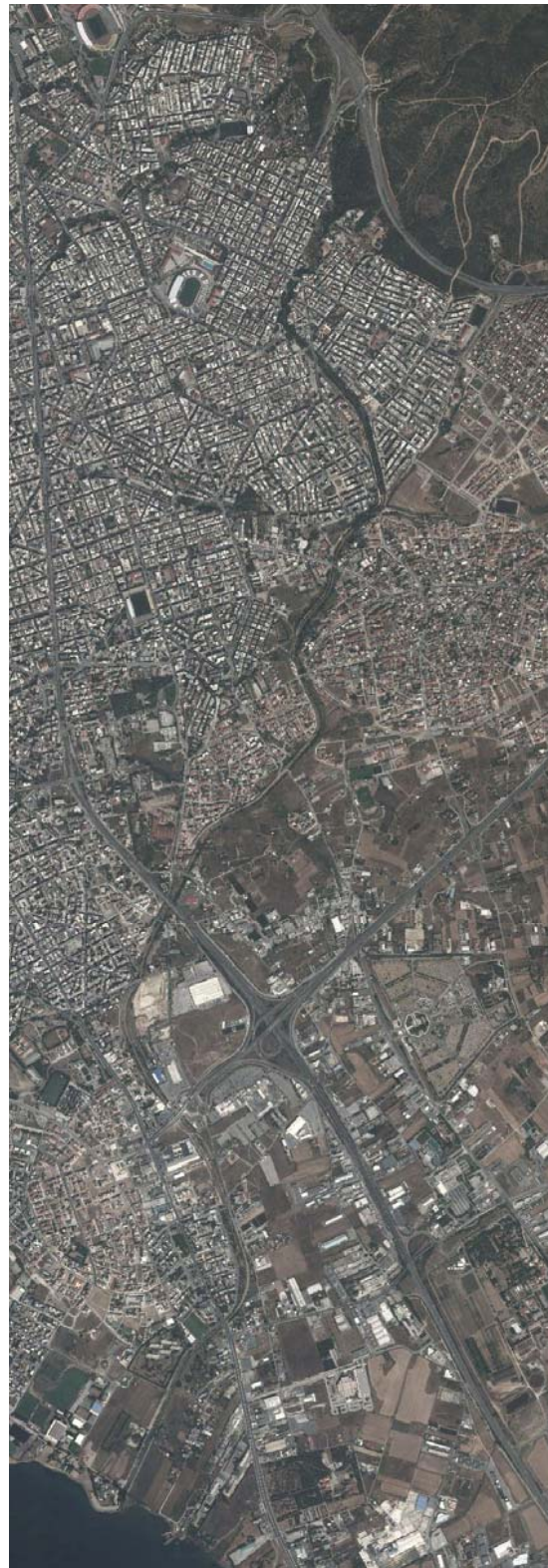
*“Πληροφοριακός Χαρτης - Θεσσαλονίκη 2” Army Geographic Services*

Greek military map that displays with detail edification on the area, along with principal routes and infrastructure. The regional canal seems to take on the role of the urban limit at the time. The fabric of the eastern areas now can be seen consolidated and with increased density, and initial signs of sprawl either in form of illegal settlements or lineal sprawl along the principal axis. The streams can be seen in the peri-urban area, while their trace inside the urban fabric is at many points discernible.





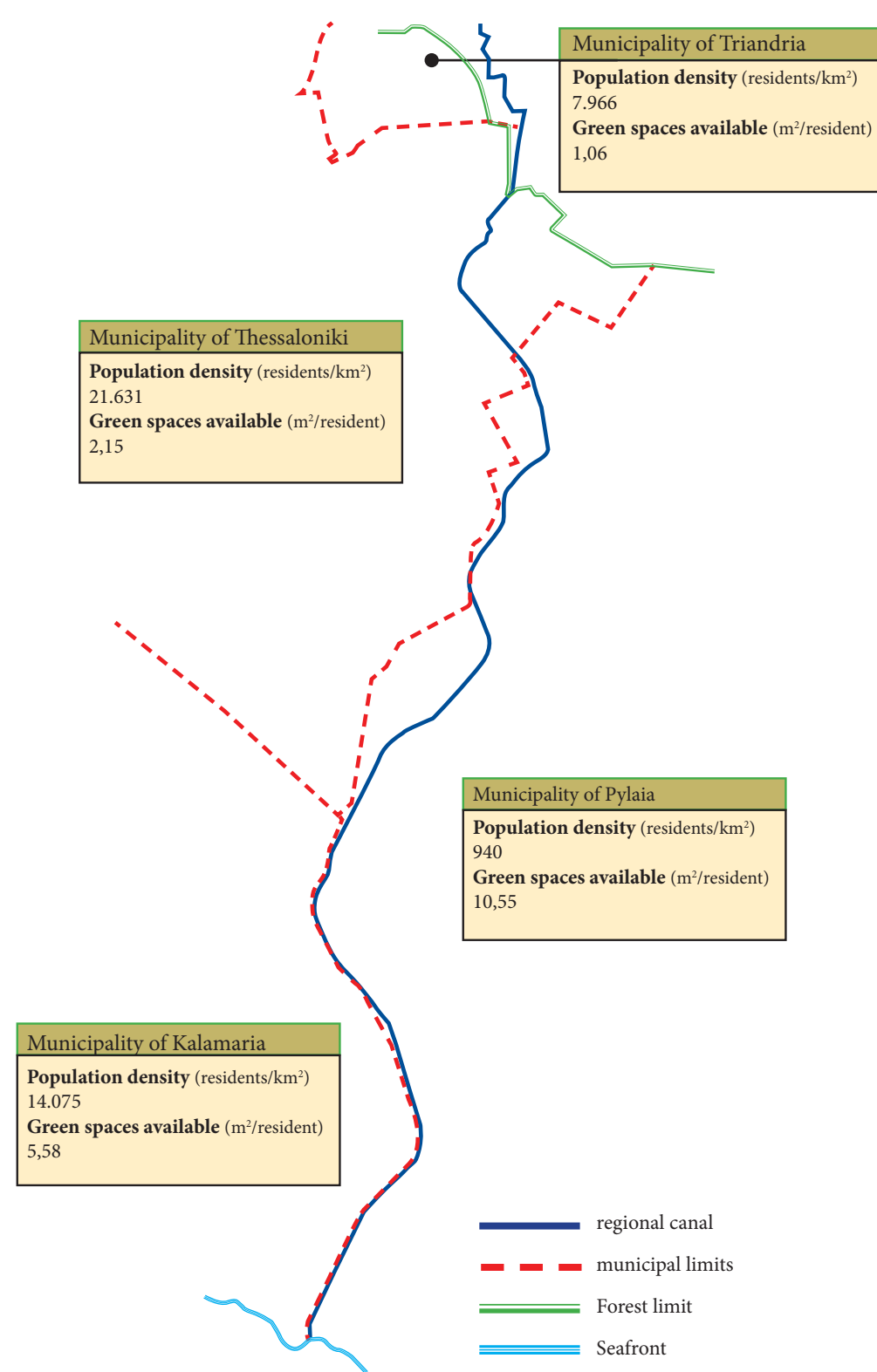
# The regional canal of Thessaloniki: *Situation and uses along the area*



**Aerial photo of the regional canal**  
(source: google maps)



**Aerial photo of the regional canal**  
(source: ORTh, 2004)



**Administrative limits & data**  
( source: ORTh, 2008)  
Green space availability 2005 data  
Population Density 2001 data



**The regional green & canal**





Various strips of aerial photos of the canal from its beginning in the Triandria area and following its path to the sea in the area of Mikra. (source: bing.com)

## i. Spatial Structure & land use in East Thessaloniki

With the only exception the section that crosses the forest, the regional canal and its adjacent space runs either inside the urban fabric or tangent to it, forming an administrative limit and a city limit. From an institutional point of view the canal and its adjacent space goes under the General Urbanistic Plans for the municipalities of Triandria, Thessaloniki, Pylaia and Kalamaria. Also for the municipality of Triandria, but also for parts of the Municipality of Pylaia and for the entirety of the municipality of Kalamaria it is tangent to the out-of-city-plan area of the urban district of Thessaloniki and thus goes under the regulation for the ZOE (Zone of Ekistic Control) and especially the “Study for determining land uses outside the city limits area and settlements before 1923 in the peri-urban area of Thessaloniki and its urban unit.” (Μελέτη καθορισμού χρήσεων γης στην εκτός σχεδίου και εκτός ορίων οικισμών προ του 1923 περιοχή της Περιαστικής Ζώνης (ΠΖ) Θεσσαλονίκης και του ΠΣΘ) of the Organization for the Masterplan of Thessaloniki<sup>2</sup>. In more detail, the structure of the designated land uses for the area under investigation is as following:

- In the section in the Municipality of Triandria the regional canal goes through the protected areas of the forest of Seich-Su, through dense vegetation.
- In the municipalities of Thessaloniki and Pylaia the whole zone of the surrounding space from Olynthos Street up to the intersection with the national road of Thessaloniki-Moudania is characterized as green spaces, whose organization is under the jurisdiction of internal structure of the individual municipalities and not coordinated jointly in any way. Apart, inside the streampaths that still exist inside the urban fabric (Stageirith, Elaiorama and Halil Ntere) the surrounding space includes a number of designated green spaces and selective activities (education, sports, etc.)
- The rest of the area is residence zones in its greater part *Unmixed* (αμιγής κατοικία). Some nuclei of general residential (γενική κατοικία) mixed areas develop in the surrounding area in the Gr. Lampraki Street, Tseliou Street and the extension of Pylaia on the west of regional canal.
- A key urban centrality is provisioned in the Municipality of Pylaia within the area under investigation, between the streams of Stageirith and Elaiorema. In this center, a great number of public utilities is provisioned, while the streams and their surrounding space has been characterized as green spaces.
- Along the path of the canal and its surrounding area a considerable number of public utilities are

2. O.R.Th (2004) Study for the arrangement of the regional canal of Thessaloniki and regeneration of surrounding area / Phase A





found, principally schools in the upper part of the canal, while in the lower part they present a different and more diverse character.

- In a short distance from the canal area exist two special areas with a possibility of connection / relation to the regional canal. The Toumpa Alley ( Αλάνα της Τούμπας) that has been recently reformed and the park of Nea Elvetia with the adjacent Allatini factory property, also known as the East Gate, object of an architectural competition in the past.

- On the level of the municipality of Kalamaria, the regional canal takes the form of the urban limit again. The designated green areas seem to be restricted in the section of Foinika. The predominant use is the mixed residential, except the area of Foinika that predominates the unmixed residential use. On the lower part of the highway (Thessaloniki- N. Michaniona) an important urban core is being developed of public and social utilities, like the sport area of Mikra, the Department of Forestry, the National Judge School, the Centre of International and European Economic Law as well as education and sport facilities.

- In the out of the city plan area, on the east of the regional canal and almost all the way out to the ring road, lies an area of ekistic development. Closer to the Foinikas area, the designation changes to “zone of central urban functions and infrastructure” and further to the south it changes to “*manufacturing zone*”. Another small part designated as above, “*zone of central functions*” is found on the lower part of the highway, while the remaining area until the seafront, is university property designated “*zone of protection and eco-development*”<sup>3</sup>.

### Analysis of land use along the regional canal and its surrounding space

Current land use along the regional canal will be presented in more detail following the previous general analysis of the general urbanistic characteristics along the canal as well as the situation in the other local streams that are connected with the regional canal. The following description is taken from the technical report of the O.R.Th in 2004, found in the urbanistic study, Phase B<sup>4</sup>, with aerial isometric images on top:

1. On the first section from the Ring Road all the way to Olynthos Street, the regional canal crosses the forest and the protected zone. On the height of the Ring Road is located the K9 exit (Triandria) of the ring road. As far as edification within the canal space is concerned only a small church, a Boy Scouts building and an illegal residential building are encountered.

2. Next from Olynthos Street to Gr.Lampraki street, all along one encounters various illegal constructions as well as fenced properties. On the west of the canal, on the height of Olynthos street a kindergarden is found. On the other side of the canal is located the 77th Grade School a bit further down the canal. On the same and next to the existing school a kindergarden and green spaces are also provisioned, partially entering in the canal stream path. Next to Lampraki Street exists a small designated green space. All surrounding area around the canal is unmixed residence with a small local centre developing on the height of Lampraki Street. Also in this section the extension of Mikras Asias street is provisioned to cover an area of the canal banks that are now found in a natural state in this section.

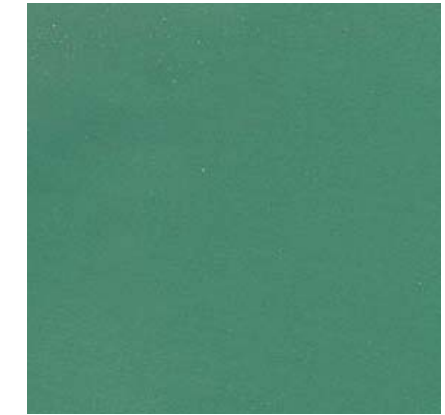
3. In this section from Lampraki to Epidavros street, is included part of the extension of Mikras Asias street. Below Gr. Lampraki Street and along the canal a series of green areas can be found on both sides adopted to the local road grid. Two school areas exist parallel to the canal on the height of Pylaia street, but only one of the two is currently constructed. In the surround area the prevailing use is that of unmixed residential.

4. From Epidavros all the way to Ath. Stageiriti Street, the only use encountered is that of green space delimited on one side by a road and on the other side by the embankments of the canal. The surrounding area is predominantly unmixed residences with some public utilities and space, and a high-school with an adjacent park area. In the junction with the stream of Stageiriti and Ath.Stageiriti street a new traffic nod is provisioned in the currently unoccupied area of the stream.

5. From Stageiritis to the Meg.Alexandrou Street develop extended zones of unregulated spaces. A series of public utilities are provisions that will surround the canal. These areas include school areas, kindergarden, sport facilities, public spaces and a civic centre, and some green areas. The surrounding area

3, 4. O.R.Th (2004) Study for the arrangement of the regional canal of Thessaloniki and regeneration of surrounding area / Phase A





in unmixed residential but it still has not been edified fully. In this area starts the old urban stream known as the *Big Stream*, in the area currently know as *Ktima Kalou*.

6. From Meg. Alexandrou to Pselou street, the canal is surrounded by unmixed residential areas, and a green area at the point where the stream joins the regional canal, that has still not yet been formulated.

7. From Pselou street to the K. Karamanli avenue the area on the east of the canal is outside the city plan limits. On the west of the canal next to the embankment exist a electrical sub-station of the electrical company. This area is all designated as green space, creating a lineal green park all the way to the abandoned Allatini factory. Adjacent properties though have occupied this space, fencing off part of this green corridors.

8. From the Karamanli avenue all the way to the Ring Road node it goes on with a series of unformulated spaces that are designated as green spaces, or residential areas that still have not been constructed fully. In the vicinity of the Erythrou Stavrou street, a playground and some green spaces can be found. The hospital of Ag. Pavlos that is located on the lower part of this section occupies part of the regional canal bank, at the point where the entrance for the hospital is located.

9. From the Ring Road node to the street of Georgiki Scholi (Farm School) in the area of Foinikas, the city plan is realised fully, while the canal embankments serve as green spaces after older interventions. The city bus terminal is located in this section along with other manufacturing and commercial use buildings.

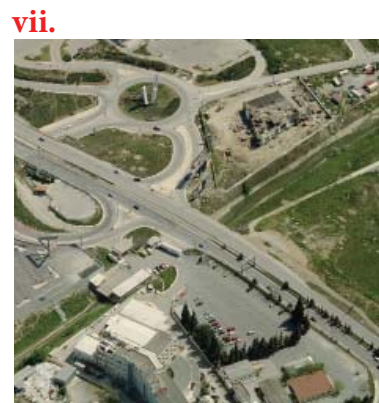
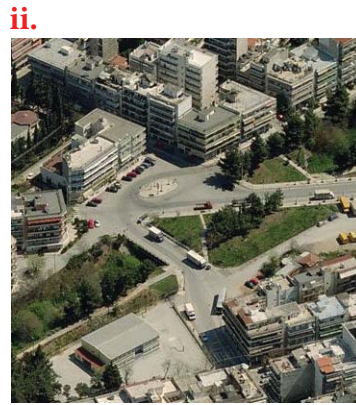
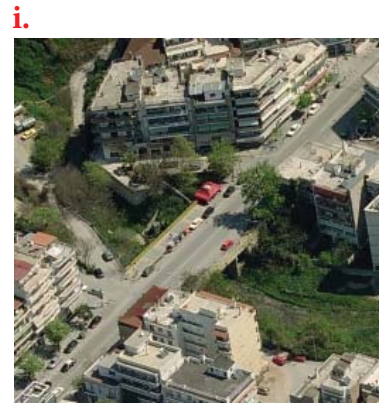
10. From the Georgiki Scholi street to the sea, the city plan is also fully realised, with the area on the east of the canal residing outside the city limits. A great part of it is property of the Aristotelean University. On the west of the canal develops a great centrality of public utilities and services like the Mikra Sport Facilities complex, The Forestry and Natural Environment faculty, the National Welfare Organization, School of Judges and numerous school and sport areas.

11. At the point where the canal meets the seafront is located the Centre of International and European Economic Law. Next to it lies the Horse Ridding club of Northern Greece. The seafront is found in an abandoned and degraded state, lacking any public activity.

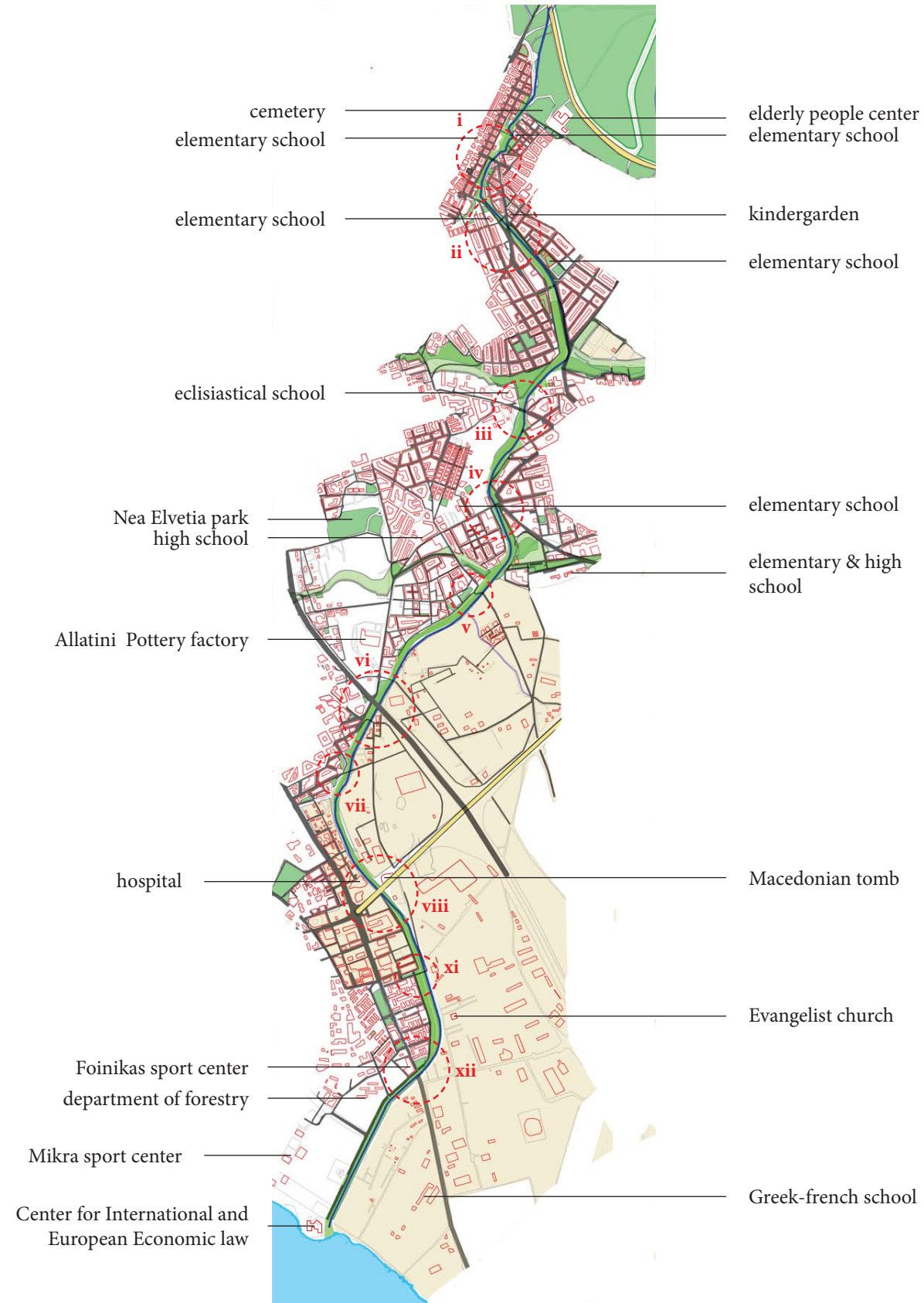
Taking under consideration the designated green spaces along and on both sides of the regional canal, the local streams that join in, with their corresponding green areas, as well as nearby open spaces, a network of green spaces is created of a principally of lineal character with a branching/dendritic form. Thus a continuity of open /green spaces inside the urban fabric can be reconsidered, but also the possibility to establish and fortify a relationship with the peri-urban area. Respectively, taking into consideration the numerous designated areas of public space and utilities (education/culture/sport/services) an extended network of public spaces can be created structuring the urban fabric with its the densely constructed spaces. At the same time, given the urban limit function that the canal takes at various sections ( or did so in the past) and the different and many times desigual conditions that exist on its two sides, make the canal emerge as a key **urban interface** that can help rethink and restructure the landscape of the Eastern Thessaloniki Region. Any intervention thus, needs a sufficiently wide perspective to permit intervene significantly on the urban structure. A first aim could be the integration (spatial-urban-ecological) of the lineal element of the regional canal in the urban fabric and function, and second, finding and developing relationships of interdependence between the canal and the residents and the interrelated space, utilizing the interface factor. The regional canal can thus serve as a central spine for the natural spaces network proposed for the eastern urban region, on which the numerous surrounding and detached green areas can dock on.

In continuation a detailed analysis is performed along the regional canal highlighting key points of mobility and activity. Following that the analysis opens up its spectre to look at the extended area as well as the local streams in order to get a better understanding of the situation, the activity and the dynamics present in the potential area of influence of the regional canal.

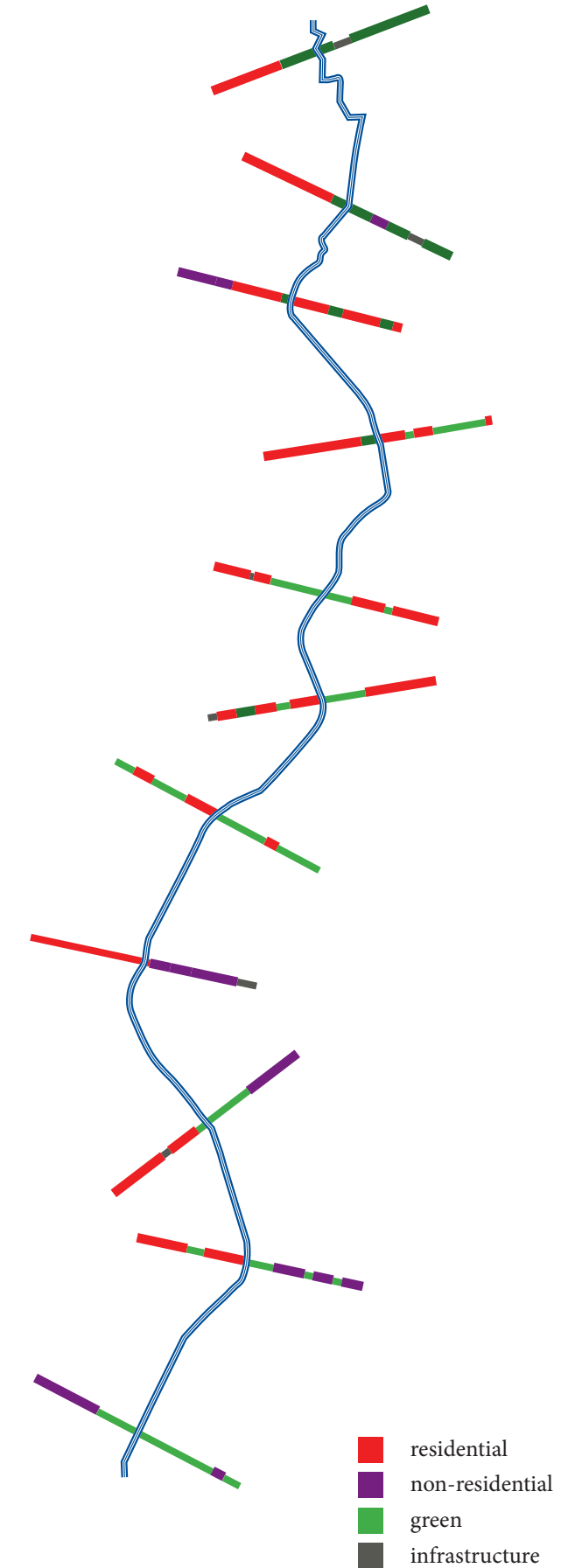




**Aerial view**

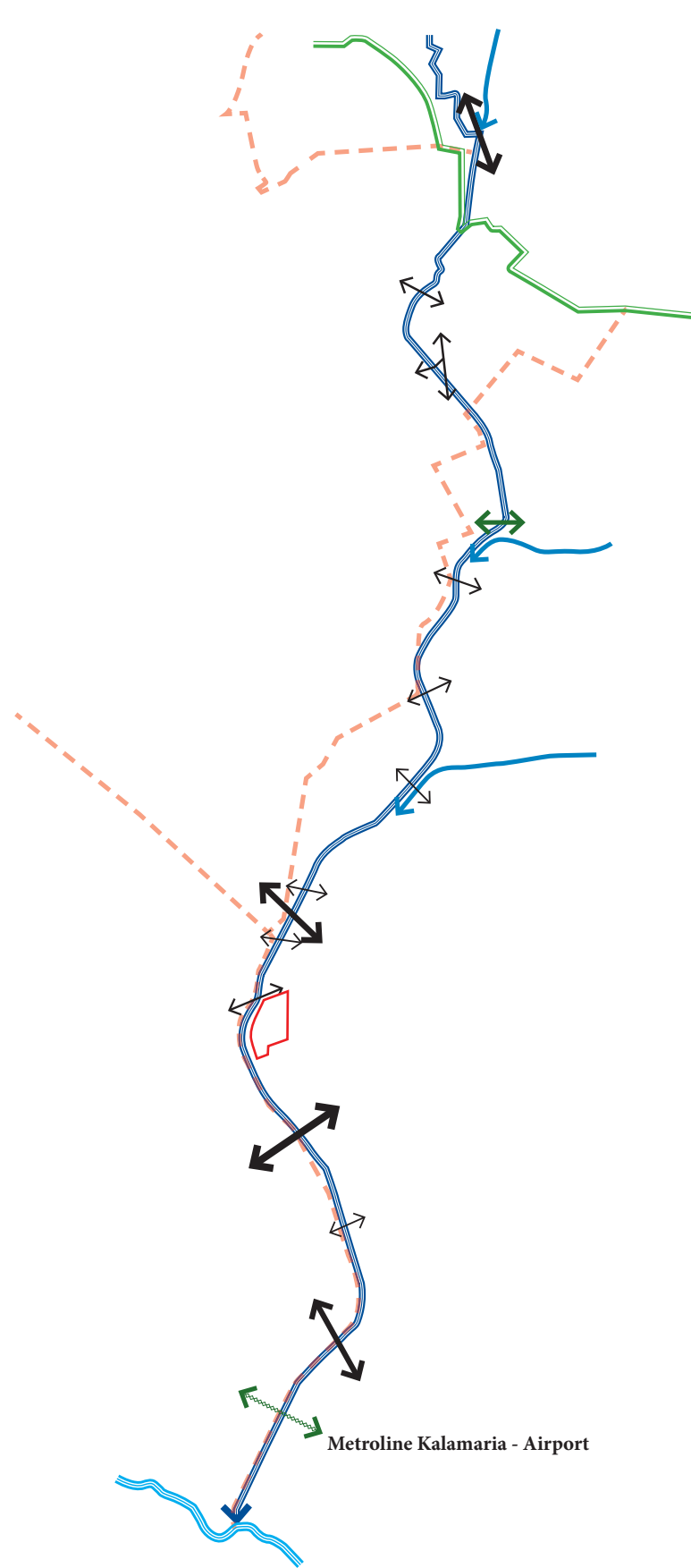


**Continuity along the canal**

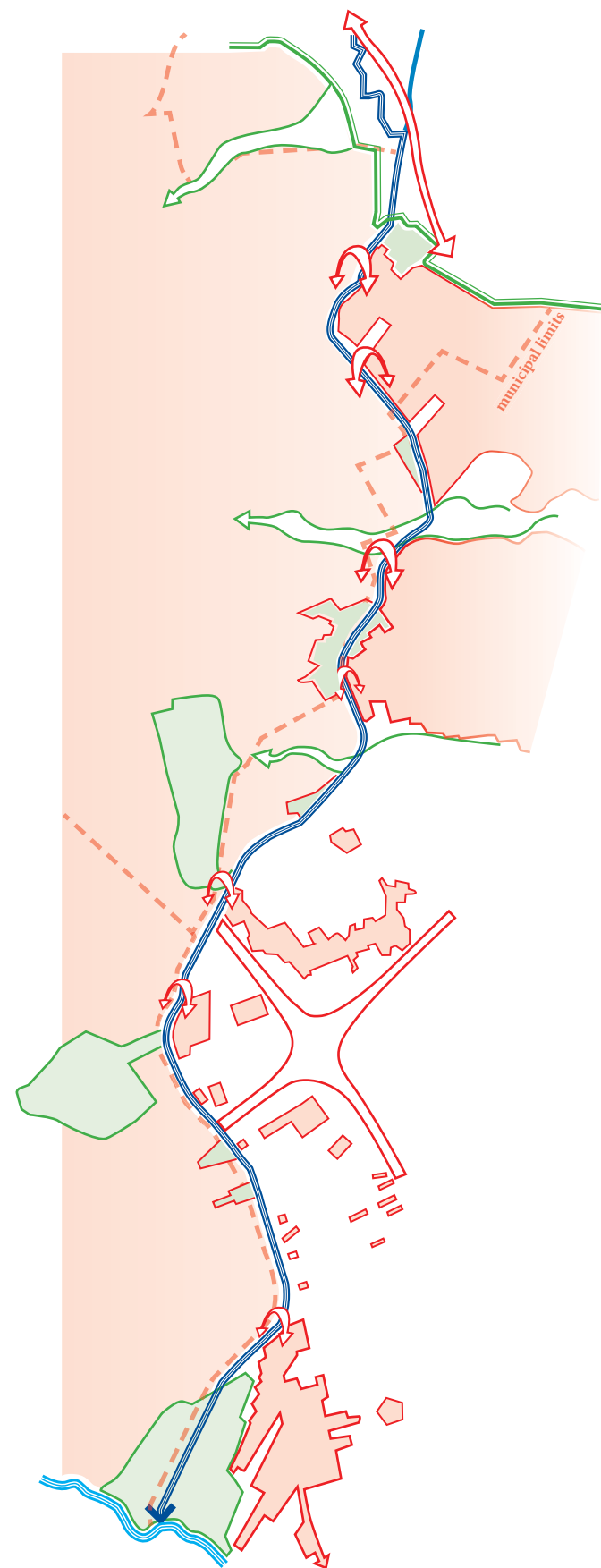


**Gradients along the canal**





The canal as an urban interface



The canal as an urban interface

**Important Points - Crossings / passages/ nodes**

**i. Grigoriou Lampraki bridge**

As stated earlier this section of the canal was part of the original Krioneri Stream. The streambed is found in an almost natural state, although given the fact that several illegal constructions are found inside. An unpaved pedestrian path runs along the stream until it reaches the bridge at the height of Grigoriou Lampraki. At that point the stream narrows considerably due to adjacent constructions and road infills, and the path disappears. Smaller improvised passes are constructed upstream to accommodate pedestrian crossing of the canal. The bridge serves both vehicular and pedestrian flows.

**ii. Epidavrou bridge**

The section until the Epidavrou bridge is in a similar state as the section above. A unpaved path can be discerned that soon disappears before reaching the Epidavrou Bridge. Dense vegetation is inside and parallel to the bed stream. At that point a paved pedestrian path starts till it reaches the bridge. The Epidavrou bridge is a covered passage on top of which two roads pass forming a small green area in the space between, and the canal passes beneath in a covered pipeline.

**iii. Plastira / Pr. Ilia bridge**

From the Epidavrou bridge all the way to the Plastira bridge, a paved pedestrian path on the downside and parallel to the canal accommodates pedestrian traffic lined with trees. A pedestrian bridge is also found at the height of the Stageiriti stream. At that point the stream loses its natural lining and is substituted by a V-shape open canal. The streambed is accessible at various point and an unpaved path runs parallel to the canal for large parts. The bridge is restricted to vehicle use.

**iv. Megalou Alexandrou bridge**

In the section from Plastira to M.Alexandrou bridge the canal maintains the same characteristics as above. A wide and unpaved path follows the canal on its downside and both canal sides are lined with trees. Small improvised structures allows pedestrian crossing of the canal. Just before reaching the Genimata bridge the canal banks raise considerably in height. The bridge is dedicated principally for vehicular crossings.

**v. Gennimata bridge/pass**

The pedestrian path disappears right after the M.Alexandrou bridge and is substituted by the road of Karaiskaki. At the end of that road and all the way to the pass at Gennimata street runs a small unpaved path and on the opposite side of the stream a line of trees. The pass was constructed in the form of an infill with a pipeline permitting the stream flow. The canal maintains its same technical characteristics.

**vi. Konstantinou Karamanli Avenue bridge**

Right after the Gennimata pass, starts Chlois street that runs on the downside of the canal on top of the embankments constructed for the canal. This is a slow traffic street that accommodates vehicular and non vehicular flows. The street ends abruptly before reaching Karamanli avenue. The canal maintains the same characteristics but with the downside banks of the canal at a notable height difference from the other side. The avenue bridge serves exclusively vehicular traffic while some smaller nearby bridges accommodate both pedestrian and vehicular flows.

**vii. Ring Road node**

The section from Karamanli Avenue to the Ring road node maintains the anterior technical characteristics. There is no pedestrian path following the canal on neither side of the canal, except very few parts. Pedestrian crossing is not available except by the bridge of Erythrou Stavrou street. The last of the Ring-Road's exits/nodes is located slightly north of the canal, offering access to the adjacent commerce and the Ag.Pavlos hospital. For this reason a considerable part of the canal is covered, both for hospital access as well as the Ring-Road crossing.

**viii. Ethnikis Antistaseos / Georgikis Scholis Avenue**

The section from the ring road node to the Avenue of Georgiki School has no pedestrian access or flow. Streets run on both sides of the canal serving as access roads for nearby businesses and commerce. After the small bridge on Knossos street where the Finikas district starts, a green lineal park is found between the residential area and the canal. That side of the canal is also lined with tall trees. The bridge by the Avenue serves exclusively vehicular traffic. For the rest of the section till the seafront the canal has low banks on both sides, and two streets running along, providing vehicular access of low density.





**top:** View of the area in 1928.

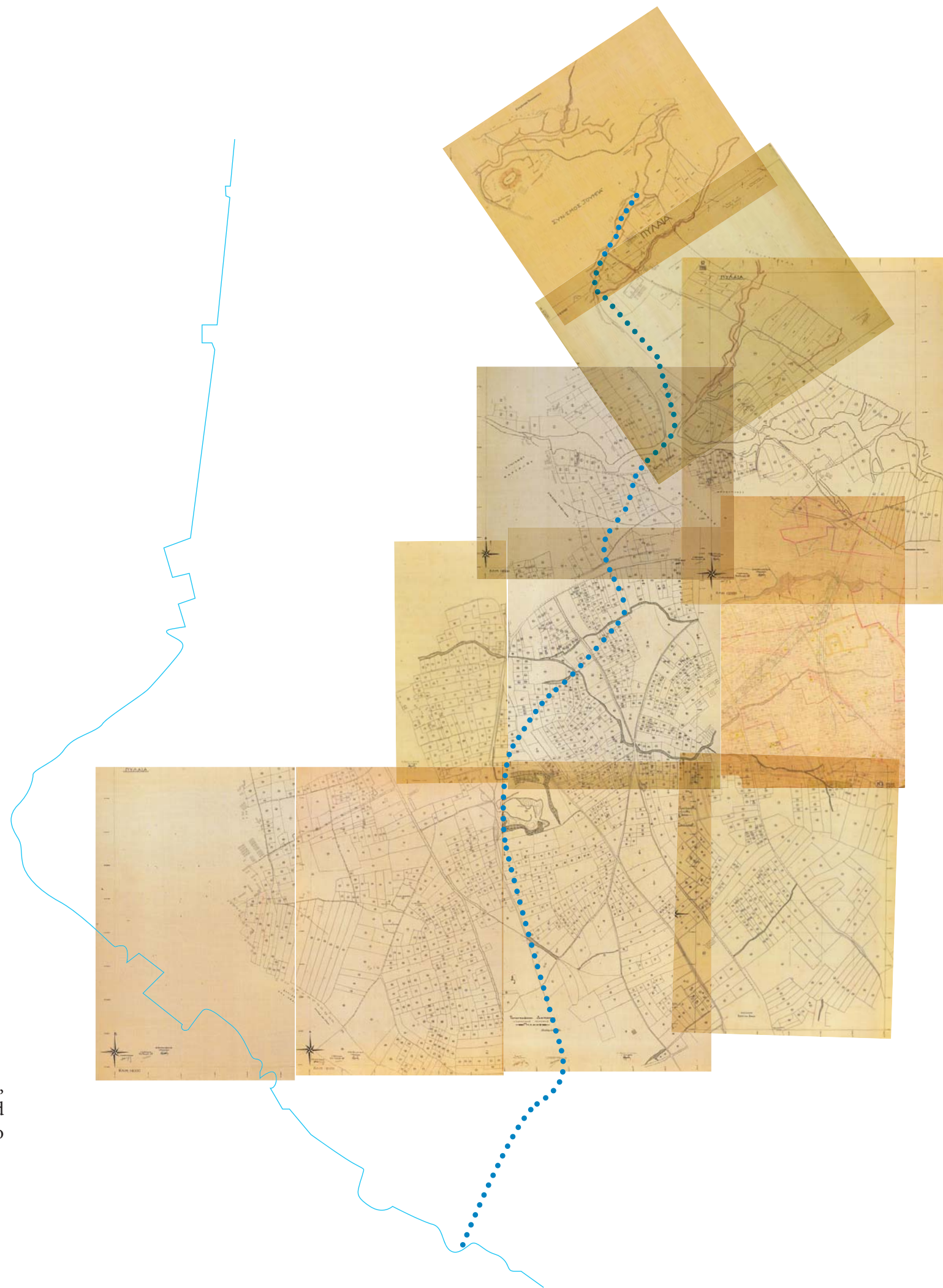
**bottom:** Aerial photo of the area taken in the 40's with the Anatolia campus in the foreground

(source: Anatolia College Digital Archives)

## The 1933 Topographical Surveys by N. Filippidis

(source: Prefecture of Thessaloniki & National Map Archive 2008)

Multiple sheets of the 1933 survey conducted by N. Filippidis for the area of Pylaia, providing an accurate and unique account for the conditions in the area at the time and before the recent transformations. The regional canal's approximate position is also marked for reference.





## ii. The East Thessaloniki & Pylea Area in the past

After 1922, the housing needs of the Minor Asia refugees created the need and at the same time obligation on the part of the state to create new settlement with the necessary organization and infrastructure. In the urban space of Thessaloniki, the hosting of the Minor Asia refugees was initially realized in refugee camps that later over time transformed to urban settlements. The greek state moved relatively fast to cover the residential needs with the creation of settlements, but without integrating these interventions in a broader territorial policy and planning. The urgent needs drove to the rapid development of simple urban plans in agriculture areas or peri-urban areas of major cities with a rudimentary arrangement of common spaces, roads and surface allotment. These plans were conducted in a very fast pace by crews of the Ministry of Agriculture (topographic surveys) and Transportation (in charge for planning for new settlements and creation of the respective urban plans). In Thessaloniki during these times a lot of the major settlements of East Thessaloniki were created that were soon to be integrated and become major urban areas for the city such as the Toumpa area, Charilaou, Kalamaria and Aretsou among others.

The Greek state had under its disposition all the land properties of the Muslims (natural and legal entities) that left the city after the 1912 liberation or were interchanged with Greek refugees from Minor Asia after the treaty in 1923. All this real estate property formed the what came to be known as the Exchangeable Realty, part of which was to be destined to cover the needs of the incoming refugees and their further development. The most notable problem was the absence of a cadastral registry for the Pylea area, which hindered the whole process of exploitation of these lands. The Greek government signed a treaty with the National Bank of Greece in 1925, passing to the bank the exploitation and management of the exchangeable lands<sup>5</sup>.

The once agricultural area of Pylea is now an area that contains the settlements of Charilaou, Toumpa, Kalamaria, Karampournaki and Pylea. In this area, the location of the exchangeable land had to be done from scratch given that there were no cadastral plans or mapped properties, which gave rise to many phenomena of illegal land occupation that had to be resolved in detail and in depth of time. For this reason the National Bank commissioned in 1933 the topographer Nikolaos Filippidis the surveying of the existing conditions and the time of an extended area of South-East Thessaloniki, based on which the ownership status and disputes over the exchangeable lands could be realised. Furthermore the increase in value of these lands due to their adjacency to the city of Thessaloniki pushed for a fast resolution of the issue<sup>6</sup>.

The survey by Filippidis was conducted between 1933-1935 and produced 20 sheets in a 1:2000 scale for the area, depicting existing existing agricultural plots and occupations while at the same time conducting a table of apparent owners. The surveying detail of the plans conducted by Filippidis are of a quite impressive for the time, accuracy and detail<sup>7</sup>. The inclusion of the original nameplaces in the survey sheets helped with the task of locating with more accuracy each property.

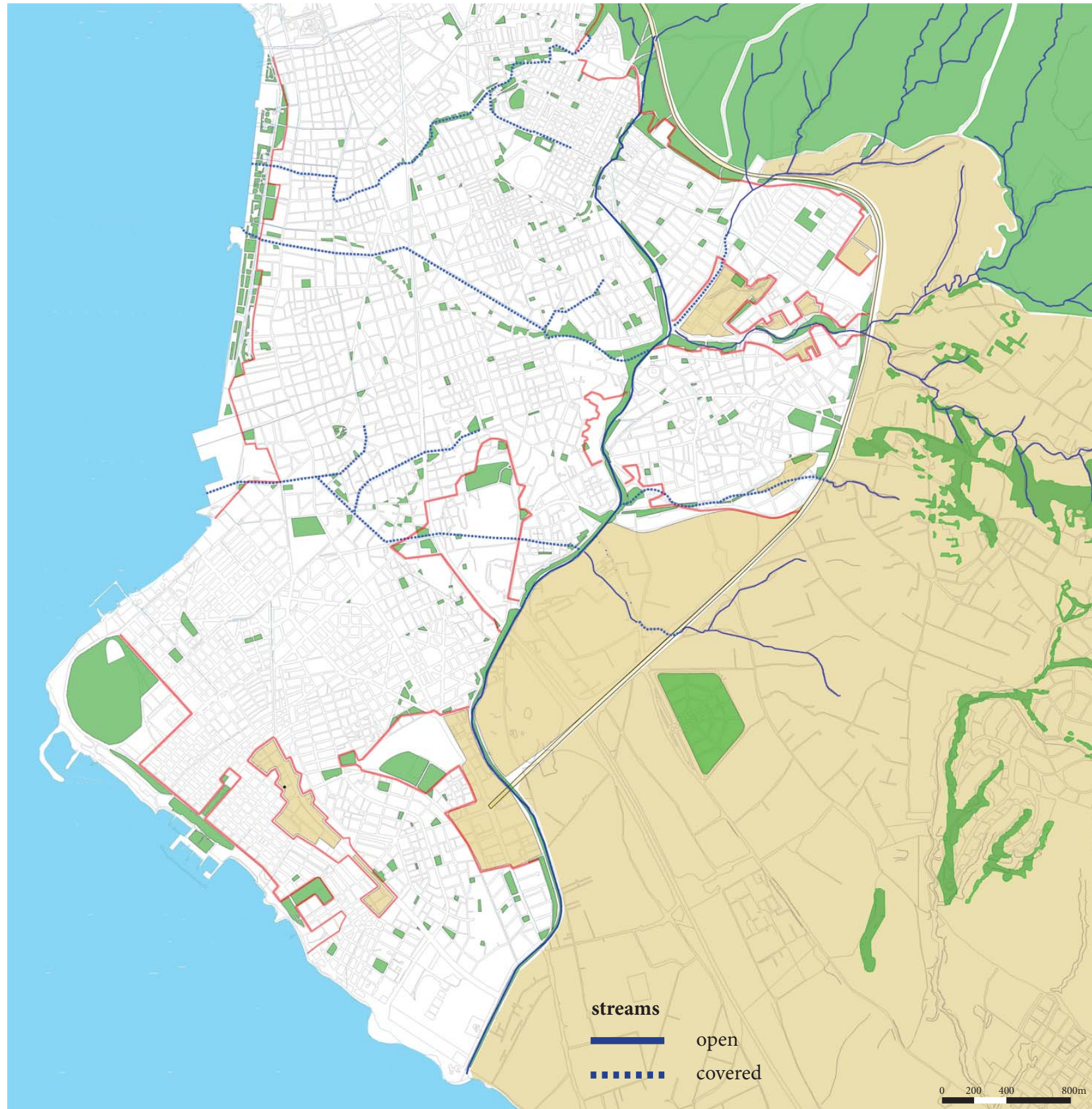
The survey of the Pylea area and the formation of respective ownership listing was an important effort for its time with regards to the technical aspects achieved by the survey, as well as the information that it recorded for the area of Pylea for future generations and reference<sup>8</sup>. The agricultural character of the area is clearly demonstrated along with the respective allotment of different sizes and shapes of agricultural lots. The local streams and major natural landmarks are also shown. Apart in the different sheets diverse information is shown:

- the agricultural areas around Pylea and the scattered small buildings (sheet 2, 6, 7, 8, 9 & 10)
- the cemetery of Pylea (Kapoutzidon) and the Arsakli (Panorama) street (sheet 3)
- the English cemetery and the cemetery of Kalamaria (sheet 5)
- the Allatini clay mine (sheet 6) & the American Farm School (sheet 7)
- the Kalamaria hospital (sheet 10)
- the Airforce property next to the settlement of Nea Krini (sheet 11)
- the American Anatolia College in its new settlement area (sheet 12)
- the initial settlements of Charilaou, Toumpa & Malakopi (sheet 13, 14 & 17) as well as Nea Krini and Kalamaria (sheet 10)
- a great part of the real estate area of the Allatini Company
- the Toumpa hill of Toumpa (sheet 17)

Furthermore the survey of Filippidis serves as evidence of the drastic transformations that have taken place in the area. It provides important information on the agro-ecological structure of the area, providing detailed information on the paths of the local streams and the diversified agromosaic. It also shows detailed information on existing paths and roads that later developed to major urban axes. This information will be useful for comparing it with the contemporary fabric, intending to detect remnants of this previous mosaic as well as permanences that have survived through the years.

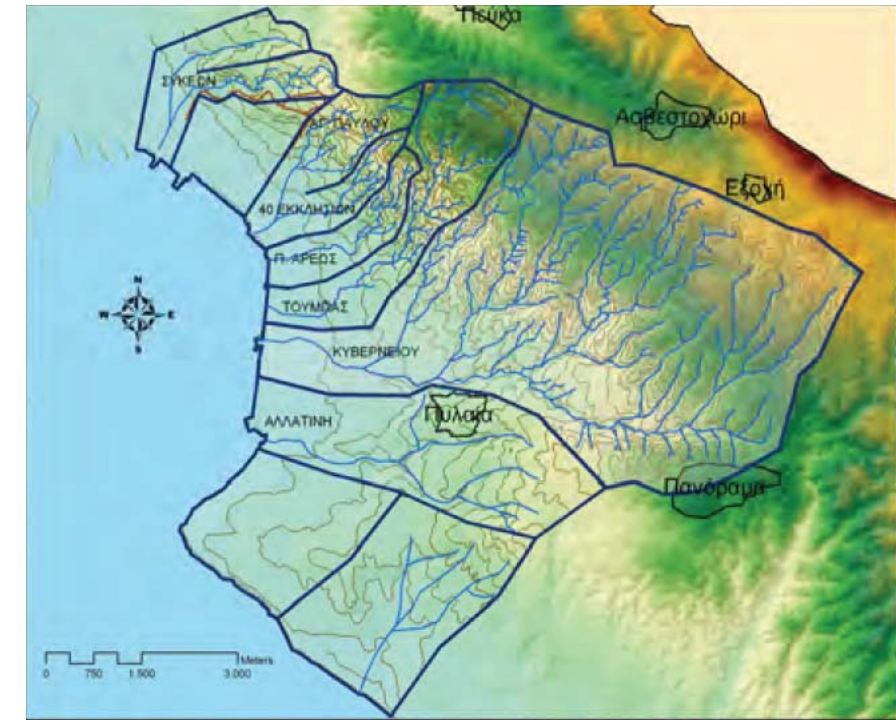
5, 6, 7, 8. Savvaidis, P. - The Fillipidi survey in the once agricultural area of Pylea and its importance in Prefecture of Thessaloniki & National Map Archive (2008)



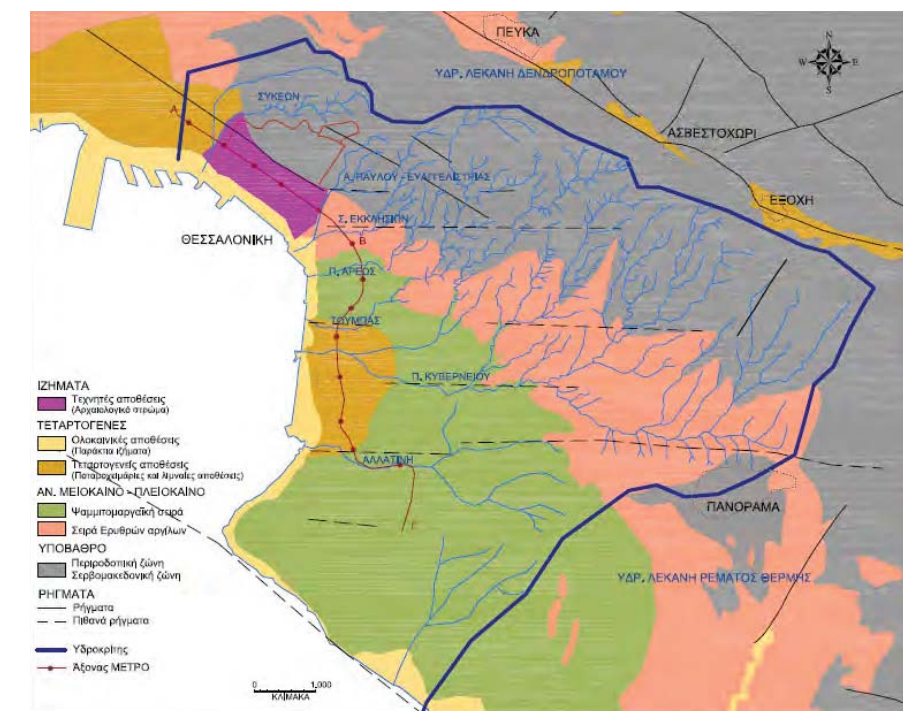


### Natural Scheme

Map indicating the regional canal in the middle and the existing natural green and open areas in the extended region, The local stream connected to the canal as also shown both on the upside of the canal and on the downside by the drainage pipelines that have taken substituted the streams. The urban limit is marked by a red line. An emerging scheme for a new green network with the regional canal serving as a central spine for structuring public and green spaces in the region.



Morphological map with the drainage basins for the local streams. source: Zervopoulou, Pavlidis (2008)



Combined geological map showing apart from geological details (soils, faults etc) hydrological information like the catchment area of Thessaloniki, and the stream paths. The axis of the Thessaloniki Metroline can also be seen painted as a red line. source: Zervopoulou, Pavlidis (2008)



### iii. The biophysical matrix and habitability conditions in the area

One of the most detailed accounts of the old streams of Thessaloniki as well as their later transformations is the text by Mplionis, G. (1996): *The streams of Thessaloniki*, which presents valuable information about the earlier state and path of the streams in their urban and peri-urban sections. The description of the respective streams of East Thessaloniki that are included are the following:

#### The streams in the past

“The first stream was called the *stream of the Three Fountains (Uc Cesmeler Deresi in Turkish)*. It was also called *Lakos of the Old Quarantine*, allowing the assumption that there used to be the old quarantine station of the city. Later known Greek names are the *Konstantinidis* stream (from the school, behind which it passed) or *Yfanet* (from the YFANET factory). It joined with the stream of the Prophet Elias (Kryoneri / Ano Touba) just above the old (Israeli) Hospital Hirsch, today known as Hippocratio. The waters of both streams discharged into the sea where there used to be the centre and baths MIRAMAR (approximately in the current site of the School for the Blind), where the deposited debris from the stream had created a small cape.

The largest stream was called *Kus Deresi, Pit of the birds* or as it is now known the *Big Stream*. It joined several streams of Sheikh-Sou in its path and divided into two smaller streams before reaching the sea. The northern stream (*stream Arsan*) reached the shore next to the building of the current National Folk Museum, the old Government House (which is why a few years ago was known as Governor’s stream - Kiverneion ). The South followed approximately the current route of the Martiou street and was named *Big Stream* or *stream Charnaud*. Between these two streams lied a densely planted area, known as *Karagatc*, currently occupied by the district of Analipsi. Some of the huge elms (*Ulmus minor or campestris*) characteristic of the region, are even found today at small isles : within yard of the 5th Gymnasium, on the corner of P-Syndika and Pentalophos street and in front of the National Folk Museum.

The last to the SE of the historic streams of the city, was that of *Ntepo*. It passed on the west of the tram terminal (Depot) and ended at sea on the south side of the mill Allatini. This last streams

as it was located the furthest from the historic centre and the upcoming expansion, has the least information documented and available. The entire area east of the walls to the Panorama and Themi, during most of Ottoman rule was full of fields, vineyards and gardens and belonged to the agricultural village of Kapicular (= Kapoutzides, Keepers of the Gate). Its Inhabitants amounted to about 50 families, many of which moved to Pylaia or Thessaloniki because of the multitude of poisonous snakes, no later than mid-17th century. A few shacks were be left at that point where the 20th century district of Triandria would be created.”<sup>9</sup>

#### The streams today

Following the description of the streams in the past this next part will look at the actual state of these streams in more detail, based on technical reports and on-site visits

##### I. Toumba or Konstantinidis Stream (drainage area 5km<sup>2</sup>)

The stream flows next to the School for the Blind and through the streets Chrysohou, Baronou Hirsch, Kritonos, and ends up arranged with framed pipeline from Th. Charisi to Delphon street and the rest with an oval section. From the road of Th. Charisi Bridge to the Street of Papafi it is not arranged. From the Papafi bridge and up the street C. Lambrakis it is arranged with an oval pipeline. From the street C. Lambrakis and up to the boundaries with the forest, this section is also arranged with a closed pipeline. Then the stream forks into two branches, the branch towards Ortansia street “Ortansia Stream” and the branch to the area behind and up the hill of Toumba and all the way to the Regional canal. The sections of the stream upstream the regional canal received by it is are in a natural state reaching all the way to the suburban forest of Sheich-Su<sup>11</sup>.

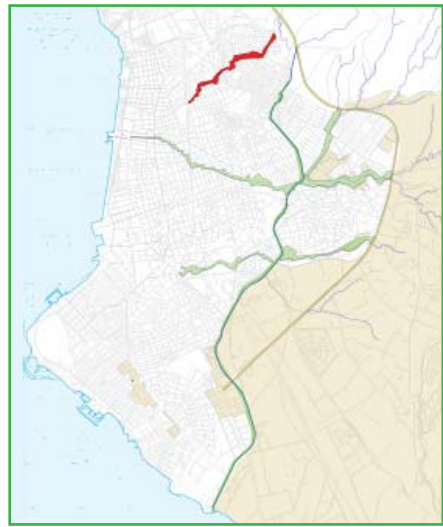
The stream of Yfanet since the construction of the regional canal received only runoff waters. Until recently, the riverbed was preserved until New Egnatia and Hippocratio Hospital, but the construction of roads and sports centres (especially in Triandria) occupied a great part of the land. The only parts that survive today are along the Ortansia Street (between Triandria and Krioneri) and behind the factory of Yfanet.

9. Mplionis G. (1996)

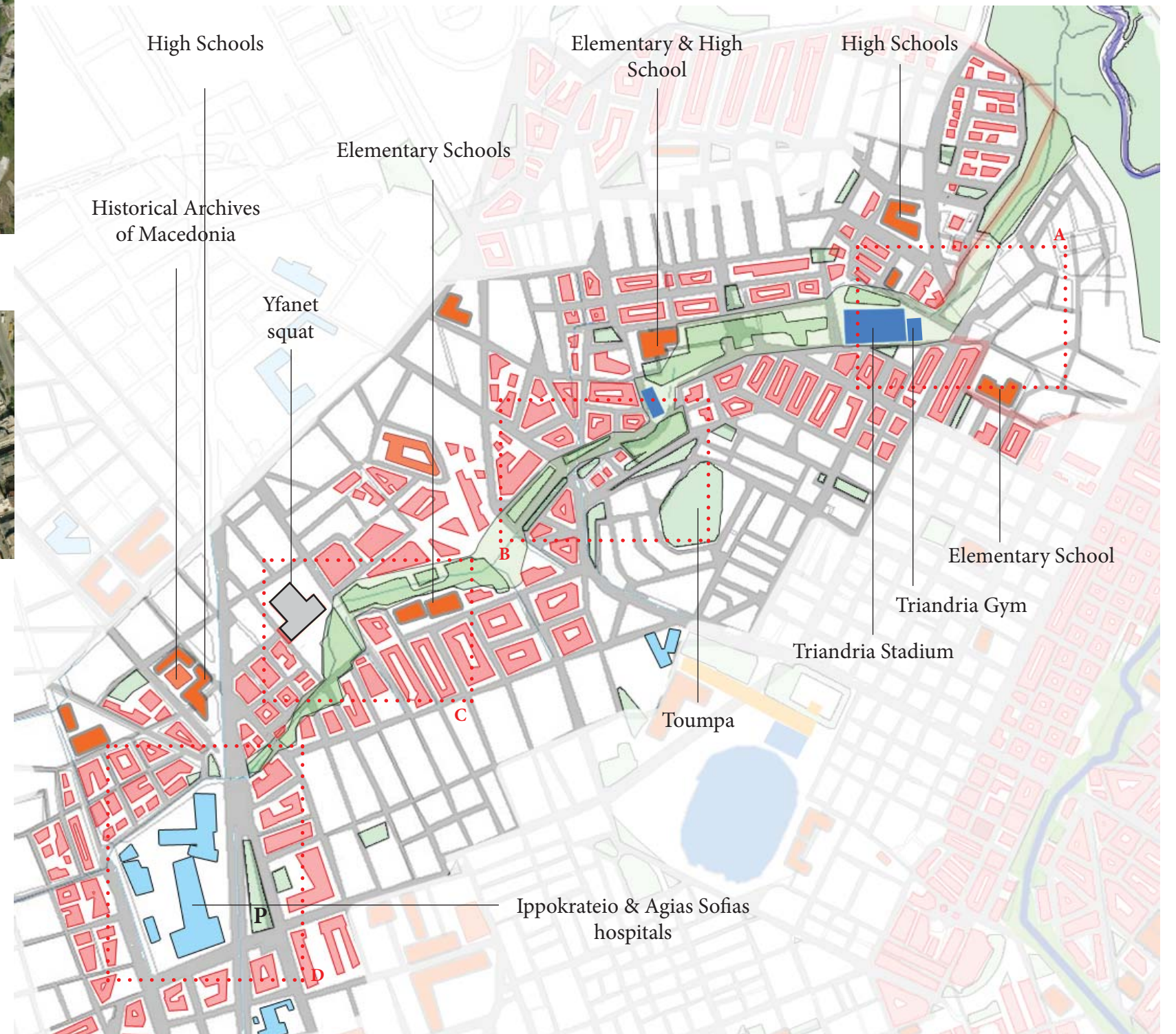
10. Zervopoulou A, Pavilidis S. (2008)

11. TEE/TKM (2003) Flood protection in Central Macedonia: An approach for flood protection for the extended urban region of Thessaloniki





**Konstantinidi / Toumba Stream**  
Length (urban) : 1.8 km





“The Ortansia (*Hydrangea*) stream has few trees and small reeds that create a mini ecosystem, springing between the two districts and at the same time feeling the pressure building up from both. In late 1994, it was decided for the stream to be infilled. In the area of the old factory of Yfanet a part of the stream is preserved along with quite lush vegetation. Poplar, acacia and fig trees in a dense development that which gives a special atmosphere. Forgotten benches and fountains show that the area was a recreation area a few years ago. The stream of Krioneri (Ano Toumba) is preserved in a better state. The streambed remains open along the road of Polygnotou all the way to street of Gr. Lambraki. In the upper parts closer to the forest (which is the central source of the spring of Krioneri, that was destroyed when the city’s ring road was constructed on top) presents a great biodiversity ( figs, poplar trees, blackberries, climbing, laurels and wild flowers)<sup>4</sup>”

Despite the artificially planted species, the region presents significant regeneration and vitality. Further down along the street Tselios, one can see a line of unusually tall trees, rare for the urban landscape of Thessaloniki.

## II. Kiverneion Stream or Big Stream (drainage area 28,7 km<sup>2</sup>)

The most important stream of all the urban streams is undoubtedly the *Big Stream*. Despite the leveling that took place to make room for the ring road to pass, a big part survives, today principally in the Municipality of Pilea. A portion of the flow is maintained almost throughout the whole year so it can sustain a small amphibian fauna. Within its area are found preserved a Roman bridge, a Byzantine watermill, and the Benozilio Silk factory (built before 1886) and the Chaitman winery facilities and vineyards on the other side of the Ring Road. In the area of the stream of Eleorema, the eastern section of the *Big Stream* is found under great pressure from the building activity and urban expansion, while at same time it conserves vegetation that create idyllic scenery. Development in several points have already caused considerable damage.

4. Mplionis G. (1996)

5, 6. TEE/TKM (2003) Flood protection in Central Macedonia: An approach for flood protection for the extended urban region of Thessaloniki

### i. Section below the Regional canal<sup>5</sup>

The above stream starts from the coast, in the vicinity of the association of the Friends of the Sea and the Nautical Club and goes through the streets Aitolou K., Mitropoulou, Kanari reaching the intersection (Kanaris-Apollo-Anaximander - Good garden) arranged by a rectangular framed pipeline. The section from the end of the artificial part to the beginning of unarranged stream is also undertaken by a tubular pipe. Then, until the Regional Canal it is in a semi natural state, an area that has entered the revised city plan and the Metropolis of Thessaloniki has built the Eclisiastical school. This section of the stream downstream of the Regional Canal presents no problems of flooding.

#### *Torrent Buyuk - Dere*

The above refers only to a referenced stream since it has completely disappeared with the urbanization and occupation of its trail and it since has been replaced by a drainage pipe. It started (branching off from the main stream of Kiverneion) at about the site of the old factory of Alysida and reached the sea at the height of the road Gravias, about 200 meters north of the current Music Hall.

### ii. Section above the regional canal

The river upstream of the Regional canal branches into two major streams :

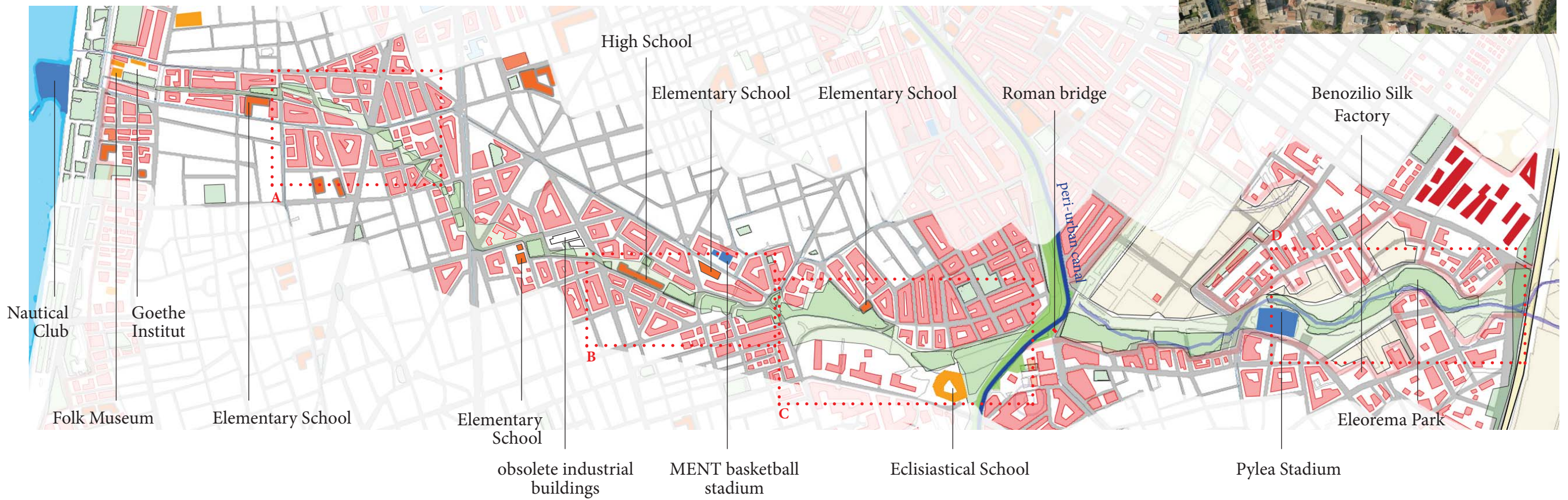
#### *a. the stream of Malakopi (Stageiriti)*

The first part of this regional canal until the street of November 17 is unmodulated. In this section is a study of the Municipality of Pilea and DTYNA Thessaloniki fix it, In this section we note the existence of the church of St. Kitts inside the stream bed. For the same torrent the water company of EYATH produced a study-paper titled “Exploring Solutions - Configuration area streams Panorama - Pilea”. The above study for the stream included the construction of reservoirs upstream of the ring road to halt the floodings, and secondly to recharge the groundwater aquifer as well as create recreational areas<sup>6</sup>.





**Kiverneion / Big Stream Stream**  
Length (urban) : 3.8 km





*b. the stream of Elaiorema,*

Which continues all the way to the city of Panorama and around the height of the ring road branches in the Stream of Pantelehmon with its respective tributaries. The upstream section of this stream from the regional canal is completely unmodulated. There is a definitive study of D.T.Y.N.A. Thessaloniki and Municipality of Pilea which settled marginally. Today this project is currently providing necessary funds for its construction. The river continues upstream and north of the municipality of Panorama and beyond. This section is in a natural state with a considerable depth is not presenting any problems.

*The Ag. Panteleimona sub-stream*

The stream upstream the ring road enters suburban Sheikh-Sou forest and is in a natural state. In this part of the Forest Service, the Department of reforestation and EYATH SA (formerly OATH) built concrete and wood flood-control dams anticipating an increased flood probability after the intense forest fire of the summer of 1997

**Allatini or Depot stream**

Third order in the Strahler scale, with EW direction and form of parallel branches. Going through the streets Psellou M., Mercuriou, N. and flows into the sea in the area of the mill Allatini. From the stream of Ntepo survives only a section near east of Villa Bianca, close to 21st and 14th High Schools.

a) Section of stream below the regional canal

The stream starts from the coastal area of south of the Mill Allatini and reaches Sofouli street configured in a framed pipeline. From Sofouli to Vas. Olga Avenue it is arranged in an open section for a short length running along the high school and the Police Vehicle station. From Vas. Olgas to the Aegeo street it is configured in a framed pipeline. From the junction of Psellos and Kifissia and up to Karamanlis street (road to Halkidiki) is arranged in an oval duct. From this point and up to the Nea Nekrotafeia street it is found in an unformed state. Finally, from there and all the way to the Regional canal a great part has been filled and covered by an asphalted street. For this reasons the surface run-off often creates big problems in the extension of Papanastasiou Street<sup>7</sup>.

b) Section above the Regional canal (*Khalil - Dere*)<sup>8</sup>

The stream is like the torrent of Kypseli are received by the Regional canal and have not been arranged. The main stream Khalil - Dere presents a particular problem in the limits of Pilea City (End terminal for public buses ) which has been infilled all the way up to the ring road limit creating at that point, a point of depression and flooding.

Today the current functioning of the regional canal is as following: the stream of Krioneri receives the waters of the stream of Konstantinidi/Toumpa through a canal located on the edge of the forest, running along the ring road. The Krioneri stream, channels its flow into the regional canal at the height of Tseliou street, receives the waters of the Big Stream/Ntepo streams and ends east of Kalamaria, after passing by the district of Foinika and the Mikra area.

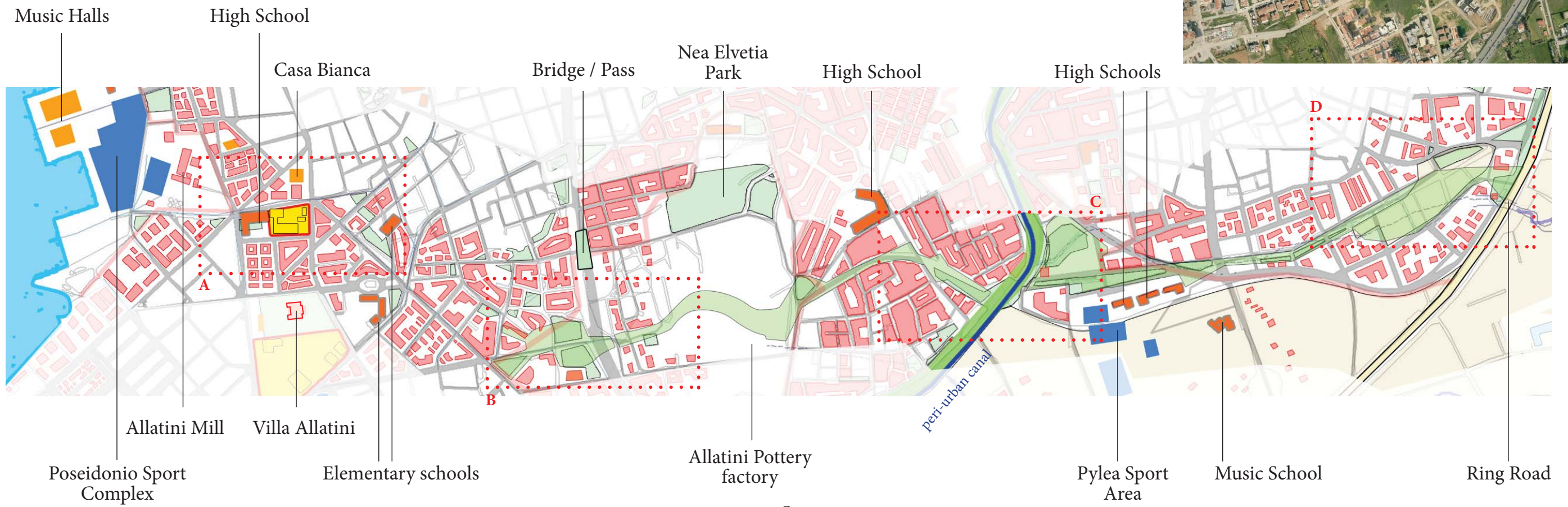
From a hydrological standpoint the regional canal affects all of the sub-basins on the east of the Thessaloniki drainage basin, principally the steam sections above the canal. But from an ecological standpoint the regional canal as a green corridor has or can potentially have an equally important effect below the regional canal. As seen in the previous analysis the earlier urban streams today can be still be seen in the contemporary urban fabric as isolated green patches lacking a coherent continuity. Although continuity along these paths is to a great extent lost, it is still possible to work towards its restoration, re-establishing in this manner the forest-sea connection, and generating considerable new accessible green areas within the dense urban fabric. The area of investigation of the mosaic of this eastern extension of the city will not solely cover the regional canal area of influence, but also include these streams in the analysis. The conditions along these streampaths is demonstrated in the adjacent and following pages.

7, 8. TEE/TKM (2003) Flood protection in Central Macedonia: An approach for flood protection for the extended urban region of Thessaloniki





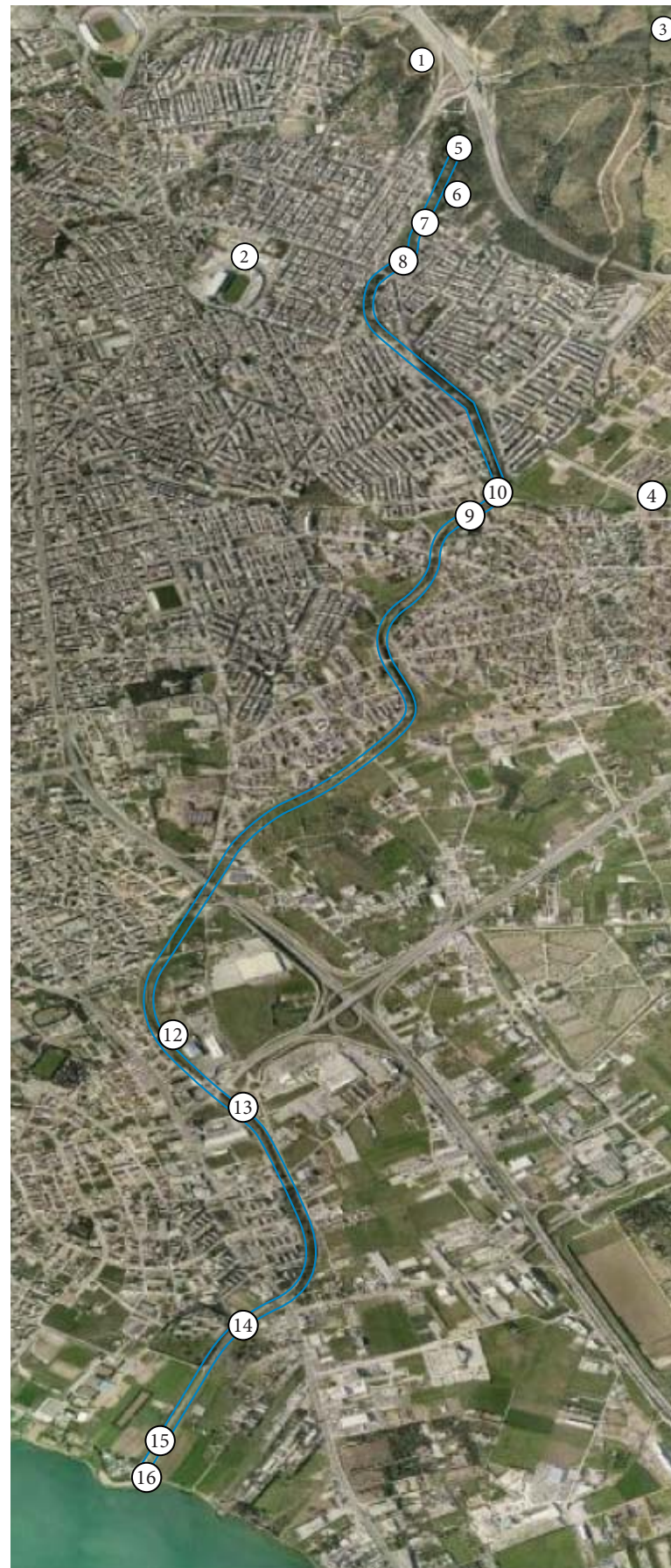
**Ntepo Stream**  
Length (urban) : 3.3 km





## Regional canal

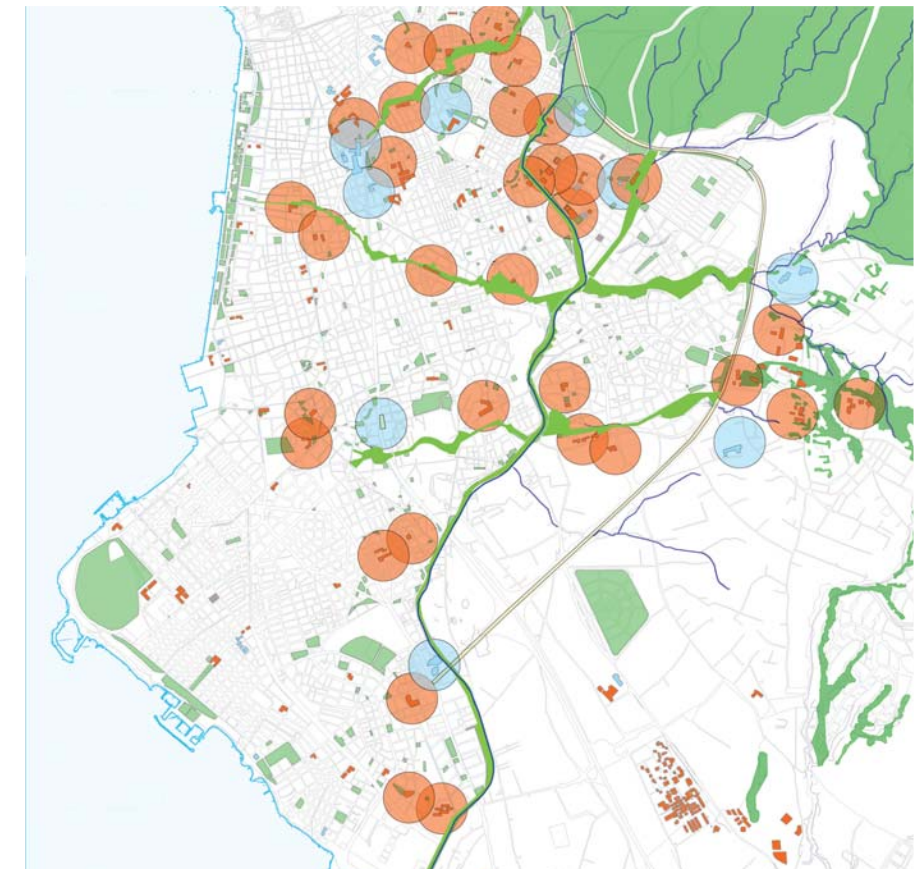
*Conditions along the canal axis*



### Images

1, 2, , 5 , 6 , 9, 10, 11, 15 (Panoramio.com)  
7, 8, 12 ,13, 14, 16 (O.R.Th, 2010)





Education and Health related activities and 200m radius  
Regional canal and local streampaths are also visible.



Local centralities and the Regional canal and local streampaths



## Forms of habitat along the canal

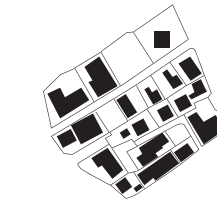
petrification  
of agricultural lands



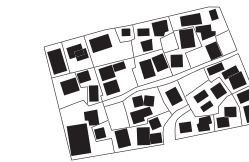
Infills



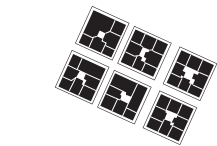
Islets



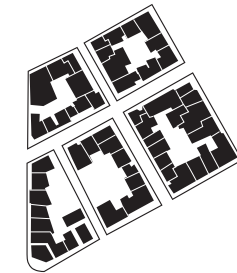
low density  
housing



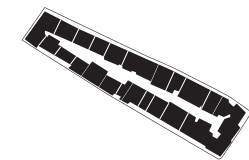
square grid



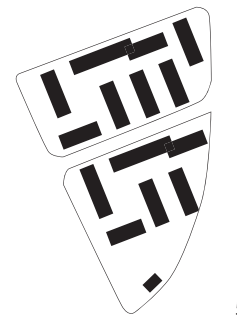
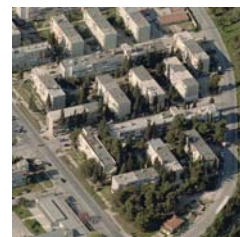
Hébrard fabric



elongated grid



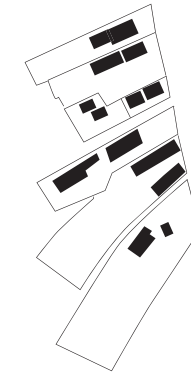
Social Housing



50m

## Forms of activity in the peri-urban area

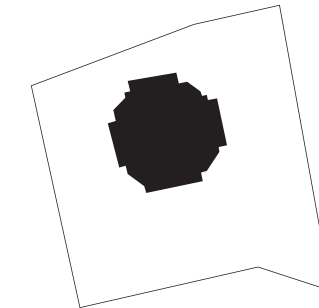
small scale activity



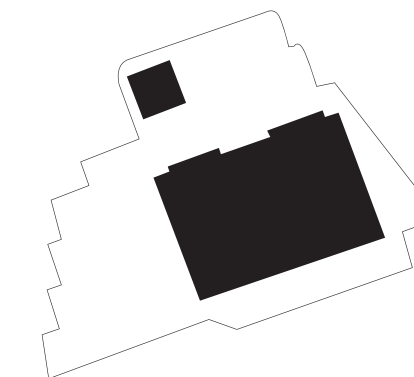
medium scale  
retail



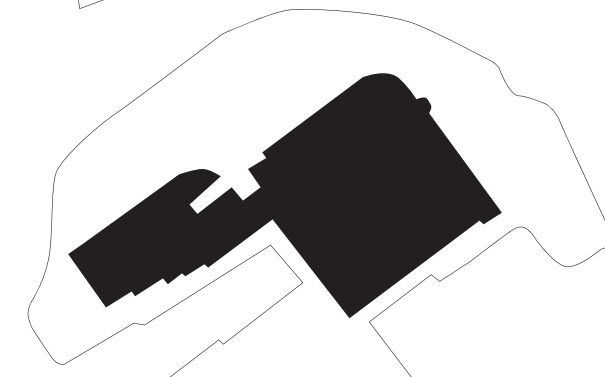
sport facilities



big scale  
retail

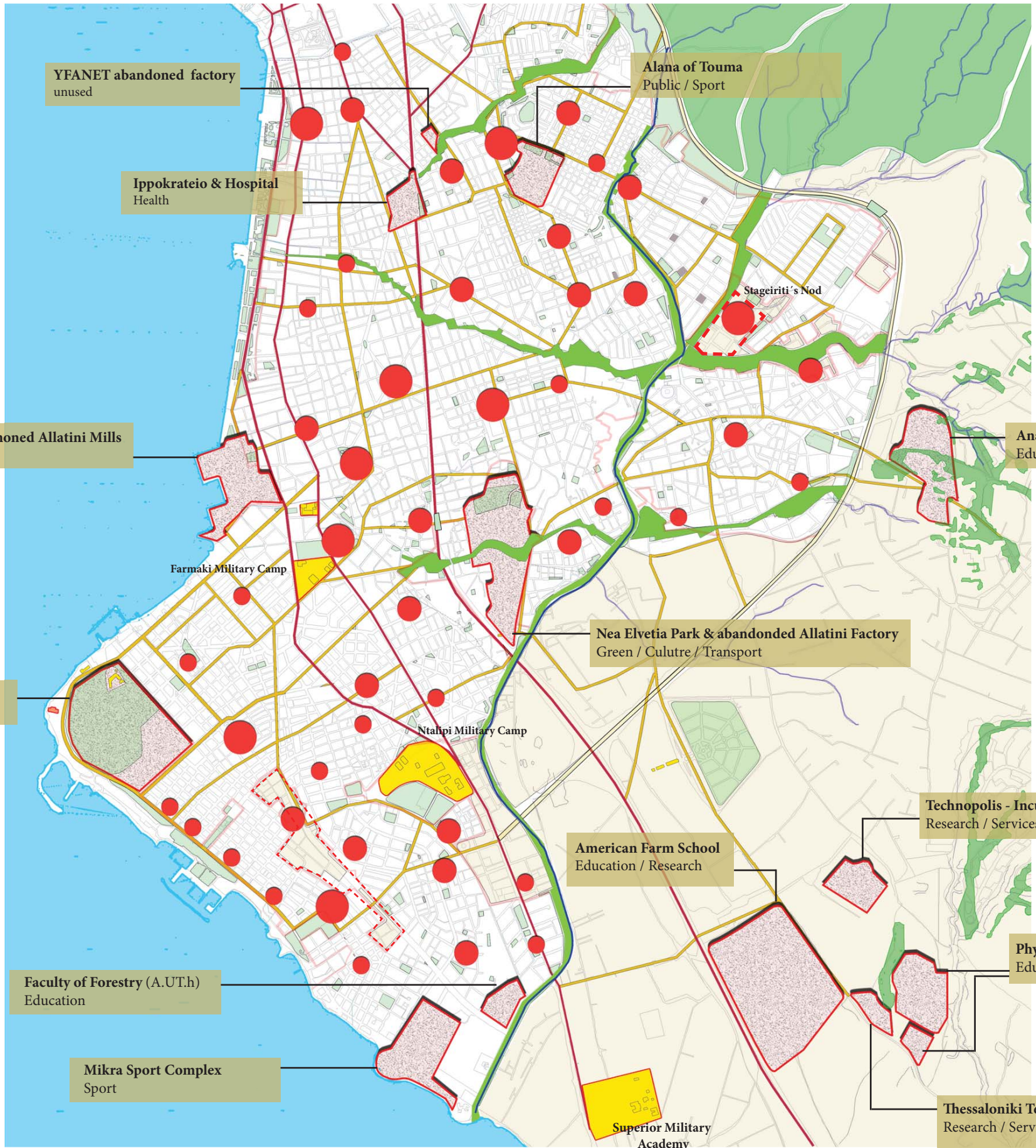


XL  
retail



50m





## New & Existing Poles of Centrality

### Public / Green Spaces

Alana of Toumpa  
 Nea Elvetia park & Allatini factory  
 Allatini Mills  
 Ippokrateio Hospital  
 Kodras Military camp

### Education

Faculty of Forestry  
 American Farm School  
 Anatolia College Campus  
 Faculty of Fine Arts  
 Faculty of Physical Education

### Sport Facilities

Mikra sport complex  
 Alana of Toumpa  
 Faculty of Physical Education

### Culture

Music hall & Allatini mills  
 Nea Elvetia Park  
 Alana of Toumpa

### Research / Innovation




Technopolis Incubator  
 Thessaloniki Technology Park  
 American Farm School

### Military

Ntalpi military camp  
 Farmaki military camp  
 Kodraas military camp (abandoned)

### Without use:

YFANET factory (abandoned)

-  Local urban centers
-  Emerging centralities
-  Military installations



#### iv. Contemporary regional urban structure

The map in the previous page on the left shows the activities in the extended area of the regional canal, including the local streams and the connection with the seafront, given that earlier it has been established as the adequate frame of analysis. The real potential that the regional canal and its streams can play in creating critical and accessible green spaces can be understood better when considered in conjunction with the multiple educational and health institutions that could take advantage the connection with such spaces. The map on the previous and side page demonstrates the formentioned statement. Especially for the areas of east Thessaloniki, with the characteristic high densities and absence of green spaces, such an intrusion of the green layer within the urban fabric could present a radical rethinking of urban green spaces in this part of the city. Another factor to consider is the presence of various sports facilities that are also present in the vicinity of the canal, with most predominant the Mikra Sport complex by the seafront. The regional canal could also provide important connection between these spaces, either in form of bike or pedestrian/jogging lanes ensuring a more constant activity and usability of the area.

As far as the urban structure is concerned, the regional canal and its streams do not cross any important local urban centres. The legal situation of the stream areas, discouraged the development of any central activities to begin with. The map on the left shows the location of the local urban centres as these appear in the local municipal plans, along with the regional canal and its streams. This map also displays areas present in the Eastern Thessaloniki fabric, that present potential of creating new centralities and generating considerable new activity and flows. These areas are found in direct connection with the regional canal or one of its streams, or could benefit from a connection with it. There are some other areas like the Kodras area that do not present any relation with the regional canal structure, but are included to investigate the potential of connection with the wider structure.

From these new areas of interest, some of them have already been identified as areas of intervention by the authorities with proposals already being developed<sup>9</sup>. The nature of these areas, that includes in many cases uses and activities of a more translocal/regional character, is bound to influence the dynamic of the region, modifying the contemporary scheme of mobility and activity. There are also other areas that are identified by the analysis that still have not been identified by the authorities as areas of intervention but present a new potential in the updated conditions. These areas are principally edge zones and urban voids. Next, these areas are presented based on the relation they have with the regional canal structure:

**Regional Canal:** Alana of Toympa (indirect), Node of Stageiritis, Nea Elvetia Park, Mikra Sport Complex, Ntalipi Military Camp, Faculty of Forestry & Natural Environment

**Toumpa/Konstantinidi Stream:** Alana of Toumpa (indirect), YFANET factory, Ippokrateio Hospital

**Kiverneion / Big Stream:** Node of Stageiriti, Anatolia College Campus

**Depot Stream:** Anatolia College Campus, Nea Elvetia park, Farmaki military camp, Allatini Mills & Music Hall

The rest of the areas that are not included in the above list will be investigated later in the urban structure analysis. Nevertheless the extended regional canal structure appears to be directly and indirectly connected and related with a number of these special areas. Given that the canal structure is a lineal/dendritic element, it could also provide a backbone structure for connecting and interrelating all the individual areas into a coherent city structure.

Which then brings us to the conclusion that if we now consider the regional canal and its streams as a new regional structure superimposed on the current urban structure we can see new possibilities that arise for structuring new green and public spaces for the east Thessaloniki area. The regional canal serving as the central spine of the structure onto which the local streams and their green areas dock on. This structure serves various functions:

- i) Highlight and fortify the **exterior/interior** function and connection,
- ii) **introduce new green areas** in the dense fabric of East Thessaloniki
- iii) creates a grid for setting up a **green/public space network** for this part of the city
- iv) re-establishes the **sea-mountain connection** on various levels and directions.

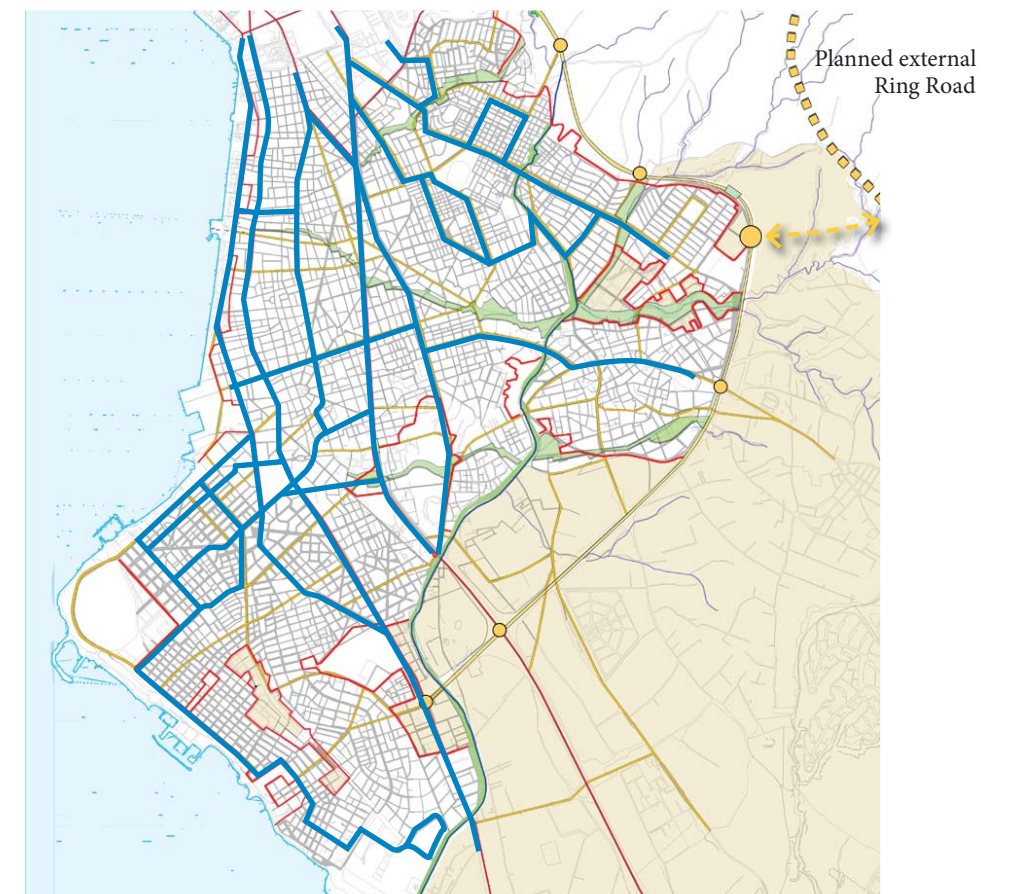
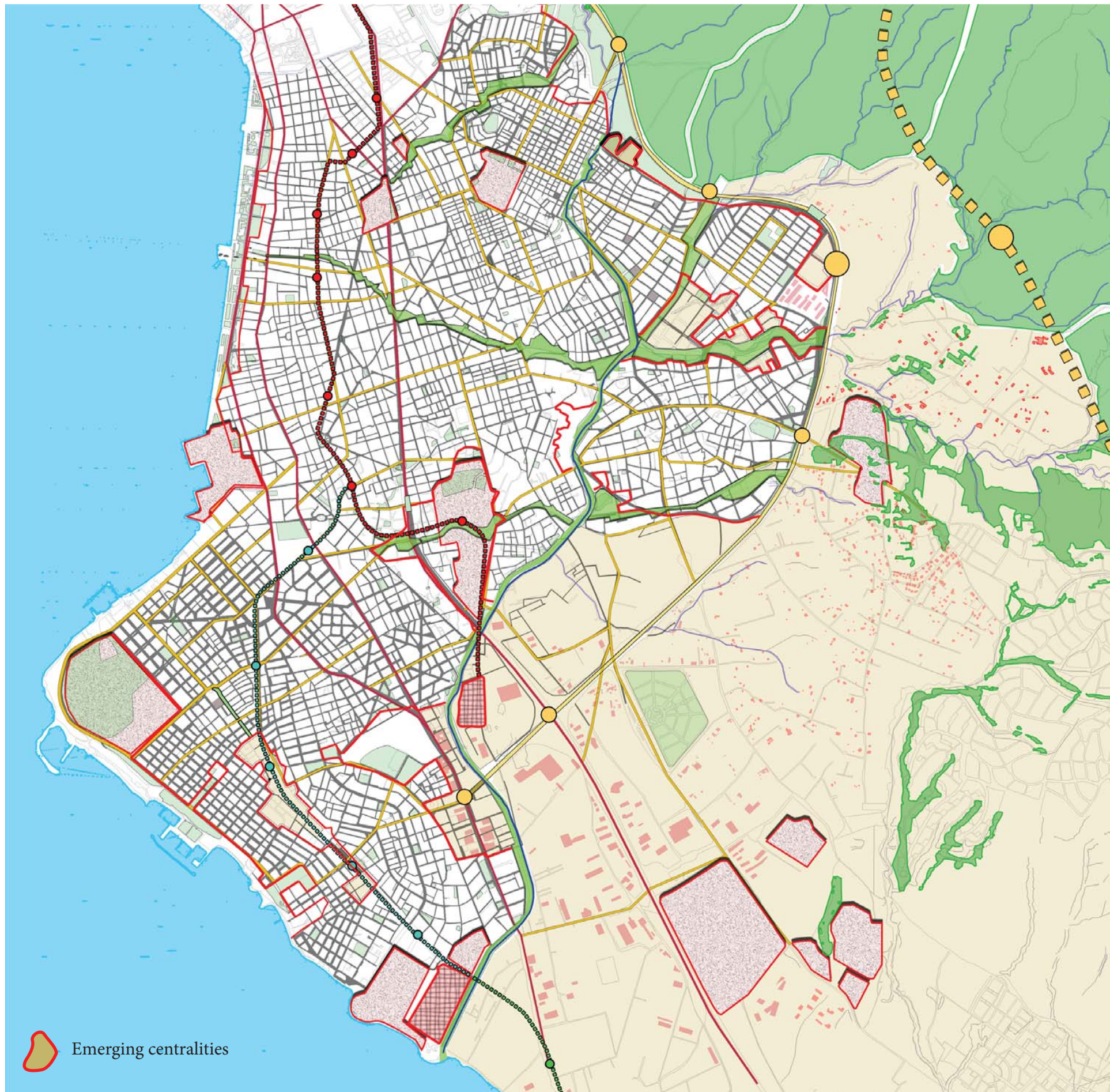
This same regional canal structure could serve as a tool/ element for ecological integration and rethinking of the natural network in the extended area. Although a hydrological restoration of the streams is still a far-fetched question, the green space restoration of the same spaces is a key concept, and a viable alternative for structuring new and dynamic green/public spaces, and regenerating socially and ecologically deprived/degraded areas. This green public/green base grid will serve as the reference when analysing later on the urban/social structure of this part of the city,

In continuation though, the proposals and plans prepared for some of this special areas are presented as well a photo report from the Regional Canal, to demonstrate the conditions along the canal. After this section follows the analysis of the urban structure and the urban layer in more detail to go on with the composition of the mosaic structure.

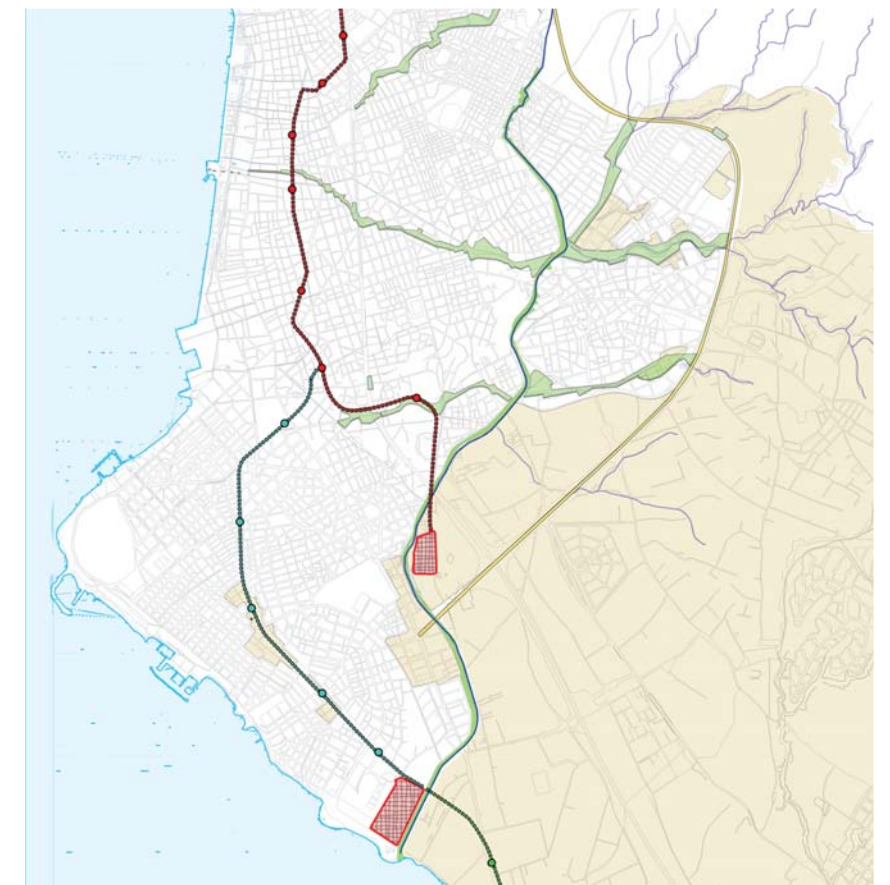
9. O.R.Th. (2004)



# Networks



Road network and hierarchy and existing principal public bus routes (source OASTh.gr)



Planned metro lines and their terminal stations (source: Ametro.gr)



## v. Flow Analysis - Mobility / Activity assessment

An analysis of the flows that cross the area will help understand better the mobility factor and investigate problems and prospects that could possibly arise under a possible future restructuring. As mentioned earlier the area that now functions as a key urban ecotone area is crossed by important urban arteries and flows that have influenced the form and growth of the city and more particularly across the limits set by the canal. The map in the next page shows the various flows that are present in the area as well as the various physical barriers that obstruct mobility and increase fragmentation of the urban fabric. Analysing the various flows in more detail we see:

- A. Vehicular traffic : The eastern expansion of the city of Thessaloniki was realised under a car-dominating scheme that respectively influenced the form of the urban growth. The road grid is presented in a tight arrangement occupying a significant portion of surface area. As a consequence public and green spaces have also been sacrificed in this process, but has also intensified public activity along the roads arteries.

As far as the road network hierarchy is concerned, there are three principal avenues that take the majority of the transverse traffic load: K. Karamanali, Vas. Olgas/E. Antistasis and M. Alexandrou. All three avenues have the same orientation (N-S) with a parallel direction to the seafront. The first two avenues that cross the urban fabric tend to present the most traffic related problems, which tend to be less noted in the case of Meg. Alexandrou that runs along the seafront in one direction and has sufficient capacity. Next in the rank there are the main roads that usually carry additional public transportation flows and then the base road grid that presents the least traffic load.

The Ring-road on the outskirts of the city is an important element in the road network and city structure. The Ring road serves to a great extent as the contemporary city limit, a function held before by the regional canal. The function of the Ring road is to divert traffic from the transverse avenues, mentioned above, and channel them around the urban fabric. The east part of the inner ring road is contained entirely in this section of the analysis. The Ring road nod of Triandria is located right by the beginning of the regional canal, and gives access to the districts of Toumpa and Triandria.

As far as the outer ring road is concerned, which is now in the planning phase, it is probable that it will have various effects. Near the district of Konstantinoupolitika, a connection road to link the inner and outer road is considered, given that at that point the two ring roads are at their closest distance. This connector is planned to cross the Kipoupoli district and create new flows and activity through this area.

- B. Public & light traffic : The public system for this part of the city makes reference to the public bus system that serves the area. This runs along the major arteries of the city and covers if not in its entirety a considerable area of the urban fabric. The metro transport system has not yet been completed for this area but provisions two lines for this part of the city: The main line and the Kalamaria extension that is planned to run all the way to the airport. Apart from the two lines, two terminal stations are also planned: one adjacent to the Nea Elvetia park and another one next to the Mikra Sport complex, both adjacent to the canal. The construction of the metro lines and their stations could increase significantly accessibility to the regional canal and its related activities.

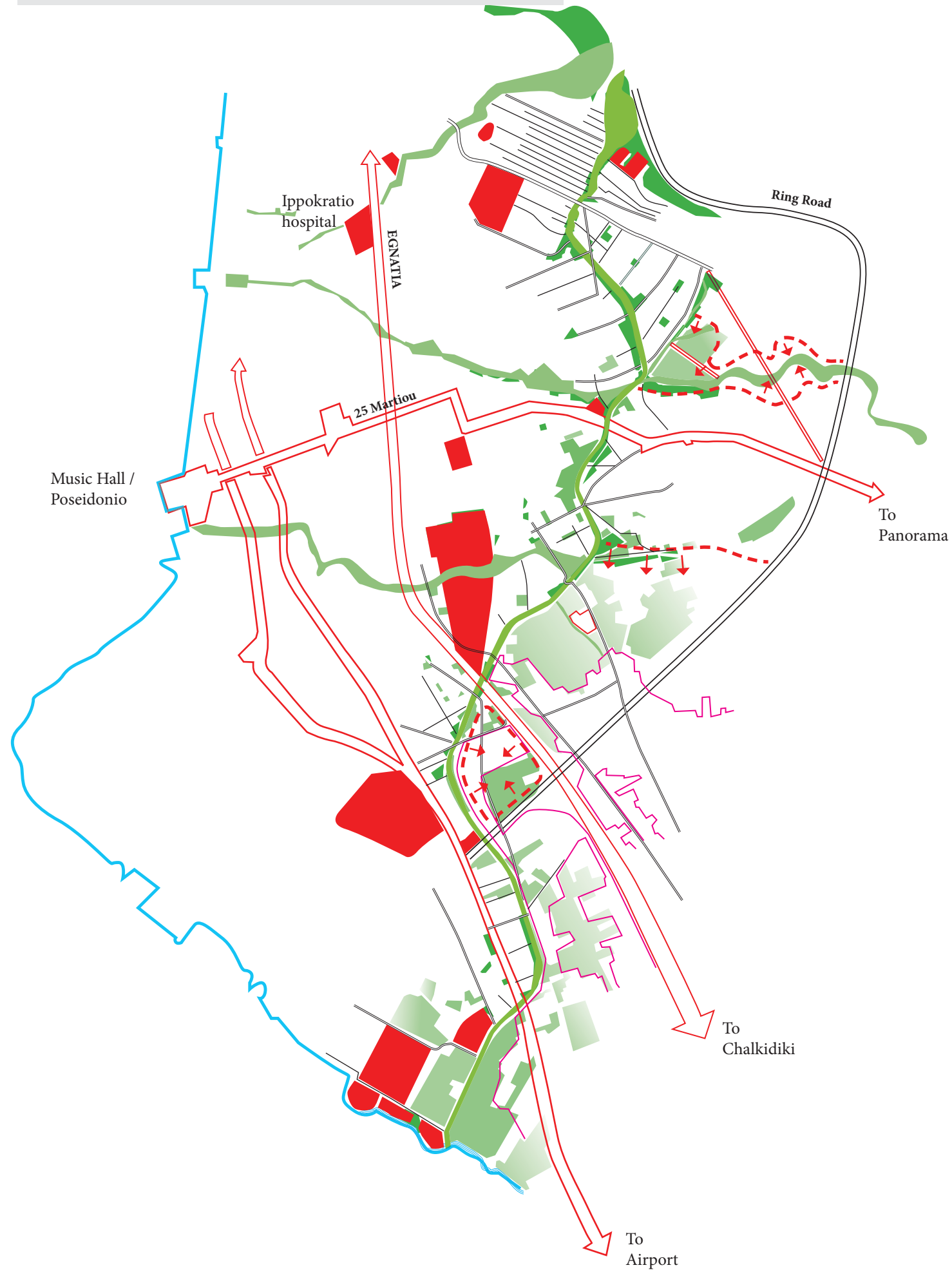
Currently there are no bike lanes at this part of the city, but is bound to change when the bike lane along the regional canal is constructed, and connected with the existing network. Currently bike circulation is undertaken by the road network under variable conditions.

- C. Pedestrian traffic : Similar to other areas in the city, the pedestrian traffic in this part is not favoured nor encouraged since there are few pedestrian-only streets and most pedestrian flows have to be served by the sidewalks. Nevertheless the commercial activity that exists on the ground floor of the majority of the buildings creates an increased groundlevel circulation and activity and places the street as the principal stage for public and urban activity.

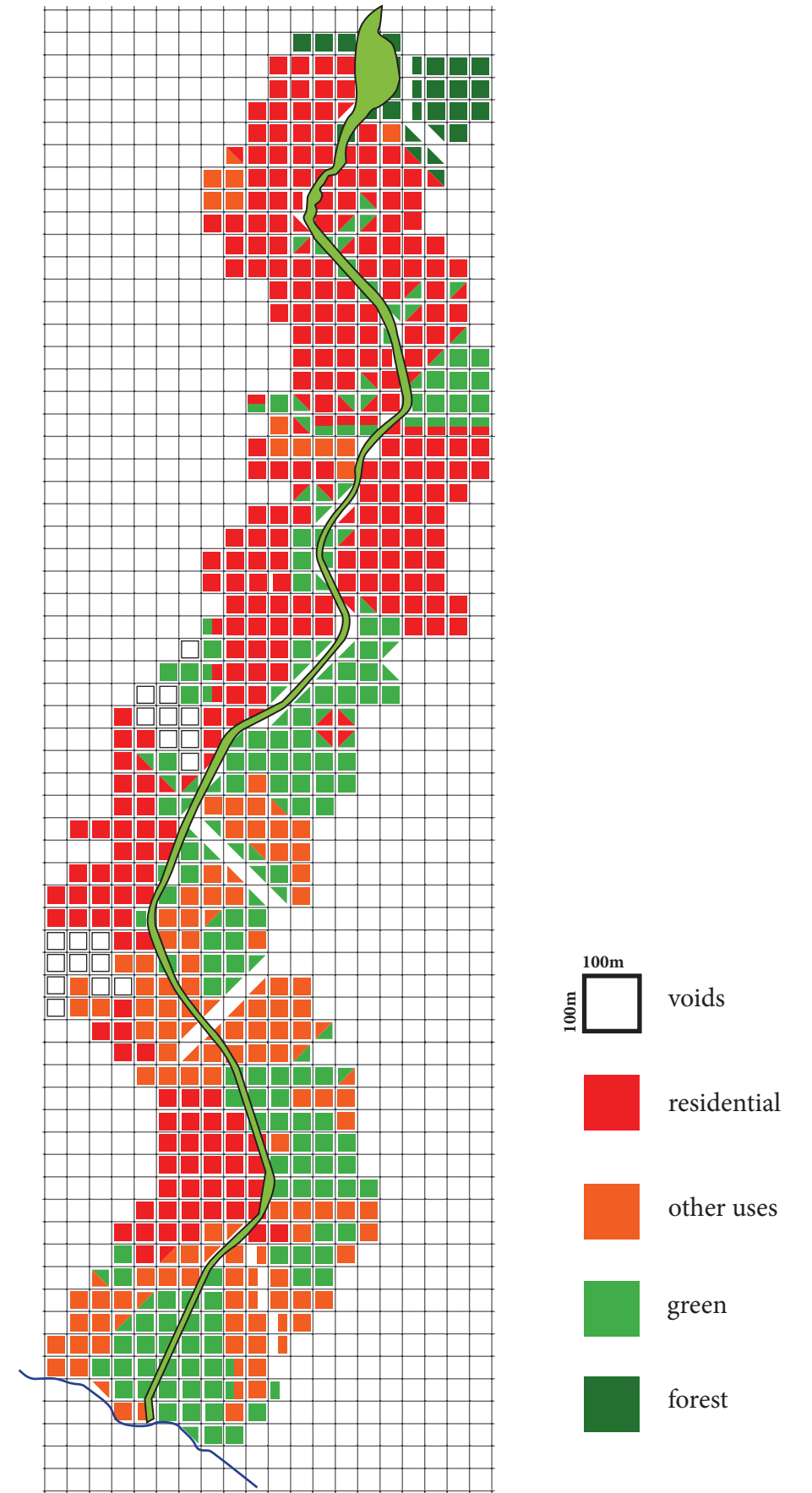
Similarly, there are few public spaces that host or attract pedestrian flows and activity in the east part of the city. Along the canal exist parts pedestrian paths can be found, but these are not continuous nor necessarily connected. Apart from the canal the most important public/pedestrian spaces are: **i)** the *Alana of Toumba* on the north situated between the regional canal and the Konstantinidi stream, and includes the football stadium of the team of PAOK as well as a couple of school units and public services buildings. Around the area exist also few pedestrian streets and the archeological site of the Toumba, **ii)** The Kalamaria pedestrian axis, that is located in the centre of Kalamaria and in a 1.3km distance from the Regional Canal. The axis provides a lineal public space with public services, schools, cafes and bars and recreation areas. **iii)** other numerous scattered and isolated public and green spaces in the urban fabric that are not however connected with each other. The lack of a properly structured public space network in this part of the city is evident and a lot of problems can be attributed to this deficiency. The regional canal and its streams when reconsidered under the contemporary spectre, could provide a viable solution for creating new spaces and connecting existing ones.



The Regional Canal as a peri-urban interface



The Regional Canal as a peri-urban ecotone





The area of the seafront will be analysed further in a later section, but it is useful in this phase to try to detect possible ways of connection with the seafront, given that it is a key public space element. As noted earlier the streams and the canal can serve as elements for restoring the sea-forest connection, while at the same time interjecting critical public/green space in the dense urban fabric.

- D. New centralities / old peripheries : As seen earlier, in the mosaic evolution analysis, the area under investigation until recently was a peripheral area of the city, designated as peri-urban area. City expansion towards this area has covered a great part with residential use west of the ring road and secondary and tertiary use east of it. The contemporary mosaic presents a complex and diverse situation, a state that arises from the slack application of city/building regulations and the absence of a proper infrastructure to follow new developments. Thus most new activities are concentrated along major road arteries that provide easy (if not the only) access, like along the avenue of Georg. Scholis (Farm school) or the continuation of K.Karamanli that transforms into the National Highway Thessaloniki - Nea Moudania, generating one form of lineal urban sprawl. Simultaneously east of the canal in the limits of the Pylaia, all the area that is not included in the city plan, experiences some type of diffuse sprawl of diverse nature: residential, manufacturing, sport etc. that goes occupying available peri-urban space<sup>10</sup>.

More recently spatial groupings of activities have created emerging poles of centralities of different character. Such centralities along the canal, apart from the Alana of Toumba mentioned earlier, are the Mikra Sport Complex by the seafront and the planned metro station next to it, the Nea Elvetia park and the adjacent metro terminal station and the new local centre in the junction of the canal with the Stage-iriti stream. Other centralities include the Anatolia College Campus with the adjacent clinics, tangent to the inside Ring Road, and the emerging pole of innovation/education that is being developed north of the American Farm School.

E. Urban voids / edge zones : In the category of voids can enter diverse types of urban spaces: **i)** unoccupied urban land, **ii)** abandoned industrial areas, **iii)** obsolete military installations, that are out of use or present little activity. In the first category the majority of open spaces can be found in small fragmented parcels that do not constitute a continuity or network. The only case of an urban void of considerable area is the case of Kalamaria with the void that is produced between the district of Ag. Ioannis and Nea Krini/Aretsou. This area is planned to be edified to a great extent with a major road artery crossing it, with the metro line extension running parallel to it. A more careful analysis of this area demonstrates the crucial role that this now void - soon axis can play, an issue that will be reexamined later on.

The second category (abandoned industrial areas) presents numerous cases. The Allatini factory, that is to be integrated in the Nea Elvetia Park, is one, that was also the subject of a design competition<sup>11</sup>.

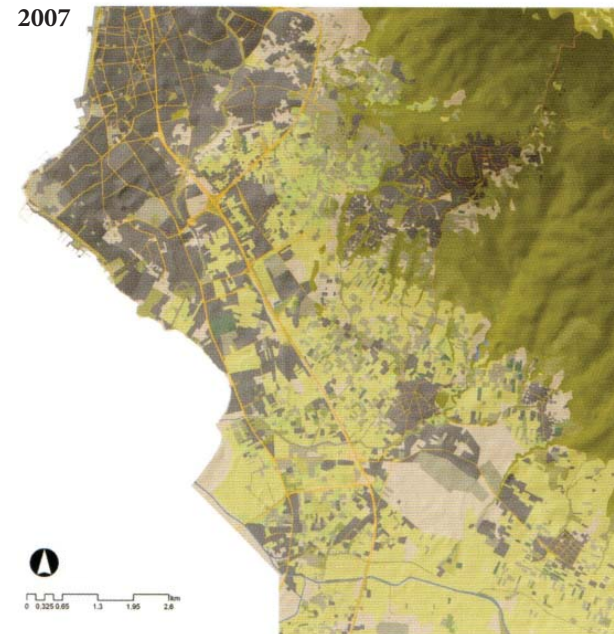
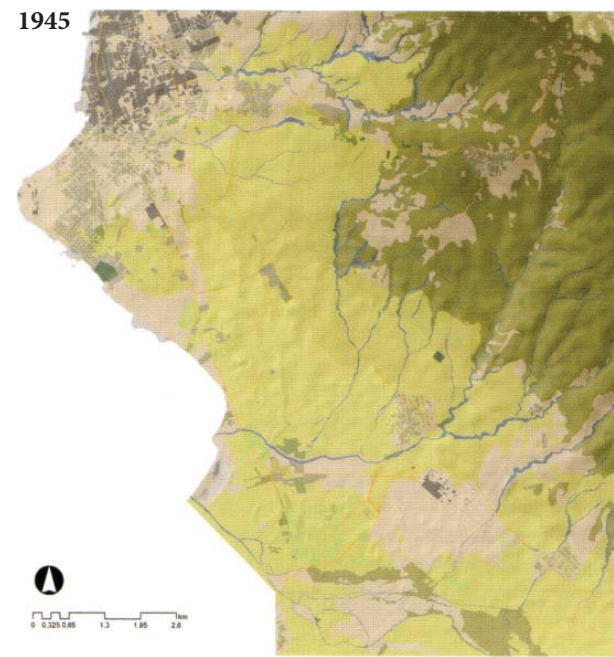
The Allatini Mills by the coast and the Music hall is another, that still has no concrete plans, although a renovation study was contacted. The YFANET factory in the Konstantidis stream is another example of large scale installations, that contrary to the previous two holds improvised cultural activities held and organized by the buildings squatters. The Old ice factory, recently also occupied by night clubs occupies part of the streambed of the Big Stream and currently holds no use.

Now as far as military installations is concerned there are also distinct types present. The Kodras camp on the tip of the Karampournaki of Kalamaria is currently out of use but hosts in a small area the NATO offices. Similarly, the Farmaki camp is out of use and holds few uses (National Intelligence Agency) and a great part of its area is used as parking and vehicle storage area. This area is planned to host the headquarters of the Region of Central Macedonia and its related public services. The Ntalipi camp which is in close distance with the canal is currently in use but at the same time holds reduced activity and an unreasonably large surface for its given uses.

Edge areas predominantly refers to unoccupied areas that are encountered in neighbouring zones with the regional canal or the more recent ring road, forming interstices. Both of these elements as shown, have respectively served as urban edification limits. Thus areas adjacent to them that have not yet been edified for different reasons, in the hypothesis set forward, can play an important role as access or buffer zones. The regional canal study identifies a number of these areas along the canal and proposes interventions for them to formulate a defined urban space<sup>12</sup>. The edge zones by the ring road cater a different approach, given the vicinity with the high-traffic Ring-Road. These tend to form a lineal green element, that can serve as buffer zone in between the artery and the residential zones.

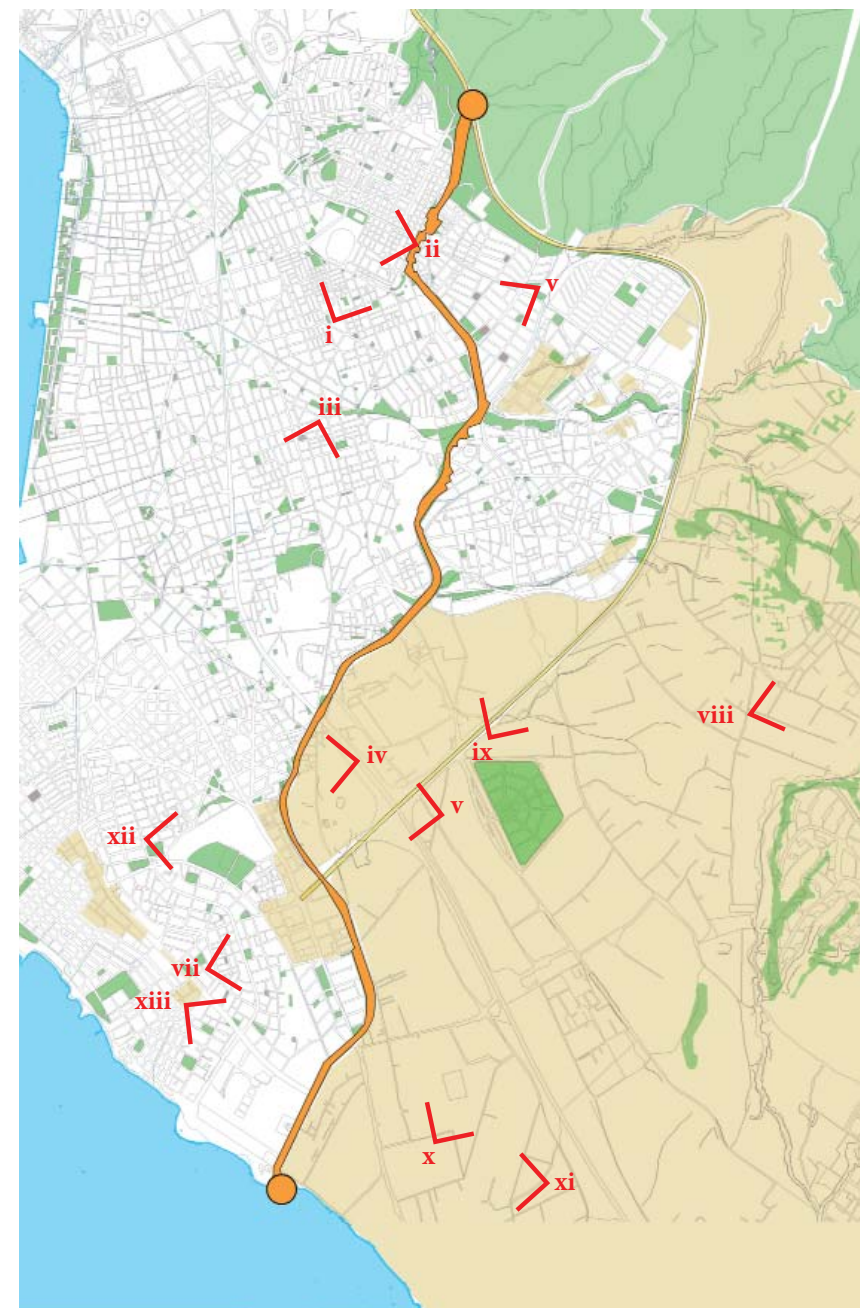
The area of East Thessaloniki, presents a complicated fragmented and dynamic mosaic, an impression of which has started to formulate / emerge through the analysis so far. It has also been demonstrated that the Regional canal, its related streams and interior and surrounding green areas can serve as the basis for structuring a green/public space network superimposed on the current urban structure. The regional canal that in the past has served as an artificial urban limit, today found almost in its entirety integrated in the urban fabric, is transformed into an urban interface: controlling cross-flows and ensuring continuity along its path. Thinking in the canal as a dynamic urban element as opposed to a static element presents many conceptual advantages. The canal is converted into a principal urban renewal tool, linking the sea with the forest and serving as an urban spine onto which different activities, uses and flows can dock on or dock off, allow or block access etc. The diagram on the left page shows the current flows related to the canal, and helps comprehend the current urban scheme & function and the situations present within, in more detail.





**Urban expansion, 1945-2007**  
(source: Yerolympos, A., 2013)

Double diagram showing the comparison and evolution of the development the urban fabric in 1945 and 2007 for the eastern peri-urban space of Thessaloniki, differentiating between constructed (tones of grey) and unconstructed areas (tones of green).



**Aerial Photos of the Area**  
(source: airphotos.gr)

The map on top shows the location of a series of low-height aerial images that show the conditions that prevail within and around the urban fabric.





iv



v



vi



vii



viii



ix



x



xi



xii



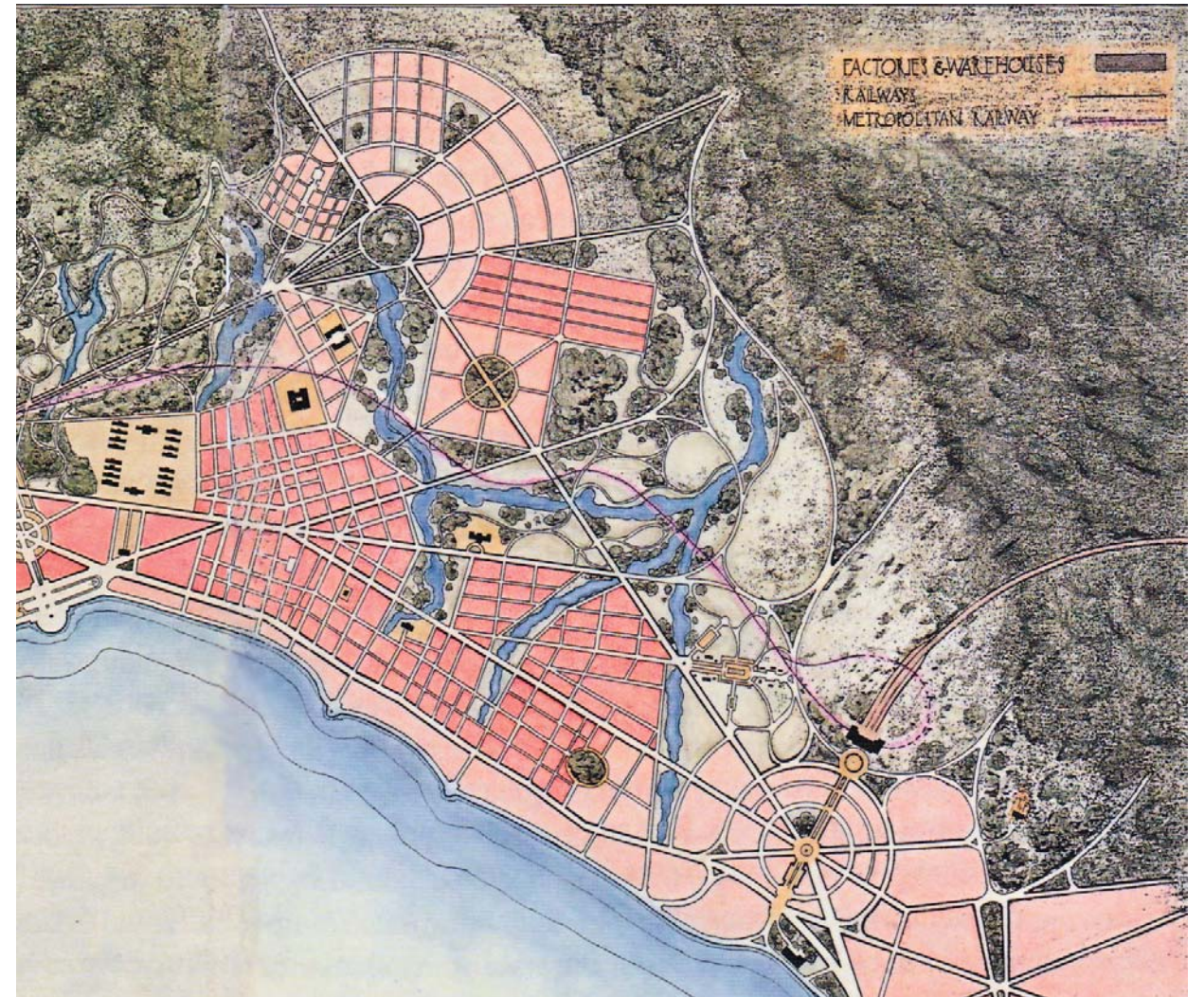
xiii







**Left:** Plan of 1919 demonstrating the grid and local streams in the East Thessaloniki area before the intervention. (Municipality of Thessaloniki)



**Right:** Part of the map of the proposal for Thessaloniki and the extended area signed by Thomas Mawson in 1918 "Salonique étude préliminaire pour la reconstruction et de l'extension de la Ville", showing the eastern extension of the city of Thessaloniki. The streams are displayed clearly invading the urban fabric and creating extended lineal green parks along, reaching all the way to the seafront. ( Ministry of Macedonia - Thrace, 2008 )

## vi. The inheritance of the Hébrard Plan & the planned dimension





**Left:** 2 sheets of the eastern part of the city as shown in the approved version of the Hébrard Plan in 1925 with the City Plan Gov. Decree 24/29-1-25. (Municipality of Thessaloniki)  
**Left:** The plan for the eastern part of the city with recent additions to the Hebrard plan, 1931 (Ministry of Macedonia - Thrace, 2008 )



The Hébrard plan for the East Thessaloniki included the areas from the Central Axis and extending all the way to Karampournaki along the seafront and including the districts of Charilaou, Toumpa to the south east. It defined in detail the road grid and the parts that were tree lined, as well as selective buildings, services and residential settlements of interest.

The original Hebrard plan, in all its conceptions did not make any provisions for a Regional drainage-canal for the east part of the city judging that no flooding protection were needed at the time. On the contrary, the local existing streams were allowed to enter and cross the urban fabric and reach all the way to the seafront, creating lineal parks along their banks and serving as fire protection zones at the same time for the newly built part of the city. Apart from the green areas along the streams, the plan provisioned the creation of three other considerable green areas for the east part of the city:

- i) The park of Karampournaki on the side of Kalamaria,
- ii) the park of Nea Elvetia with the adjacent
- iii) the hill of Toumba.

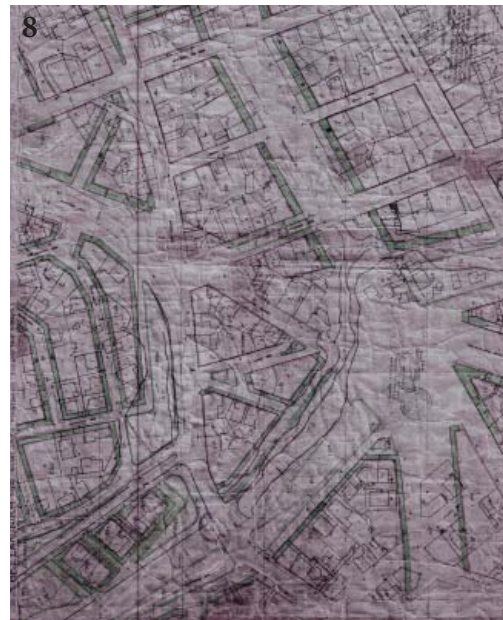
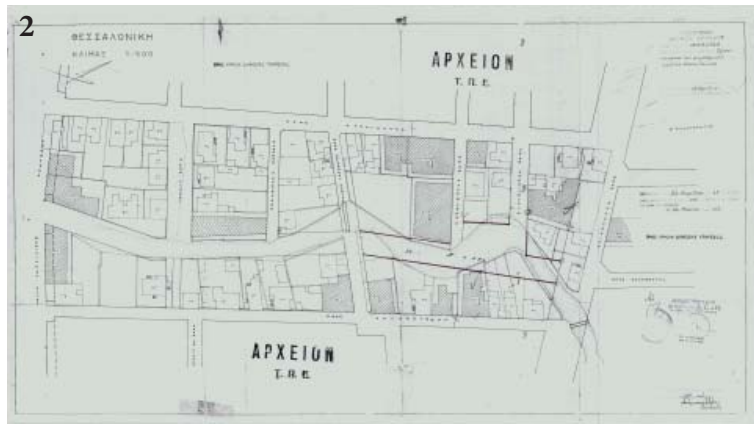
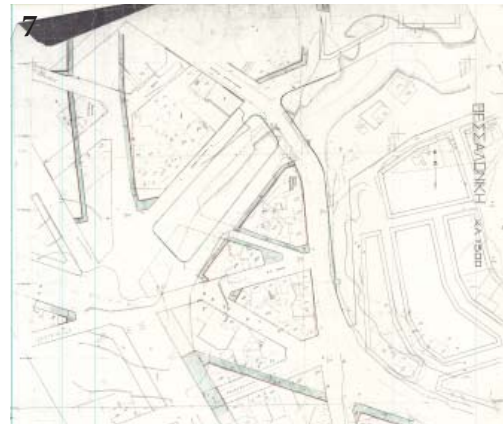
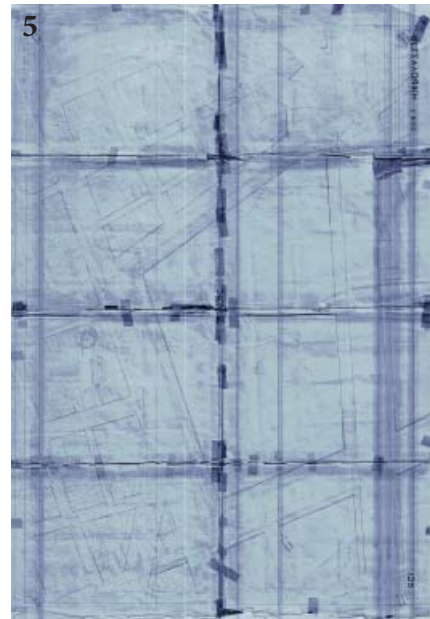
Nevertheless it can be assumed that the plan could not foresee the great demand for housing and new construction in the following years from the approval of the plan, and the expansion that the city would experience

surpassing the plan limits. The built up surface soon occupied critical space of the streams and their respective ecosystems, upstream and downstream , thus leading to the construction of the regional canal which seemed as a rational decision at the time, with a technical bias, to provide adequate, and as it proved later to a great extend overdimensioned, flood protection for the eastern parts of the city. The creation of the Regional canal although it dried up the local streams on the downside of the canal and through the urban fabric, former streams paths areas were conserved principally and not exclusively as green areas.

The 1925 plan designated these areas as stream and green areas and interestingly withstanding the pass of time and adjacent pressures, they were conserved up to this day as recognizable traces still present in the contemporary urban fabric.

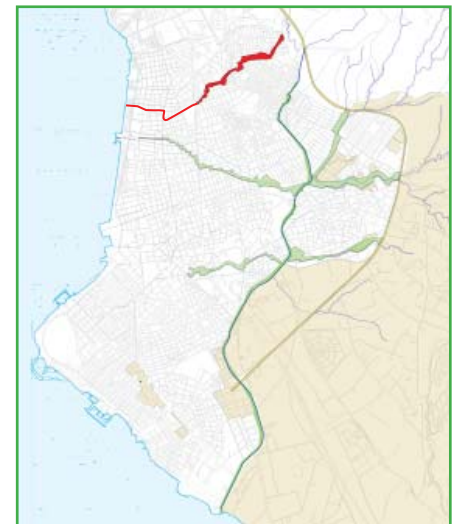
In continuation an analysis and presentation will be made of the diverse consequent plans and interventions along the urban streams with their respective transformations and the contemporary result and impact that they have had. These plans are evidence of the constant pressure that the streams have faced and the evolution of the contemporary urban fabric of the city.





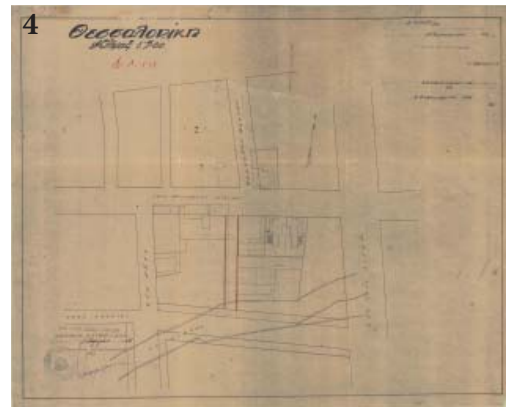
## Konstantinidi / Toumpa Stream

1. Survey plan of the Toumpa area in 1982. The regional canal can be seen on the east along the Toumpa-Malakopi limit 2. Modification of the City Plan in 1969 for the part of the section between Vas. Olgas and Delfon avenue, and its conversion to a street 3. Modification of 1963 corresponding to the seafront part and the creation of the new quay, replacing existing at the time buildings 4. Modification of 1969 for the section between Delfon and Konstantinoupeleas avenue where the stream made a turn 5. Modification of 1957 along the limit with the Ippokratio Hospital 6. Modification of 1984 for the area of Ano Toumpa at the height of Papafi street 7. Modification of 1964 at the height of Grigoriou Lampraki avenue in Ano Toumpa 8. Similar to 7, a bit further to the north. 9. Modification of 1991 in the Triandria in the Kryoneri area for the urbanization, arrangement and integration to the city plan, defining public spaces, pedestrian networks and proposed buildings 10. Modification of 1975 for the section of the stream from Papanastasiou to Diogenous Street, defining new green and public spaces as well as school areas.



(map source: Municipality of Thessaloniki Digital Archives)

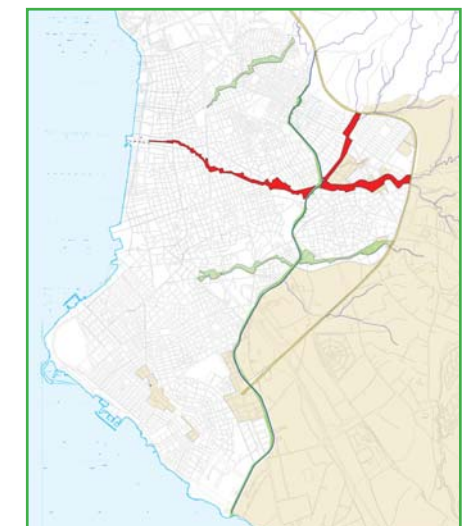




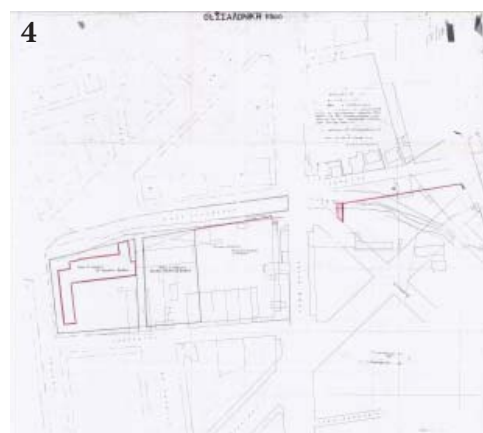
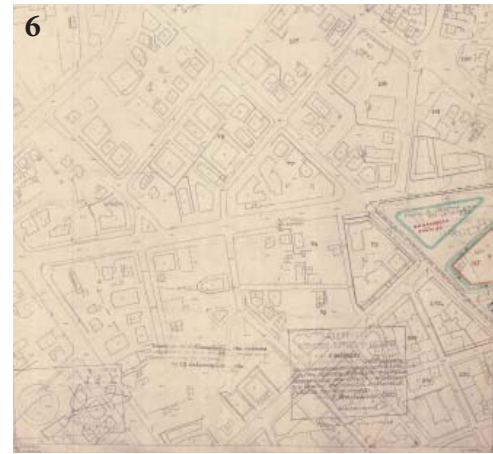
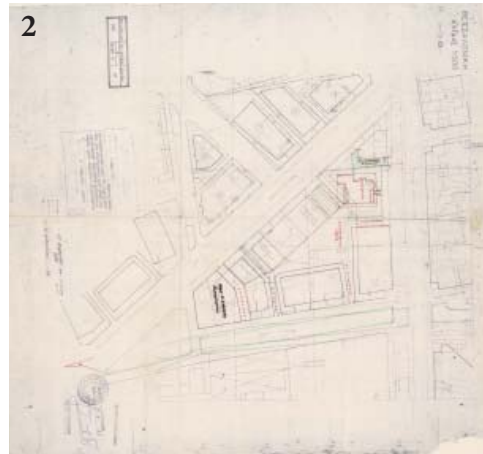
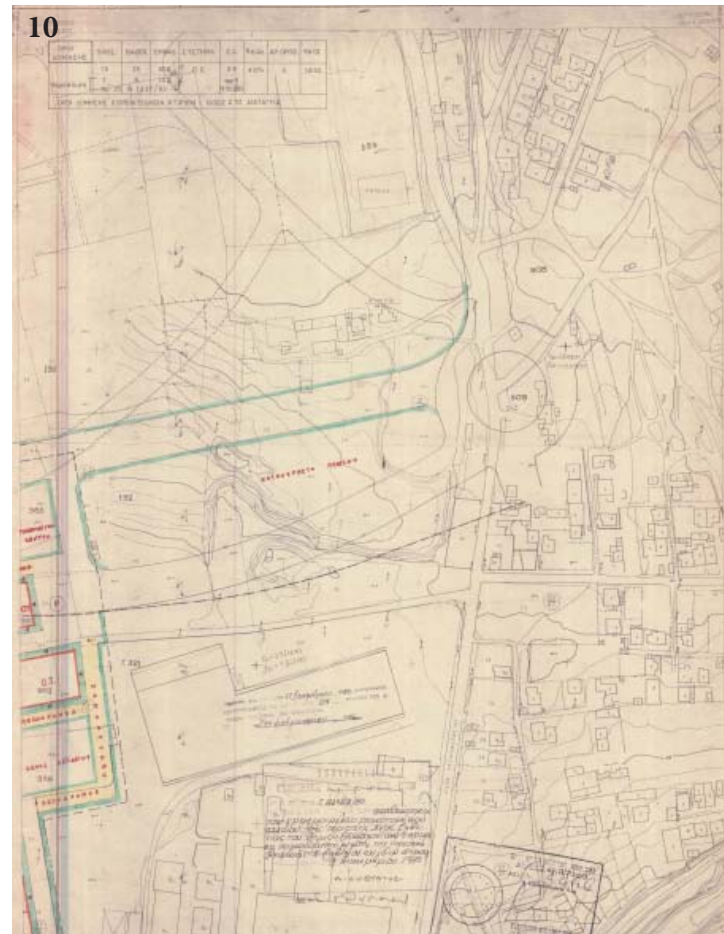
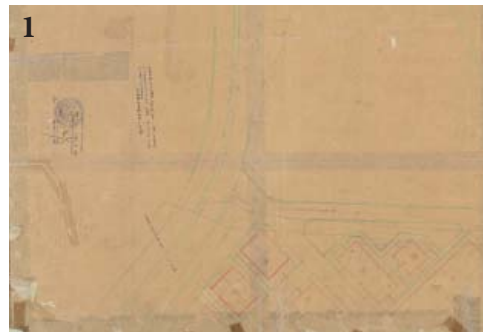
## Kiverneion / Big Stream Stream

1. Modification of the plan of 1939 from the current Vas. Olgas avenue to Delfon avenue. The Allatini ceramic factory can be seen bordering the stream and future grid that was to replace it. 2. Modification of 1996 in the section between Nea Egnatia and Papanastasiou Avenue demonstrating the placement of two new areas of School buildings. The plan also shows the area of the abandoned factory of Alyside as area for the construction of a High School and the Ice factory as green public space 3. Modification of 1984 of the section from the Anaksimandrou street to the Peri-urban canal, where a series of areas dedicated for school building can be seen 4. Modification of 1956 in the junction with Delfon avenue, similarly as 1 5. Modification of 1976 similar to 5 and 1 6. Modification of 1991 in the junction with Petrou Syndika street where a school area can be seen 7. Modification of 1970 of the stream section from Delfon to Gamveta street with the creation of public green spaces 8. Modification of 1972 of the stream section from Nea Egnatia to Anaksimandrou street. with the creation of the new streets replacing the stream, (Distomou, Gennadiou) the new green public spaces, and the new school building. 9. Modification of 1965 of the section between Gamveta and Mantinias street 10. Modification of 1993 in the section between Gambeta and Dousmani street, and the creation of new green public spaces over the old stream trail 11. Modification of 1972 of the section from Egnatia to Mantinias street

(map source: Municipality of Thessaloniki Digital Archives)

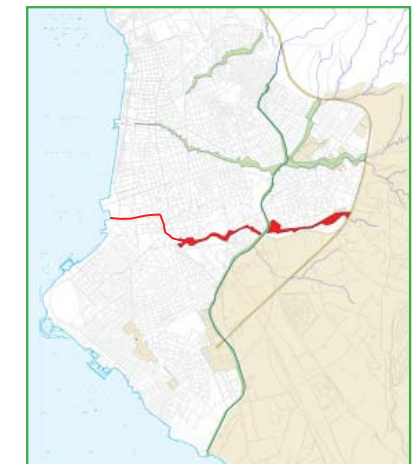




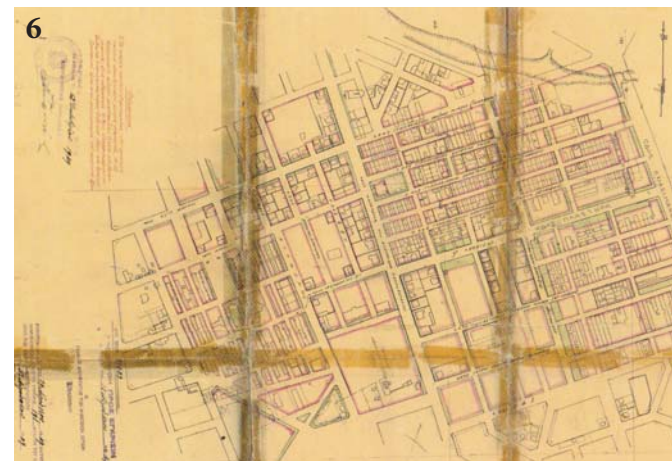
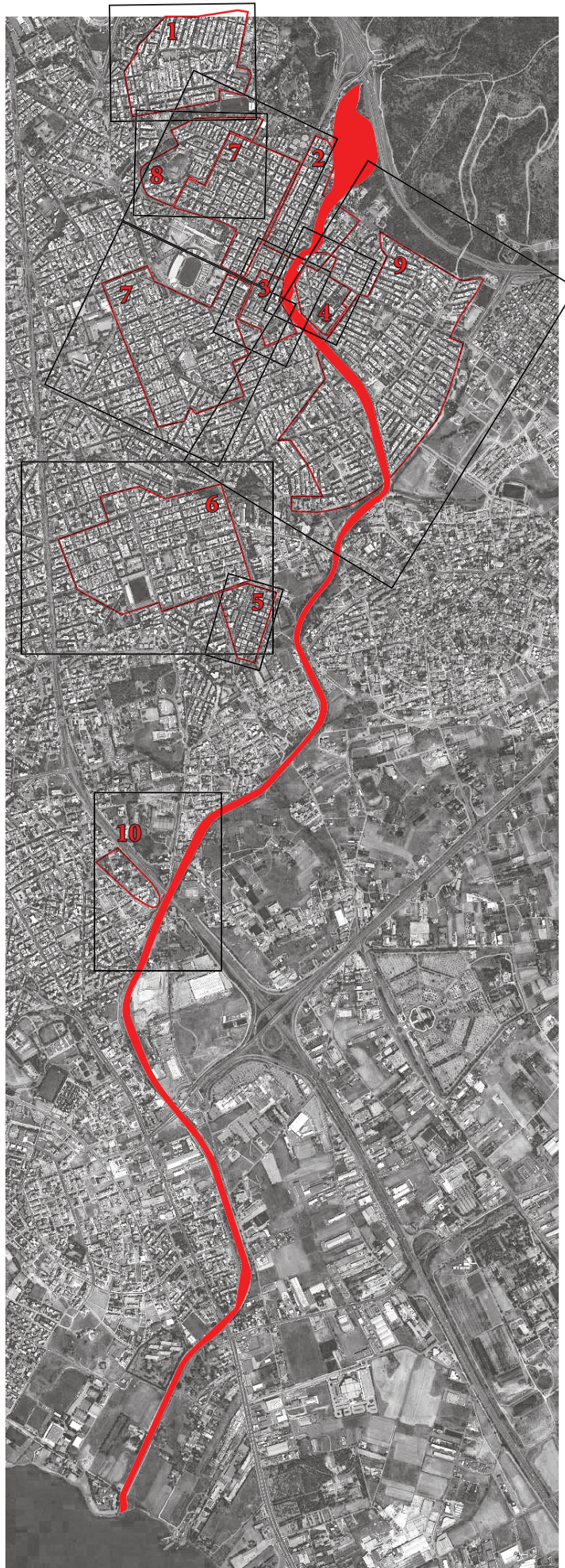


**Ntepo Stream** (maps source: Municipality of Thessaloniki Digital Archives)

1. Modification of 1972 of the section bordering the Alatini mill before reaching the sea 2. Modification of 1979 of the section between Antheon and Vas. Olga Avenue 3. Modification of 1968 at the junction of Antheon (then Thermis) and Sofouli street 4. Modification of 1967 of the same area, designating the area for the High School and the conversion of the old Depot area as storage area for the Police 5. Modification of 1975 of the stream section between Delfon and Voulgari street showing the new green public areas and new school area 6. Modification of 1985 in the section between Voulgari and Michail Pselou street 7. Modification of 1954 at the height of the church of St. Eleytherios 8. Modification of 1985 at the junction of the Nea Egnatia with Michail Pseliou street defining the new building blocks, pedestrian streets, public and green spaces and street school areas 9. Modification of 1983 of the Allatini and Nea Elvetia section 10. Modification of 1985 at the height of the Allatini factory. 11. Modification of 1955 for the district of Nea Elvetia defining new building blocks and public green spaces. 12. Allatini Estate, 1935 (source: Yerolymou, A., 2013)







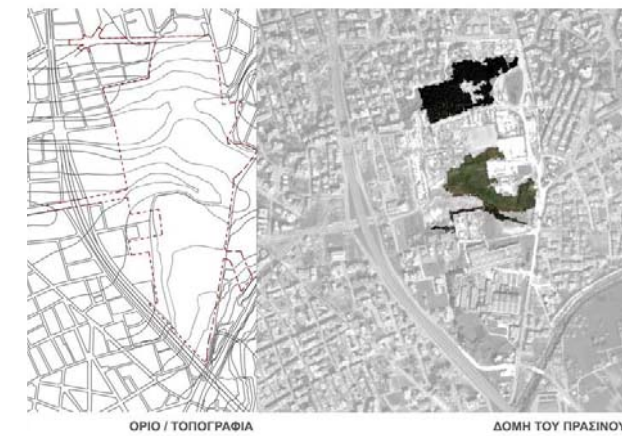
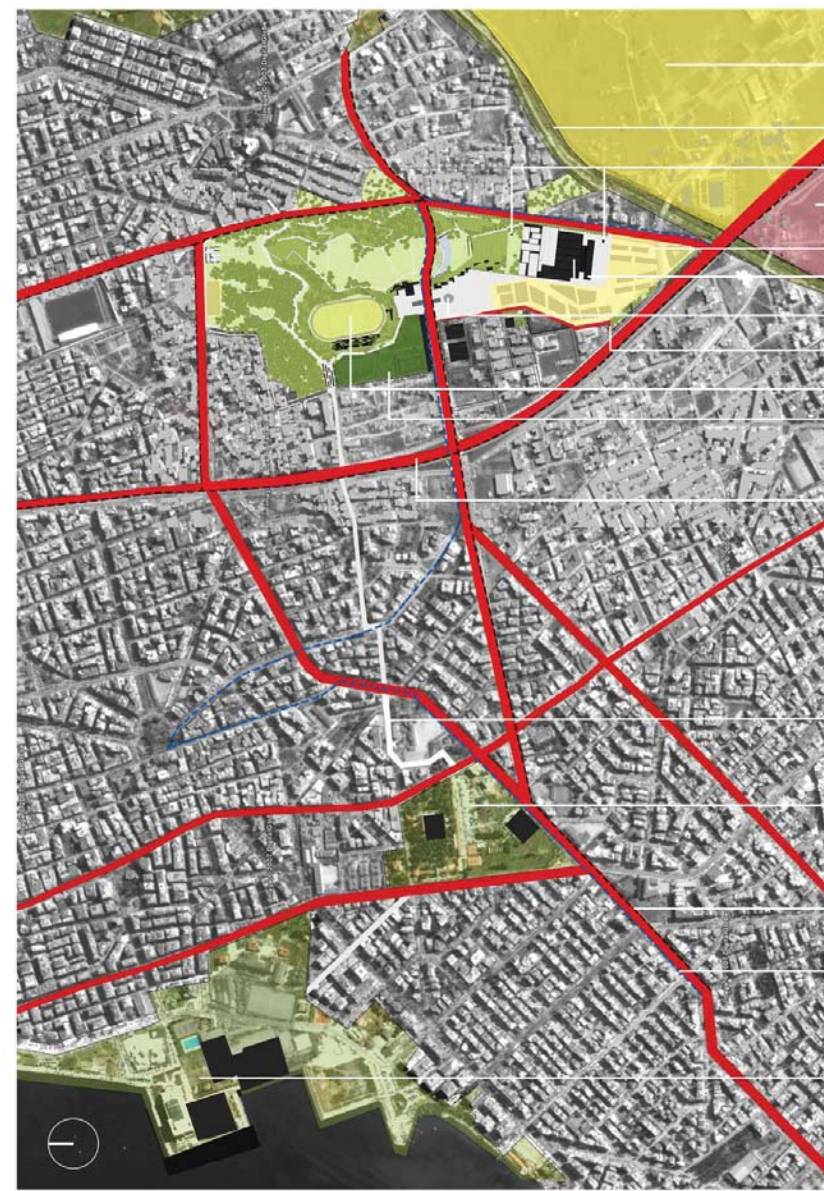
**Regional canal** (map source: Municipality of Thessaloniki Digital Archives)

1. Modification of 1978 for the plan of the Triandria district 2,3,4. Modifications of 1984 for the area of Ano Toumpa 5. Modification of 1936 for the district of Trochiodromikon (Agia Kyriaki) 6. Plan of 1949 for the Charilaou Settlement 7. Plan of 1934 for the refugee settlement of Toumpa 8. Modification of 1963 for the Ano Toumpa district around the hill of Toumpa. 9. Expansion of 1958 for the Ano Toumpa district. 10. Modification of 1985 of the Nea Elvetia / Kifisia area.





# 1. Nea Elvetia Park/ International Open Competition 2006 / *Unrealised*



## 1st Prize

Giannakou A., PROAP LDA, Balioulis, Il. & associates, Romanos M, BASIS-SYSM  
 (source: Geochoros.gr, TEE/TKM 2008)

The winning proposal by Giannakou A., PROAP LDA, and others recognized the area as a pole of supra-local/regional character for the entire city, acting as a catalyst for the creation of a green network that integrates the city with its natural limits: the sea and the mountain. The proposal core ideas focus on creation and reinforcement of conditions of centrality in the area, diffusing limits and barriers presents and creating synergies between private and public sphere and differentiated fabrics. To achieve this it proposes the creation of a major green park, an intermodal station (metro,bus,car,bike), a sport area, the reutilization of the Allatini factory for cultural activities and the prolongation and redesign of Michail Tseliou street in order to act as an integrated urban axis.





**2nd Prize**

*Diktyo AE, Meletitiki / A. Tombazis, Chorotechniki, Grivaki G, Makridis P. & Associates  
(source: diktyo.eu, TEE/TKM 2008)*

**3rd Prize**

*Doxiadis AE, Schema 4, TREDIT SA, Koumantaraki R, EUROTEK AE  
(source: schema4.gr, TEE/TKM 2008)*

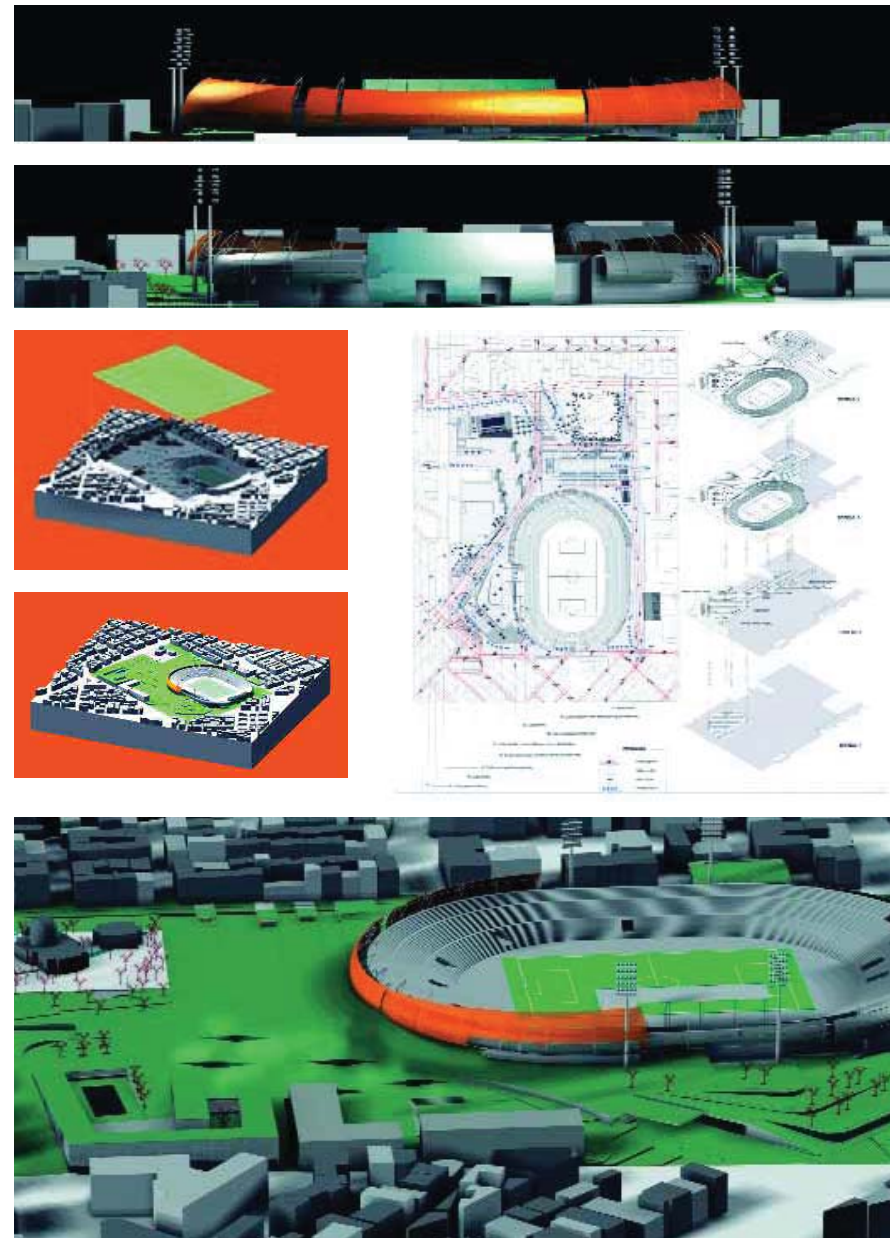


## 2. The Alana of Toumba / National Architectural Competition 2000 / *Constructed*

(source: SEDES-PEA, 2001)



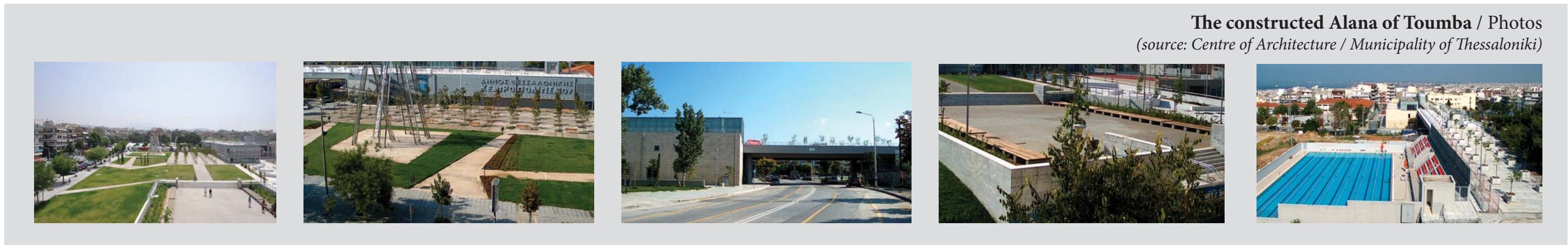
**1st Prize**  
Papadakis M., Apostolos P., Panetta N.L.



**2nd Prize**  
Tsigarida E., Karavas M., Papadias A., Kouri E.



**3rd Prize**  
Seira E., Tsaousis G., Lespouridis S., Mpoutoudis G., Tsakmakis F.

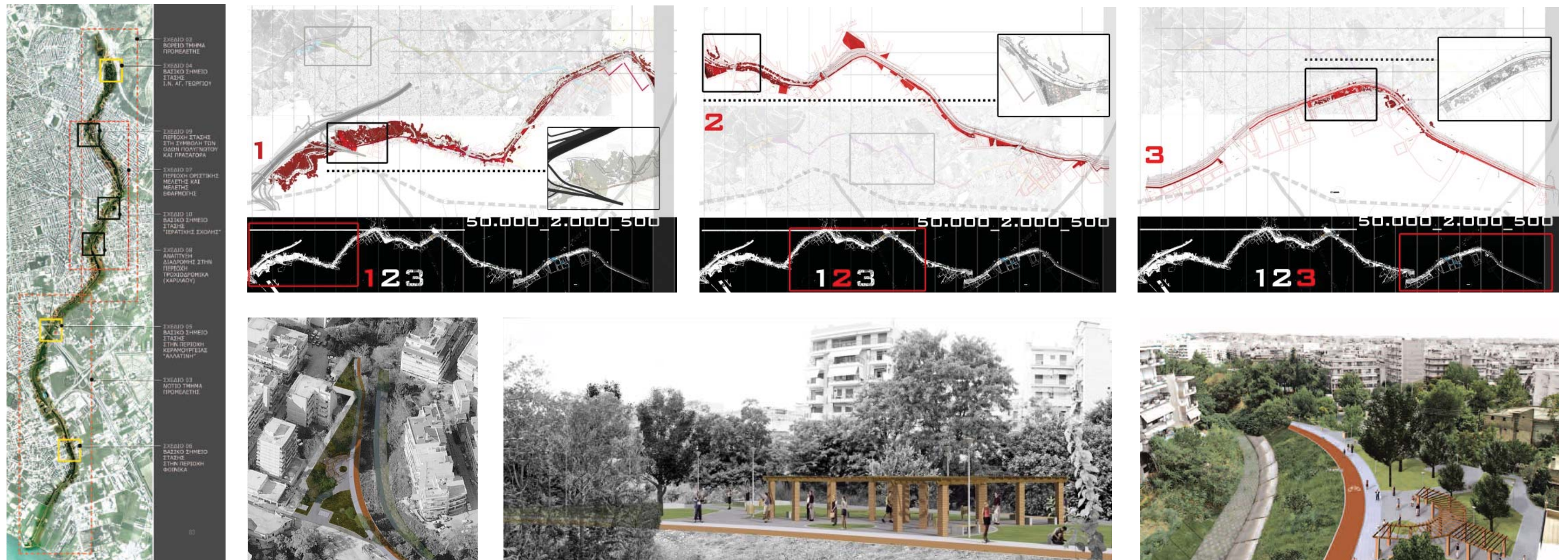


**The constructed Alana of Toumba / Photos**  
(source: Centre of Architecture / Municipality of Thessaloniki)



### 3. Study for intervention on the regional canal of Thessaloniki and renewal of surrounding areas , 2007 / In Progress

Diktyo AE, Balioulis & Associates, Giannakou A., METESYSM AE, et al.



(image source: O.R.Th. 2010, METESYSM.gr)

The study initiated by O.R.Th wanted to demonstrate that a flood prevention project, in addition to protection, it can also play a role in upgrading the quality of life for the residents of the city offering additional advantages. For this purpose the study was broken into individual sub-studies that would investigate in more detail the specific problems and conditions of the area. The sub-studies were the following: **Hydraulic study / Urban study / Architectural design / Landscape and green areas / Environmental Impact**

More specifically the hydraulic study concluded that the regional canal fully meets the flood protection needs of east Thessaloniki, except some points where it proposes specific interventions. Finally the study also concludes that in large parts the regional Canal has been overdimensioned. (The study assumed a 100-year flood scenario.) The urbanistic study in continuation reaches the conclusion that the: *“The study area is a lineal zone with great length and limited depth, which constitutes a long corridor of association of natural elements (mountains, sea, streams) and runs along the edge of the urban fabric of East Thessaloniki. This “green corridor” has reach a regional reach and especially for the whole eastern and southern part of the city. The surroundings of the canal can be divided into distinct sub-sections and sections with different problems and characteristics. In many places it has formed a “natural area” because of dense natural vegetation. Anthropogenic interventions in several points are evident (infills due to construction, some illegal buildings in the river bed, etc.). In some specific parts exist some problems with applying the city plan as well as a need to adapt to planned or under-construction*

13. O.R.Th. (2004), (2010)

*tion projects. Existing interventions can be found at some points but are generally in fair or poor condition”<sup>x</sup>.* The study then concludes affirming its initial hypothesis the regional canal is a flood prevention project, that except from protection it can also help to upgrade the quality of life for residents of the city by offering the following possibilities:

- i) Recreation and quality of life ( pedestrian and bicycle lanes).
- ii) Protection of human life and property (add sufficient technical measures for a 100 year flood provision and protection of coastal area).
- iii) Improvement of the health of residents ( avoiding stagnant water).
- iv) protection of the canal area from edification and unrelated activities
- v) Increase in the number of users / accessibility of citizens to the green areas of the city.

The study makes special reference to the spatial importance of the regional canal in structuring public space but focuses principally in possible connections with the surrounding green areas and the streams but does not go on with more extensive proposals. The connection with and in between the forest and the seafront as well as the one between the regional canal and the Alana of Toumba and the Elvetia park are highlighted and established by the analysis and the final design.





recycle sites



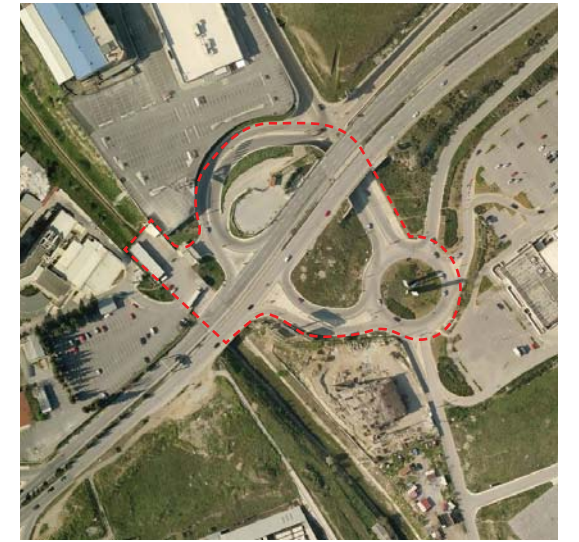
0 50m 100m 250m

big size retail



0 50m 100m 250m

nodes / crossings



0 25m 75m

## Situations Detected *Risks and Opportunities*

### legend

- is: residential islets
- r: fabric remnants
- g: scattered green areas
- re: recycling sites
- br: big size retail
- c: crossings / nodes
- ec: ecological crossings
- fu: funnel effect
- oc: stream occupations
- lg: latent green spaces
- a: new modes of accessibility
- pa: periurban agriculture
- in: discontinuities
- s: stream traits
- p: poles of activity
- se: seafront

stream occupations



0 20m 50m

funnel effect



0 25m 75m



## vii. Situations Detected - Risks and Opportunities

Having analysed this particular and key edge area in its different aspects and scales, this following section will make an indicative listing of the different kinds of situations detected along its course, serving as a phenomenology of conditions and dynamics present in the contemporary mosaic. For each type of situation the risks detected as well as the possible opportunities that arise are listed.

### *Accessibility*

#### **crossings / nodes**

*Risk:* The regional canal is crossed at various points by important urban axis, but no official connection are established nor is the canal's presence highlighted in any way.

*Opportunity:* These crossings / nodes can be transformed to key areas of accessibility for the canal, also providing intermodal connections with buses / cars

#### **new modes of accessibility**

*Opportunity:* The construction of the metroline will create two stops within the Central Axis area. These key mobility areas will offer increased accessibility for the area and create a radius of positive impact on adjacent areas.

#### **ecological crossings**

*Risk:* The ecological connection in the local landscape presents serious fragmentations and lack of a coherent structure.

*Opportunity:* Utilize points of natural crossings as natural hubs / patches creating green centralities of a different but dynamic nature.

#### **seafront**

*Risk:* The seafront at the end of the canal is found in a degraded state and disconnected from the rest of the seafront.

*Opportunity:* The restoration of the seafront area of the canal, and its connection with the rest of the seafront can have numerous benefits for the canal. The area around the Centre of International and European Economic law can serve as a local point of development for the area.

#### **funnel effect**

*Opportunity:* Use the stream corridors as entrances to the forest and the peri-urban land, developing according path and bicycle networks.

#### **incontinuities**

*Risk:* Along the regional canal certain incontinuities are created due to the partial fulfilment of city plans or lack of provision of future expansion

*Opportunity:* Revising the current conditions along the canal it is necessary to consider new connections that minimize the negative barrier effect of the canal at certain points.

### *Activity*

#### **big size retail**

*Risk:* The availability of space in the eastern peri-urban space has given birth to the appearance of big size retail units that consume considerable and increasing amounts of space, principally peri-urban agricultural land.

*Opportunity:* Minimize the impact of existing units, and carefully consider future placements, with minimal impact considerations applied.

#### **adjacent latent green areas**

*Risk:* Along the canal there are numerous open areas in semi-natural state that have remained unoccupied but are under pressure from future developments.



adjacent latent green areas



0 25m 75m

ecological crossings



0 50m 100m 250m

peri-urban agriculture



0 50m 100m 250m

incontinuities



0 20m 50m

scattered green areas



0 50m 100m 250m

urban stream traits



0 50m 100m 250m

stream traits



0 50m 100m 250m

seafront



0 25m 75m



*Opportunity:* Preserve the maximum amount of these areas, densifying adjacent built areas and create a series of lineal green spaces along the canal, guaranteeing a greater impact of the canal as a regional green infrastructure.

#### **recycle sites**

*Risk:* The various abandoned or obsolete sites along the canal or the other streams, bring down the quality of space and hinder further development. The Allatini factory is a big scale site example, but there are numerous smaller sites that pass undetected in an initial survey.

*Opportunity:* Utilize these spaces and the key space that they hold to introduce new dynamic functions and ensure ecological and functional connectivity for the canal.

#### **stream occupation**

*Risk:* Both in the regional canal as well as the old streams there are diverse types of occupations of the stream spaces taking place: from unofficial residential settlements, to different public services (schools, sport etc.) they have taken over critical space of the streams that jeopardise their continuity as well as consuming and putting pressure on existing green spaces.

*Opportunity:* Liberate the streams from unwanted or non-compatible uses and return regained space to civic use/activity

#### **urban stream traits**

*Risk:* The old streams are found below the regional canal contained in a consolidated urban context, and under a constant pressure from adjacent spaces.

*Opportunity:* The old streams can and should be converted officially into lineal green spaces that also will serve as connectors for the wider ecological functioning.

#### **peri-urban stream traits**

*Risk:* The same streams above the regional canal are found in a distinct state, where adjacent urbanization has not yet been consolidated, and the streams are presented in a semi-natural but at the same time degraded state.

*Opportunity:* The availability of spaces and the latent state of the streams should be utilized strategically to conserve ecological functioning and guarantee more vital space for the streams than their respective urban sections.

#### **peri-urban agriculture**

*Risk:* The once extended agricultural fabric of East Thessaloniki, is now being threatened by unregulated activity and expansion of land consuming activities.

*Opportunity:* Define and protect designated areas and pockets of peri-urban agriculture co-existing along with present and future uses.

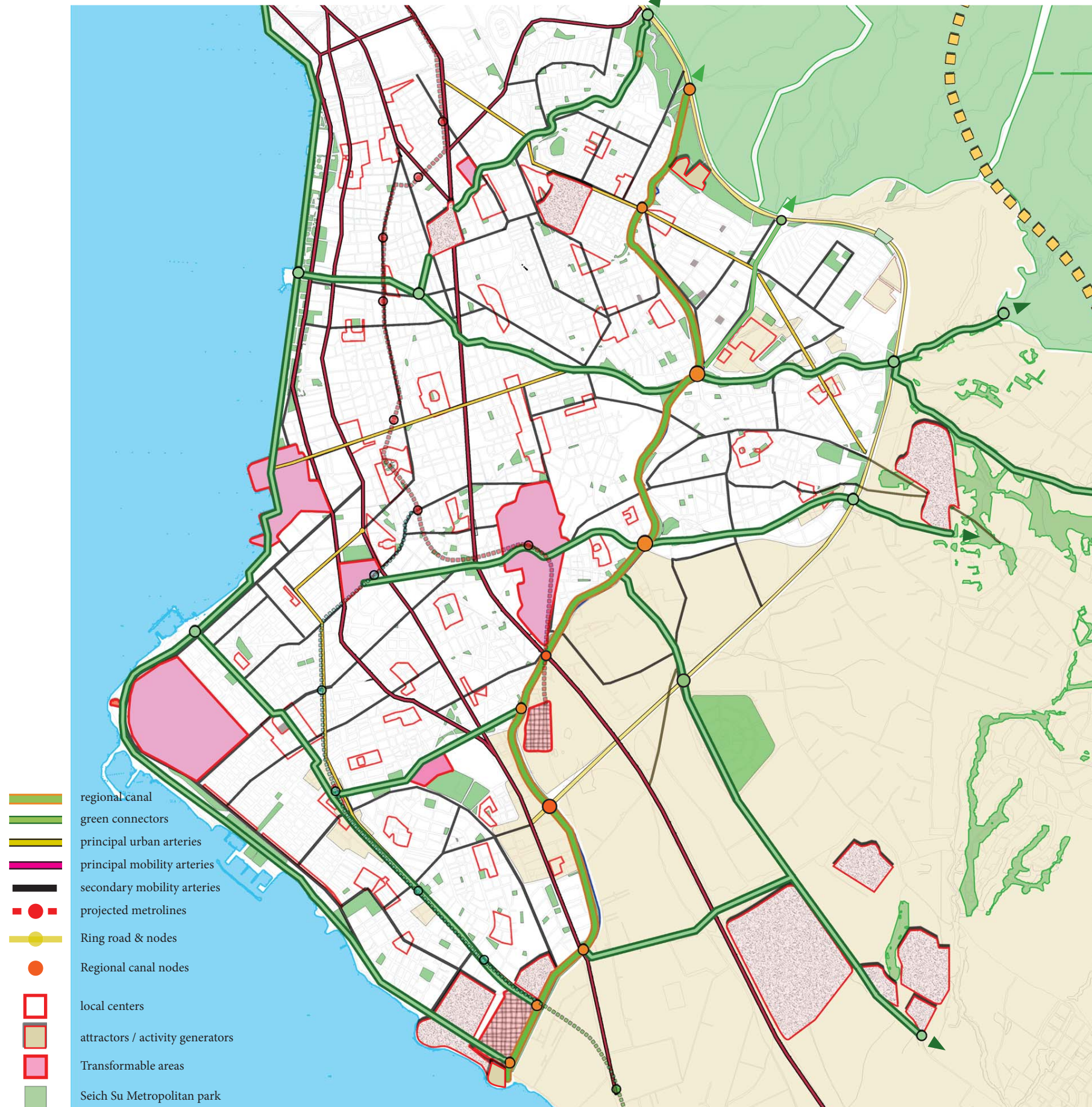
#### **scattered green areas**

*Risk:* The numerous green areas/parks/open spaces within the urban fabric are found scattered and unconnected between them.

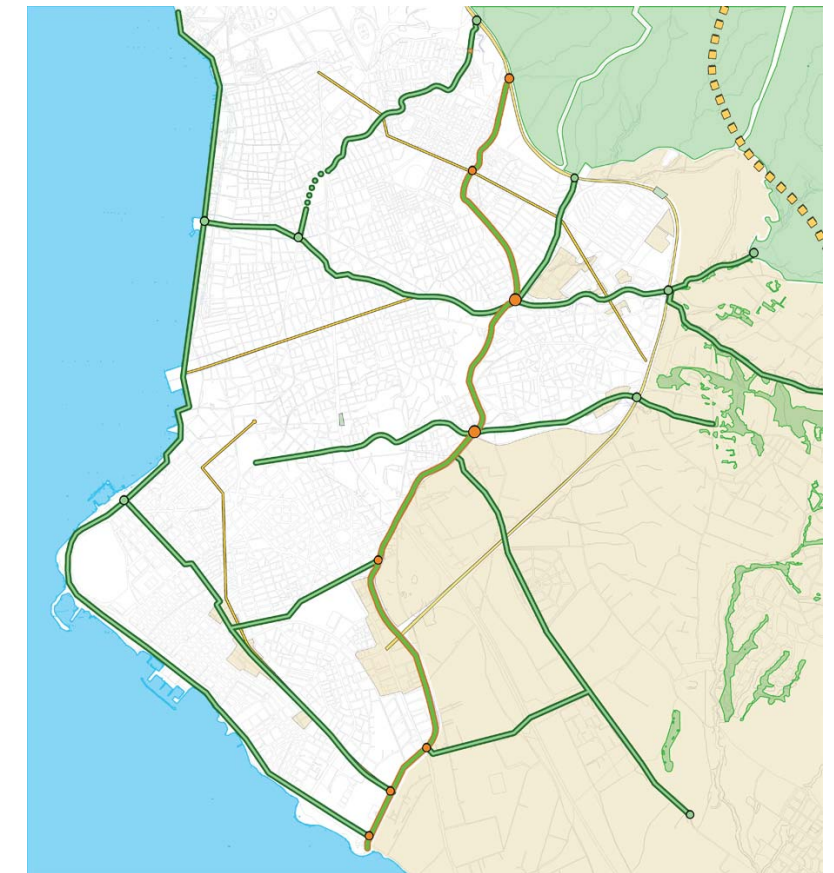
*Opportunity:* Using the regional canal as the central spine a network of green and open spaces for the extended east Thessaloniki area can be planted with immense potential benefits on a local and regional scale.



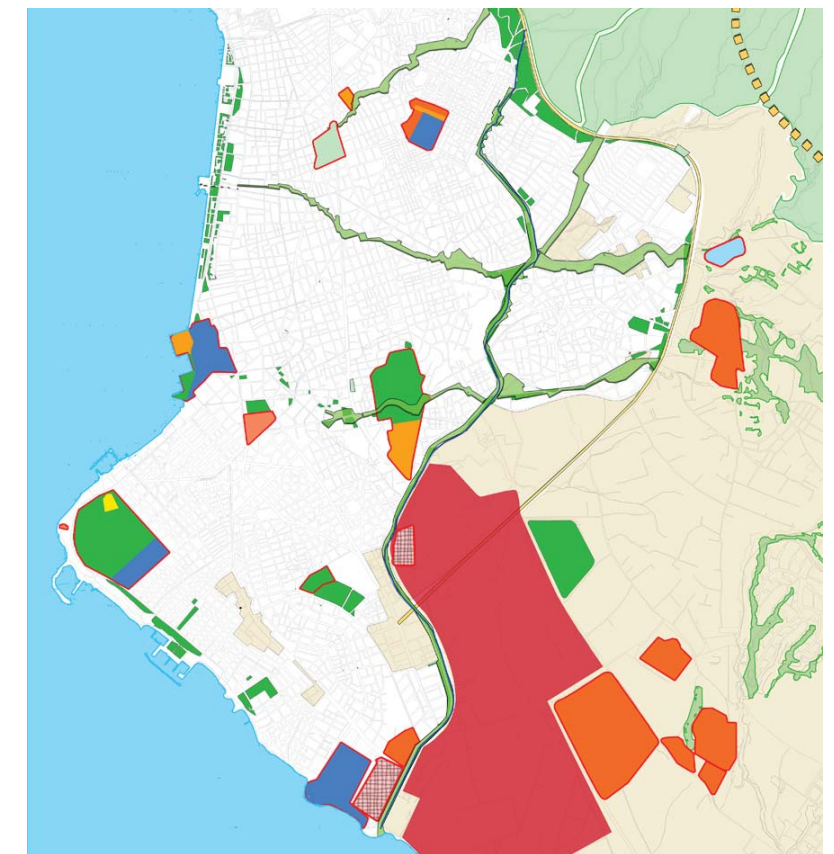
# The Regional Canal of Thessaloniki - Urban Structure Re-programming



green corridors



zones of activity





### viii. Re-structuring the Regional Canal and the eastern Thessaloniki area

Following the analysis of the canal and the local mosaic, a better understanding of the current situation and functioning of the area of East Thessaloniki can be reached. This understanding can serve as a base for rethinking / reimagining the functioning of the area. A transformation of this local mosaic can then be rethought utilizing the regional canal as a key urban element aiming to restructure and rejuvenate the dense urban fabric, and at the same time establish a sea-mountain connection and diverse interconnections at different scales and directions.

This task can be achieved by connecting existing and potential public and green spaces with the regional canal area, as well as interconnecting with each other in order to form a coherent network of public/open spaces. The various existing and projected flows also need to be considered and managed accordingly to adjust the mobility factor to the updated conditions. Finally an evaluation of existing and consideration of new activities needs to be performed to complete a meaningful restructuring of the local fabric. This will be performed in two parts, first the restructuring of the urban layer and secondly the restoration of the green layer.

#### A. Reprogramming the City Structure

The updated role of the regional canal as it emerges from the analysis can be seen on the images on the following pages on the left, displayed along with the corresponding city structure that emerges through the process. The individual parts/elements that compose these reprogrammed city structure are described in continuation:

##### Regional Canal

The regional canal is recognized as an key regional element and an important urban planning tool to help mend and rejuvenate the fragmented local landscape and at the same time provide vital public/natural spaces for residents. The question of continuity and consequently mobility is the most important that needs to be considered and resolved whereas conflicts and barriers arise. The regional canal starts at the seafront, in the Mikra area and moves northward all the way to the Ring road crossing a stretch of almost nine kilometres. Thus in terms of continuity, it is convenient to think of the regional canal as one continuous element. For this paper's purposes though the canal as observed earlier can be divided respectively into two distinct parts based on the distinct prevailing conditions in each area:

Lower part: corresponds to the section from the seafront to the height of Meg. Alexandrou street, a section that has served and still serves to a great extent as a urban limit for the city of Thessaloniki and Kalamaria on its one side. On the other side it borders with the Pyléa Development and Leisure area developed over the peri-urban agricultural area of Pylea. Given the situation and characteristics of this section it can potentially serve the role of a urban/peri-urban ecotone, controlling and monitoring urban activity across its path. Certain points of centralities and potential public space value emerge along its path, as highlighted in the previous analysis. Additional attention could be applied to the edge zones cre-

ated between the canal and the urban fabric. Also the points of conflict with the principal road arteries need to be resolved with adequate solutions in order to succeed in achieving the desired continuity along this section of the canal. The Ring-road node is an example of such a point where the canal has been covered up extensively by the traffic node and the surrounding activities. The issue of connection and integration in the urban fabric needs to be reconsidered in conjunction with these areas. The eventual construction of the two metro lines will provide the axis with increased accessibility in this lower section. The key objective in this section is to succeed in relating the canal with its surrounding context and providing conditions that can attract public activity and flows from these activities, facilitating access and means (physical and mental) of connection. At the same time control the limits of urban expansion on one side and diffused non-residential activity on the other.

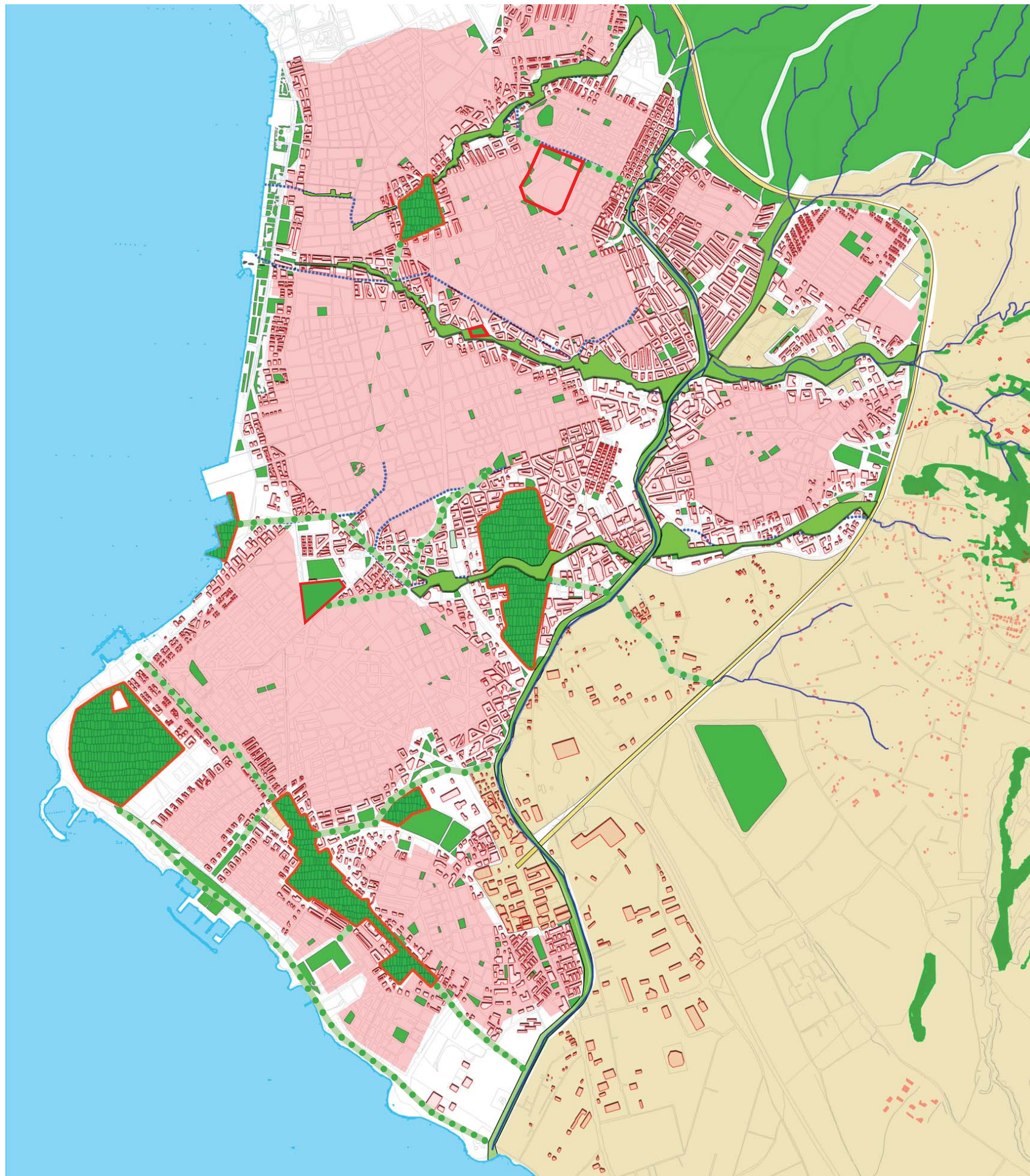
Upper part: corresponds to the section from Meg. Alexandrou street and all the way up to the Ring-Road and the node of Triandria. This section of the canal presents a distinct character from the previous section crossing a completely different context of a dense urban character. The more important issue here is the question of ease of access to the green/public areas and the introduction of new green spaces where possible or necessary within the dense urban fabric facilitating additional green areas.

At the point of confluence with Eleorema stream it creates the potential for the creation of an important hub both of urban and ecological nature. Also the points of inflection with the existing road arteries cater special attention to ensure the unobstructed flow both pedestrian and vehicular. The vegetation along the canal in this section is everpresent and quite dense in certain sections providing important green spaces. The stream path area needs to be cleaned from incompatible uses and activities established legally or illegally along its course and establish a pronounced continuous pedestrian route along its entire length. The proximity of the canal to the dense urban fabric ensures sufficient flows and activity, which needs to be facilitated with the establishment of a series of access points. The regional canal for this upper part takes the function of an urban ecotone, with certain socio economic characteristics / function.

##### Green Corridors / Pedestrian axes

This category makes reference to the emerging green axes highlighted in the analysis: **i)** the green corridors along the old urban streams. The three principal streams as demonstrated in the previous analysis can create in an optimal scenario 8.9 km of public green spaces, a length equal to that of the regional canal. New transversal sea-mountain connections are created, providing additional access to the seafront **ii)** the Kalamaria pedestrian axis, including Kerasountos street that is wide enough to facilitate pedestrian flows, the existing pedestrian axis (Komninon), and its logical extension to the SE all the way to regional canal, branching also earlier towards the Dalipi military camp to provide another access to the canal **iii)** the pedestrian axes on the east of the canal, that can provide access to the emerging educational and innovation pole.





## The emerging urban green infrastructure

What is the real importance of the renovated regional green structure? Although the regional canal on its own, with an 8.3km length is an important structuring effort, it is not sufficient to structure adequately the east Thessaloniki area in its entirety. Nevertheless, as it emerges through the analysis the regional canal as an existing regional element can serve as the backbone for the further restructuring and reticulation of the green structure along this part of the urban fabric. If one considers the addition of the old local streams as new reformed green areas, in reality linear elements branching off in different points along the canal, then the real potential of a wider restructuring is made more evident. The regional canal apart from serving its primary function of flood protection at the same time it can be upgraded to the status of as a major green axis that opts to change drastically the existing urban fabric.

An integral restructuring that would include the regional canal and the three major streams could provide a considerable additional public/green space. Apart, given the local conditions this new structure could improve significantly the accessibility as well as the mobility issue especially for pedestrian and non-motorized vehicles. In addition to the regional canal and surrounding areas, the further inclusion of the stream paths could add 8.9 km of new open/public space. This project would then aim in : **i)** taking advantage of the stream paths that today are presented in various states but still hold a potential for regeneration: **ii)** establishing a sea-mountain connection both for ecological restoration as well for citizen mobility. **iii)** establishing a urban-periurban urban philosophy, identifying limits, then edges, interstices and areas of intervention. If we are to take under consideration the green areas, existing and proposed, a completely new structure emerges, this time a more extensive and integrative structure that creates numerous opportunities for intervention on the urban fabric.

## The Regional Canal of Thessaloniki Green Urban Infrastructure Re-configuration





These sum of these axes in conjunction with the regional canal as a *central spine*, create the base for a coherent public/green space network for the east part of the city. These arteries can accommodate pedestrian and bike flows from the peri-urban area to the urban fabric along with other flows if present. More importantly establishing route connections /links to the peri-urban area they enforcing the urban-rural connection, guaranteeing an increased resilience for the area.

### Urban arteries

Contrary to the previous category this one makes reference to the existing urban arteries that hold an important function as mobility corridors and could in a wider reconfiguration of the area scheme play an upgraded role, combining existing activities with introduction of new ones, and an overall improvement of public space amenities and access. These arteries can combine vehicular and light flows like the axis of Kalamaria and Toumpa or can have a more pronounced pedestrian character (25 Martiou). The axis of Kalamaria is planned to have the metro extension run along the axis for part of its length. The axis of Toumpa could also facilitate light rail traffic providing increased access to this part of the city. These smaller scale structural interventions can help reticulate and propagate the regional canal effect on a larger scale, increasing connection and accelerating the process of integration of the canal as a urban & public space with mosaic of East Thessaloniki and the rest of the urban fabric. If we consider the regional canal as the central spine with the streams branching off as part of the wider structure, these arteries play the role of expanding and propagating the effect while creating updated condition and structuring the local micro-structure accordingly.

### Nodes & connectors

This category makes reference to points of intersection of different flows along the regional canal and their key role in the overall functioning of the city structure. In this category we can discern the existing nodes that need to be reconsidered and on the next level nodes that appear along regional canal. As far as nodes along the canal is concerned these make reference to latent key public spaces that emerge from the previous analysis from the confluence of flows and activities lying principally on the intersection of flows principally soft flows. The principal nodes of this category are : **i)** the intersections/confluence with the local streams where key public spaces and utilities could be located **ii)** the node that appears at the intersection with the Ring Road, the biggest in size and flows **iii)** the point of intersection with major road arteries where bridges/passes exist to accommodate vehicular and non-vehicular flows.

Connectors on the other hand refer to certain kinds of interventions that intend to reestablish continuity and overcome fragmentations caused by the intersection of incompatible flows. They come to prioritize pedestrian flows over vehicular flows or resolve conflicts of the two. These could come in the form, for example in the case of the local paths on the height of the Ring Road, or in the form of pedestrian and bike bridges across the canal at various heights.

### Urban voids / Latent spaces

This category refers to areas present in the contemporary fabric, and are either bound to change use or currently holding no use. Given the importance of the area and the special occupancy terms that exist, these areas although small in size could play a key role in transforming and activating the existing fabric as analysed earlier.

A potential interpretation of the urban mosaic structure based on the analysis has been presented along with the proposed restructuring of its individual parts. As far as the question of limits is concerned, the contemporary urban limit seems to be phenomenically set in conjunction by the Ring-Road and the regional canal, creating certain types of interstice spaces in between the two. Nevertheless, the phenomenon of sprawl past the canal and even outside the ring road is widespread both for residential or tertiary use, eliminating in practice the effect of physical barriers but presenting a typomorphological differentiation nevertheless.

The contemporary urban fabric, as seen, includes various voids and latent zones of typical of urban peripheries that could and in fact need to host renovated uses and activities. Further expansion of the urban limits outside the current one, is not necessary. The peri-urban area is found in an overwhelmed state by the construction of infrastructure, and increasing pressure by urban sprawl in its different manifestations. The consumption of agricultural and ecologically valuable land is a question/issue that needs to be resolved urgently and decisively for the totality of open spaces in the area. In order to formulate the final image of the mosaic of the area, it is necessary to perform the same operation for the ecological structure present along. The combined result of the two layers can produce more significant and insightful results and can highlight clearer the order of intervention on the distinct areas of the urban fabric. Thus the analysis of the regional ecological functioning follows in continuation.

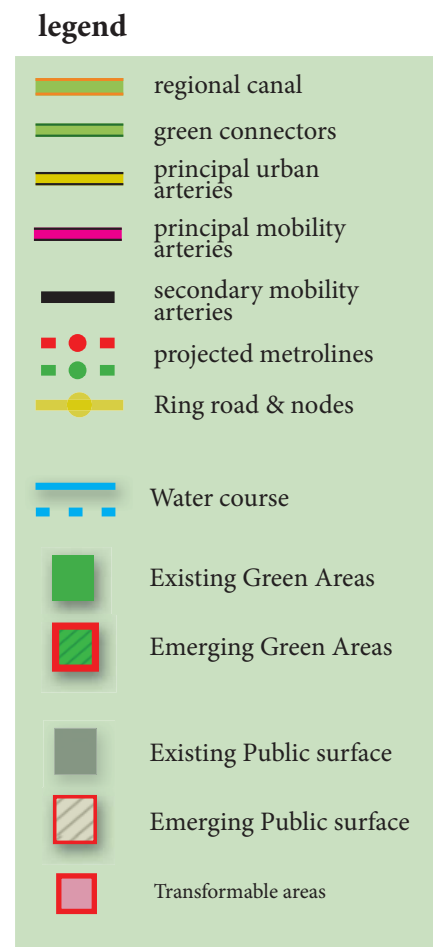
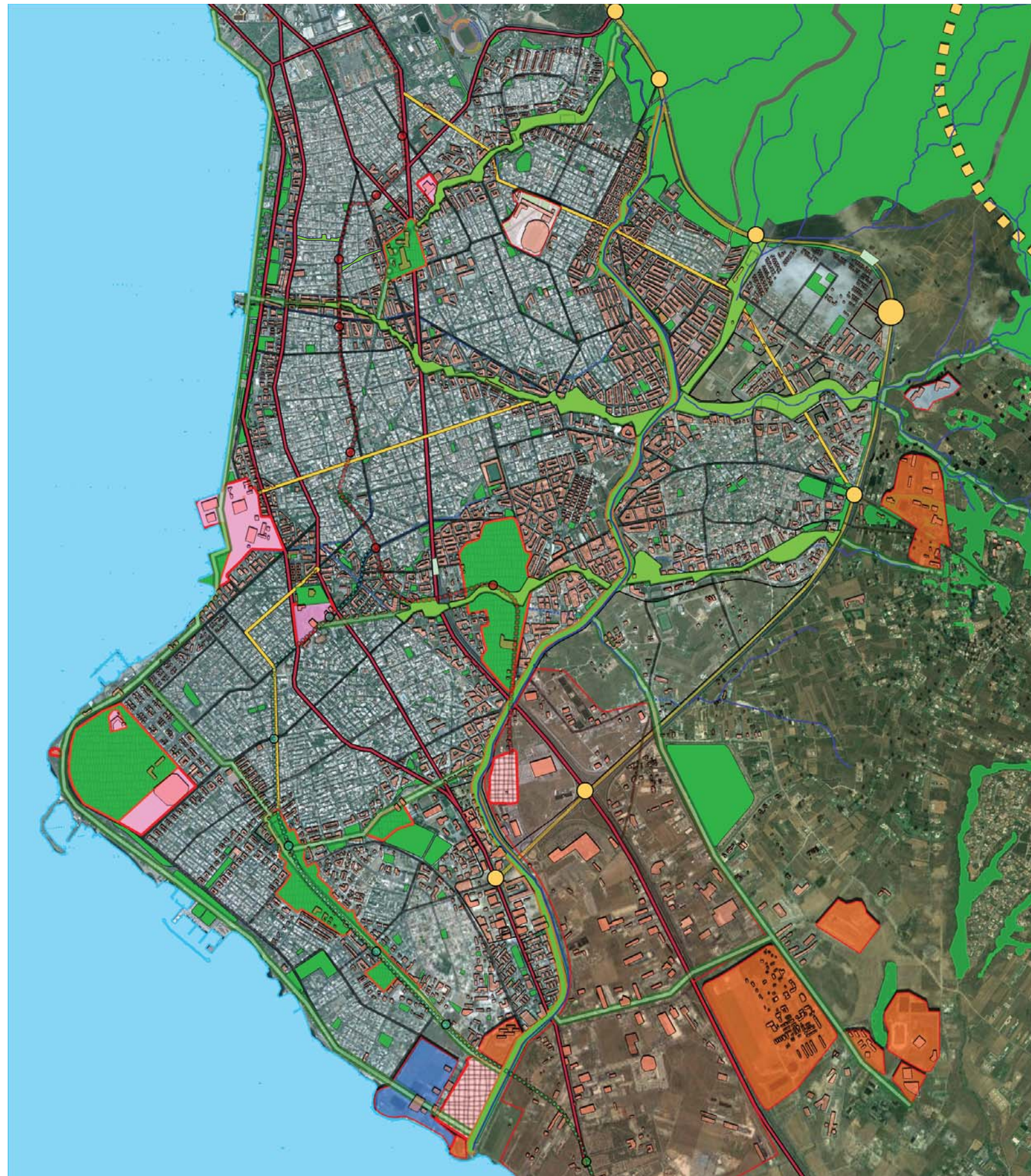
## B. Restoring the ecological layer

After having looked at the possible restructuring of the urban structure using the public /open spaces and the habitability - activity - mobility factor as the principal design parameters, this next part will look at a potential restructuring and restoration of the ecological layer of the area, taking also into consideration the results of the first part. The analysis of the ecological layer of the area was looked at an earlier stage, but its correlation with the updated conditions highlighted by the earlier analysis can provide more insightful conclusions. The map on the left indicates the original stream traces along with green areas, correlating it with the previous analysis. The regional canal in conjunction with the old local streams can serve as lineal structuring elements for generating green spaces and restoring the sea-forest connection. The situation along the regional canal was examined earlier, and the proposed plan for its restoration as seen included a hydrological and ecological study. In continuation the possibilities for restoration along the old stream paths be analysed in more detail to detect additional possibilities for intervention along their path and points of connection / interaction or other important elements and situations:

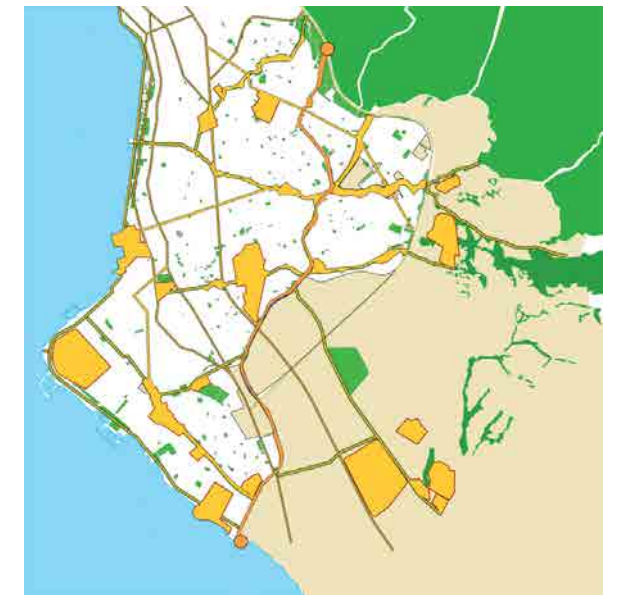


# The Regional Canal of Thessaloniki\_Re-configuration

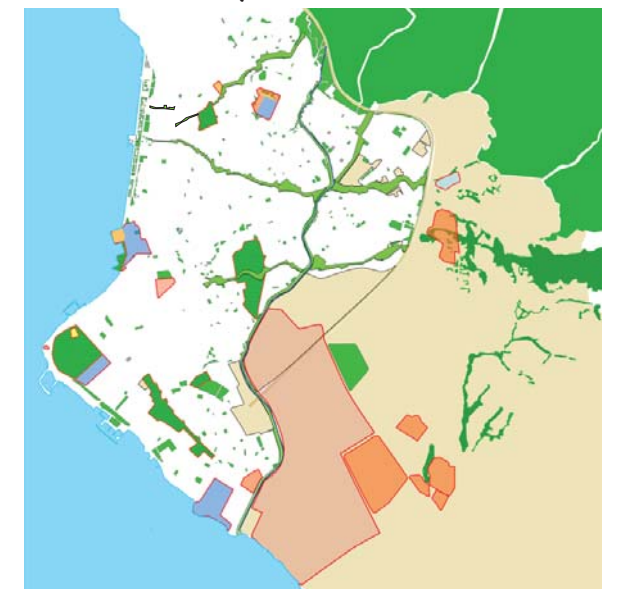
## Mosaic and Structure



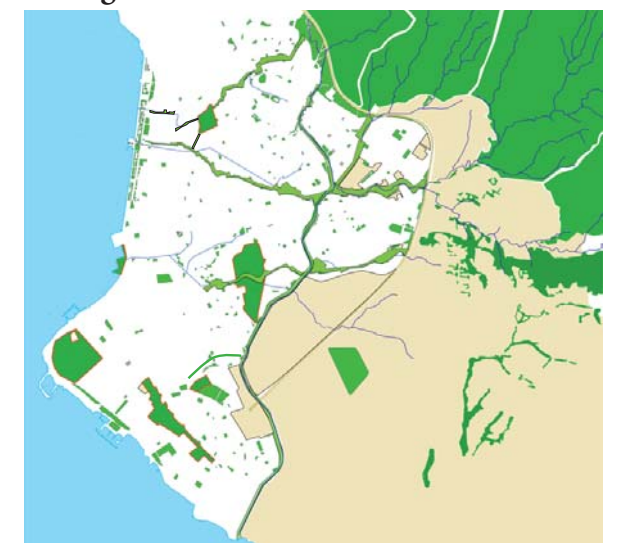
**Structure**



**Zones of Activity**



**Ecological Structure**





### **Konstantinidi Stream**

The Konstantinidi stream-path is still discernible from the Ring Road all the way to the Ippokrateio hospital. Inside the path stream one still encounters diverse activities authorized and unauthorized: in the top part unauthorized settlements can be found inside the path, mostly low height buildings; the football field and adjacent sport facilities at the height of Miaouli street and the second one in Eleftherias street are both constructed inside the path and take up critical path area. After the second stadium a series of lineal green spaces appear along the stream path that can be easily connected. The path leads to the Ippokrateio Hospital where its trace is to a great extent lost. Nevertheless a more careful examination permits discerns the original path and identify possibilities of intervention. The Ippokrateio hospital complex can serve as a green hub, a key ecological patch, given the availability of potential green spaces. Its connection with both the Konstantinidi and the Kivernion Stream could have benefits both for hospital as well as urban users. The stream presents considerable vegetation along its contemporary path, and thus an ecological continuity / corridor can be established along. The hydrological restoration is a question that at this point cannot be considered given the various obstructions/activities present in the streampath.

### **Kivernion / Big Stream**

The Big stream was the most prevalent of all the local streams in the area. Currently the stream can be divided in two sections: the part on the upside of the regional canal, and the one on the downside. The part on the upside of the canal, is still open and discernible almost in the entirety both in the Eleorema and the Stageiriti tributary streams. Both run through areas of low density or still undeveloped areas and thus their conservation is possible and easier to achieve. The part of the stream below the regional canal presents different conditions, crossing a dense urban fabric and being restrained in smaller widths throughout its course. Nevertheless the streams crosses an important stretch and almost reaches the sea-front at the height of the Folk museum and the Goethe Institute, lined with green areas for the most part of its length. Continuity along the path is possible, and the possibility of forming a green corridor that connects the seafront with the peri-urban and the forest area. From a hydrological standpoint the section on the upside of the canal needs to be conserved and managed properly to protect it from surrounding pressure. The lower part again presents more complications and could only be considered once a basic ecological continuity is established.

### **Ntepo Stream**

The third stream of the area is found in a covered state for its most part, with its trace being discernible at points only at small parts close to the regional canal and in the Allatini property. The trace of the old stream thus is harder to follow throughout the urban fabric but with careful consideration smaller patches do appear and a cognitive continuity can be discerned. This series of patches can be structured in a series of green/public spaces that when considered in their entirety compose a considerable corridor

extending from the inner Ring Road all the way to the Ntepo district in the area of the Farmaki military camp. The connection with the sea front cannot be established in a direct way, but nevertheless it is necessary for in some way to achieve an indirect / direct connection. As mentioned the continuity along this corridor is harder to achieve but is of equal importance with the formentioned, since it helps structure public space in newly built peripheral areas and provides additional access to the regional canal and the sea-periphery axis. The hydrological restoration and preservation can only be applied to the currently existing unaffected area, as well as in part of the Nea Egnatia park.

In conclusion it can be affirmed that the reutilization/recycling of the old stream-paths offer a viable way to create accessible green spaces, that given their lineal nature can serve as ecological corridors and key regional structuring elements at the same time. Complementary to the effect to be generated by the intervention along the regional canal, the stream paths emerge as side alternatives for re-sawing the local fabric, eliminating the effect of present fragmentations of the current mosaic and structuring in conjunction with the regional canal an extensive network of public/green spaces for the East Thessaloniki area. This restructuration can lead towards the direction of a complete ecological restoration of the local landscape.

On the page on the left the combined mosaic of the area, as it emerges from the analysis, is shown in its final combined form. The proposed structure for the area, utilizing the canal as the principal structuring element, covers the extended area of East Thessaloniki, an area much bigger than the strict limits of the canal. Thus the restructuring potential that the canal offers is quite important and a revision and reconsideration of planning priorities and policies should be considered to explore this latent potential evident and present in the contemporary mosaic.





location



## v. Conditions and dynamics along Thessaloniki's Ring Road

*The contemporaneity of a limit*

top: diagram showing the extended ring road structure (existing and proposed) as well as the proposed analysis structure (highlighted in red)



## *The ring-road as a contemporary limit*

The Ring road of Thessaloniki (περιφερειακή οδός) is the object of study of this chapter, that will investigate the conditions and dynamics along its length and determine its contemporary function and role in the wider urban structure. Furthermore, given the actual urban expansion cover and its relation with the route of the Ring Road, it will investigate the ways that the highway infrastructure has acted in the past and is currently acting as an unofficial limit for urban expansion.

The Ring Road of Thessaloniki as a mobility structure can be divided in two groups, the **Inner ring road** (~22km) that was constructed in various phases in the late 80's and early 90's and the Outer Ring Road that today has been partially completed; the western part was constructed as a section of the Egnatia Highway, as it bypasses the city of Thessaloniki. The extension of the outer ring to the east is still in the plans, and its final form and route has not yet been decided. The whole project also sparked a regional debate taking into the consideration environmental factors as well as demands from local groups and authorities. For the purpose of this analysis and the verification of the mentioned claim, the following sections have been chosen to be analysed in more detail:

### **First section - Western Outer Ring Road** (14km)

This first section starts from the Kalochori node and follows the western outer Ring Road route (and Egnatia Highway) all around to the north of the city and the intersection with Lagkadas avenue at the Eukarpia / Titan node. This section covers an extended section crossing the east and north-east periurban area, a terrain predominantly flat with small hills and undulations and cultivable and semi-natural areas as well as industrial areas, either in concentrated areas or a sprawl-character, scattered over the landscape.

### **Second section - Seich Su forest** (12km)

This section starts at the Eukarpia node and follows the inner Ring Road puerilely to the Seich Su forest all the way to the Konstantinopolitika node. This section runs along a pronounced city-natural limit, with the Seich Su forest on the east and the Thessaloniki urban body on the west.

### **Third section - Eastern Inner Ring Road** (5km)

This third section starts from the Konstantinopolitika node and continues south all the way to the Nea Krini node. This section runs close to urban residential areas of the Pylaia municipality on the west of the road while on the east side the terrain is characterized by agricultural land fragmented by recreational / leisure / commerce installations scattered all over.

The sum of these three distinct sections will compose the analysis limit / analysis line of this section that can also be seen in the illustration on the side page. The individual results from each three areas will serve to compose the final (analysis) synthesis for the entire urban region and provide a general overview of the conditions and dynamics along the Ring Road and in conjunction with the rest of the areas of analysis covered by this study.

Before initiating the analysis the next two pages demonstrate with photographs the conditions along and around the Ring Road along various spots, marked on the corresponding map. A careful study of these photographs demonstrates the great diversity of areas and landscapes that this route crosses. Something which may come as a logical conclusion given the extended length of the proposed route, but which will also be demonstrated through the analysis. The contemporary peri-urban area of the city is found dotted with an "anticipated" infrastructure that acts both as an attractor and a limit for urban activity at the same time. Conditions along the inner Ring Road are characterized by the proximity to the urban fabric and areas of activities as well as a greater degree of integration with the surrounding fabric. The entire Ring Road structure is found in a latent state, being on the wait of the decision on the extension of the outer Ring Road and improvement works along the inner Ring Road. At the same time, this critical urban infrastructure needs to be rethought and analysed under the contemporary territorial context and planning practices, during this phase of urban dilatation with all expected and unexpected consequences that it may have for urban expansion and its urban form.



# Conditions along Thessaloniki's Ring Road

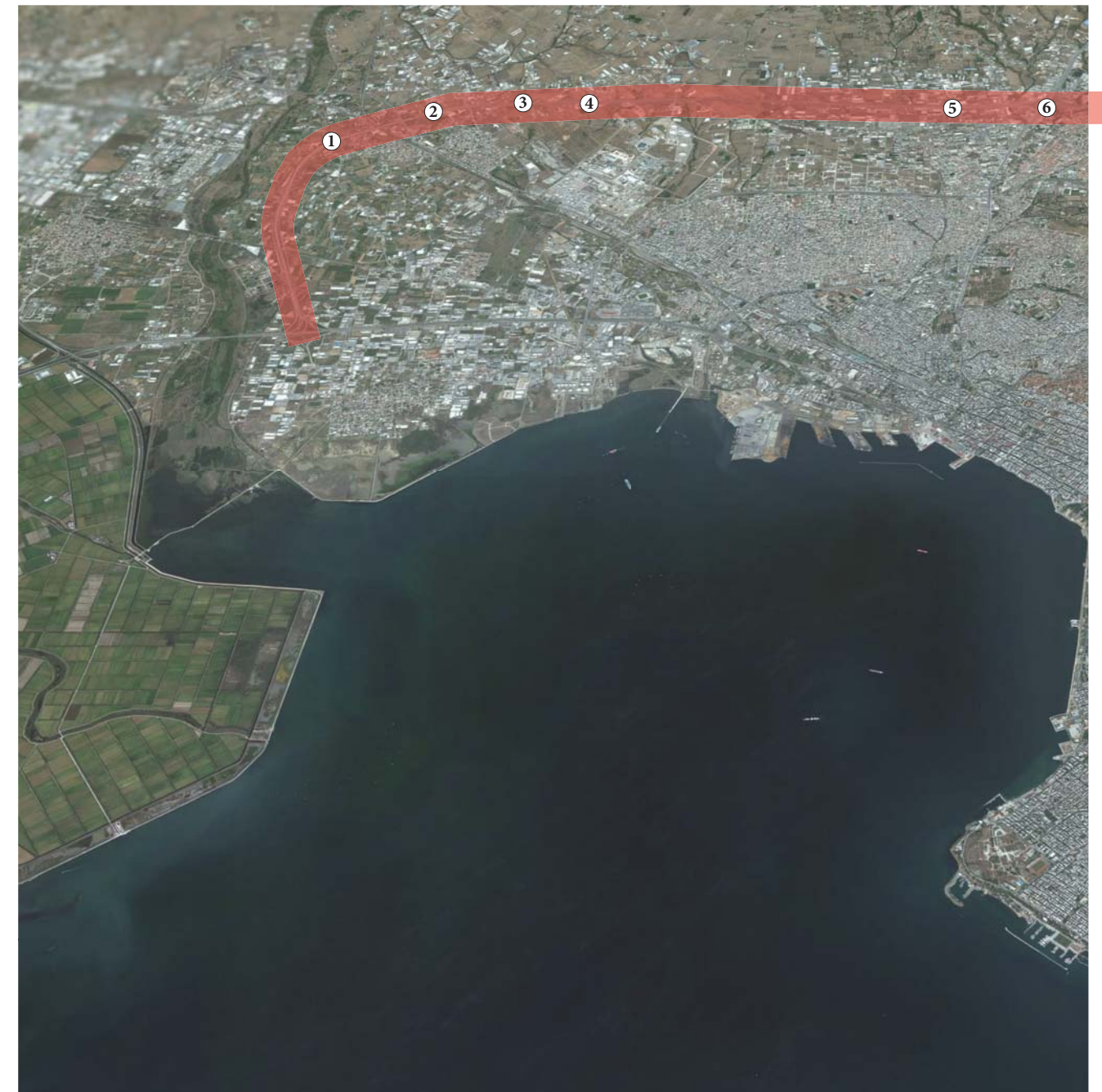
## Photogramme

Photo sources:

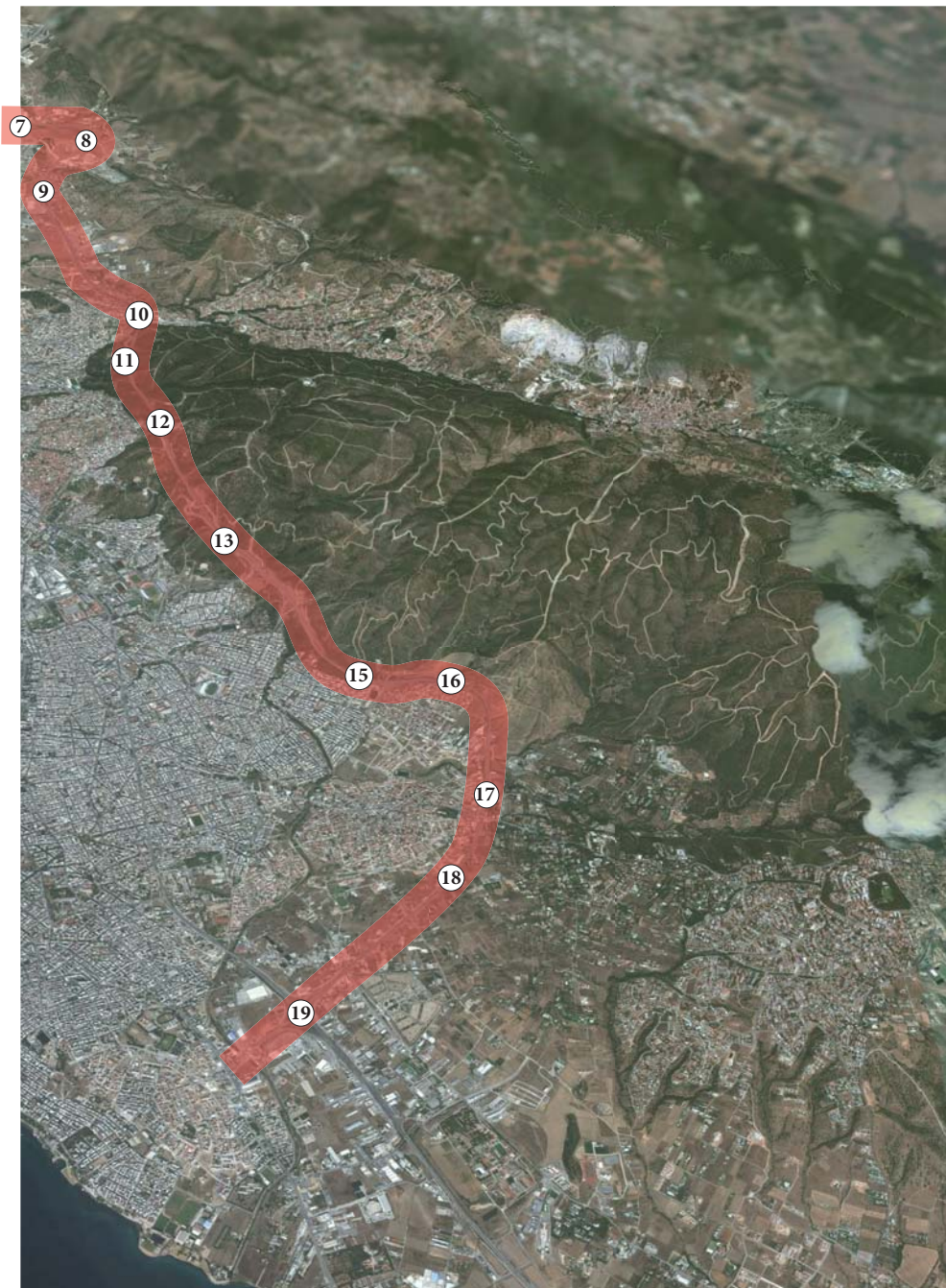
1, 3, 5, 6, 7, 8, 9, 10, 14, 15, 16, 17. Panoramio

12, 13, 18, 19. Airphotos.gr

2, 4, 11. Egnatia motorway S.A.







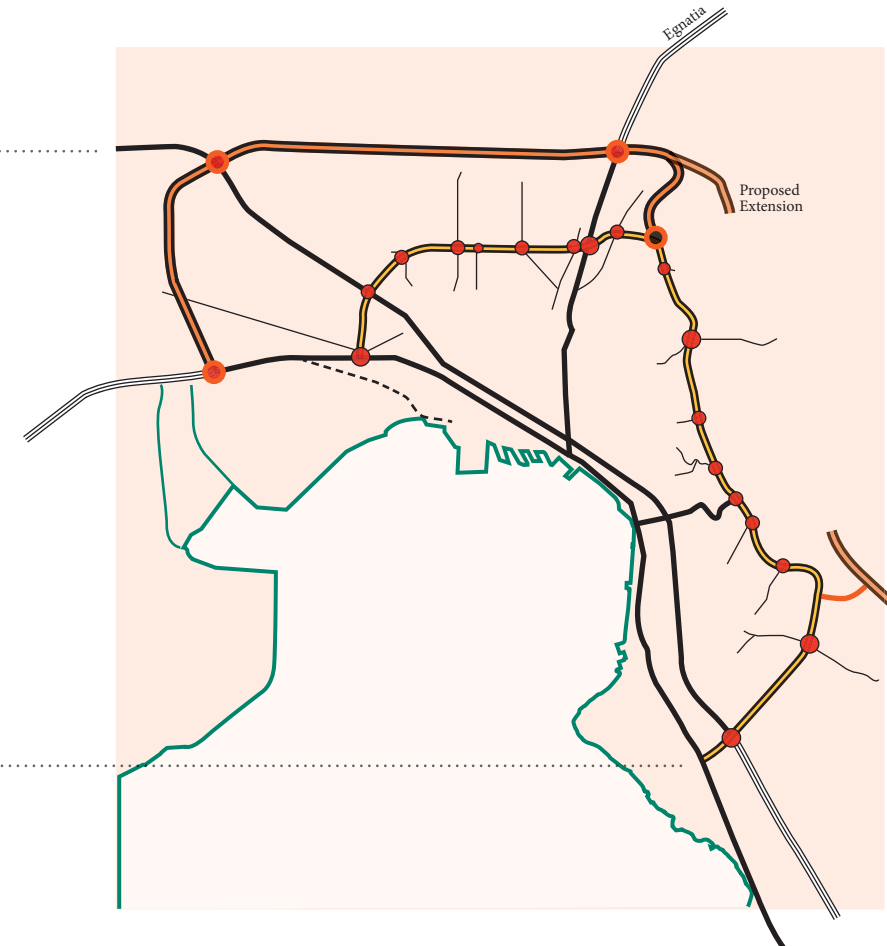




**Aerial photo with Road Ring structure and related arteries superimposed.**  
 (Base image source: Bing maps)

## The Ring Road as urban infra-structure

**Nodes:** ● Outer Ring    ● Inner Ring    ● Inner-Outer Ring

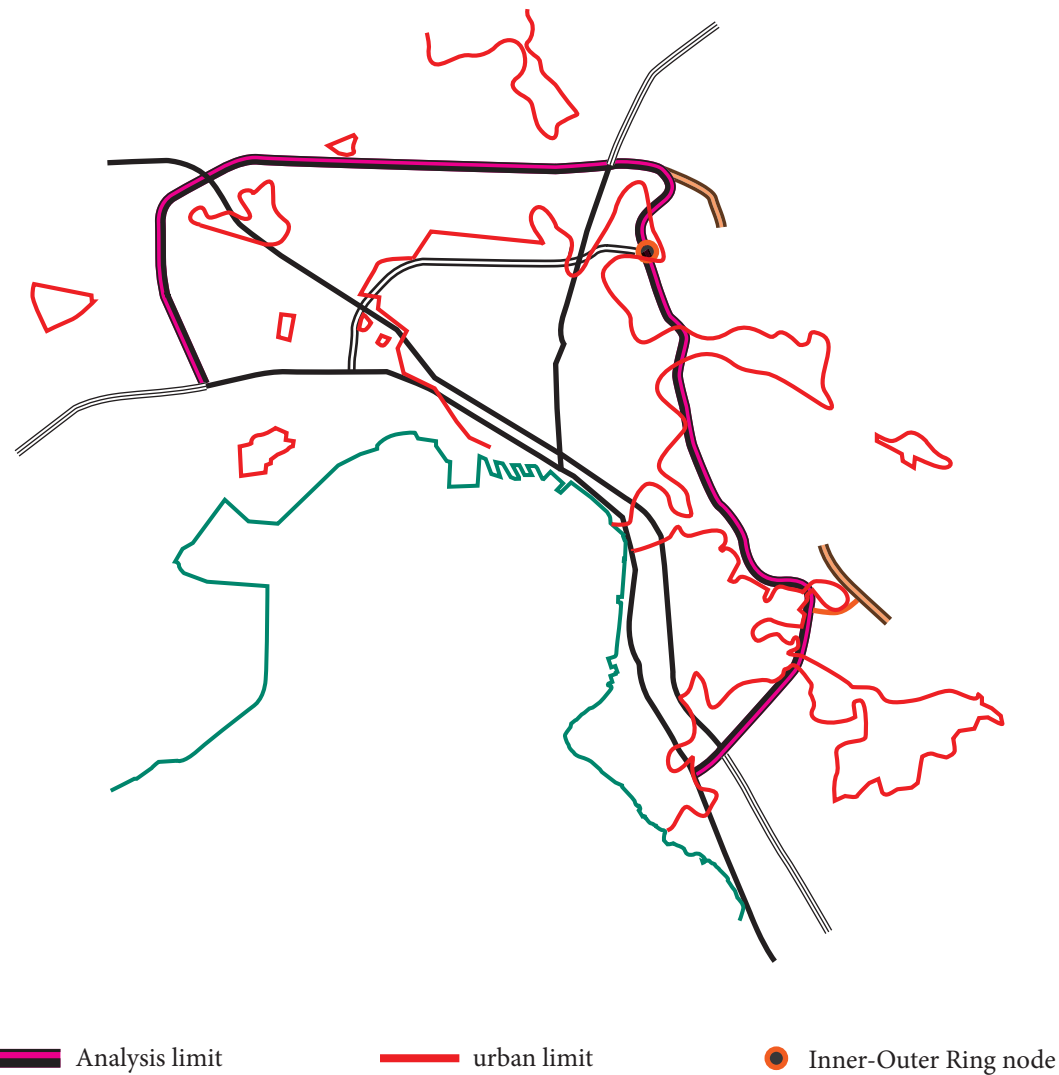


**Arteries:** — Outer Ring    — Inner Ring    — Rest of Arteries    - - - under construction

The above diagram shows the Ring Road structure and its function as a territorial urban infra-structure. The inner ring has a total of 20 access points, creating nodes of mobility of different types and complexity. The urban fabric expansion has reached the ring road limit, especially on the western part and less on the east. The middle part has created a pronounced limit between the adjacent forest and the urban expansion. The eastern part of the inner ring that crosses the east peri-urban area and runs around the municipality of Pylea and has less access points. Transverse connection through the urban fabric is achieved by two major axis: the Nea Egnatia -Egnatia Avenue and the Tsimiski-Vas. Olgas-Farm school avenue. Smaller axes like the Lagkadas or the 3rd September Avenue provide connection at intermediate points. The ring road structure does not close its arc all the way to the seafront on either end. At end of Kalochori there is lack of direct connection with the urban settlement and the natural areas of the lagoons and Gallikos river, while at the east end it ends abruptly at the height of the Ethnikis Antistaseos Avenue. The two rings are connected at one point at the district of Nea Efkarpia with a short stretch.



## The Ring-Road as an urban limit - analysis



The Ring Road structure in the contemporary urban context assumes a key role as a mobility element of regional importance. This becomes obvious and easily discernible when one considers its territorial extension, its length, and the key areas that it is crossing. This next part and the subsequent analysis sections will investigate its relationship with the urban functioning and dynamics present in the contemporary mosaic. Thus a principal research objective is the investigation in the possible barrier effect that the ring road may selectively or collectively have on the diverse urban vectors. For this reason a analysis structure has been chosen, combining sections of the inner and outer ring, the sum of which can be seen in the diagram above. The selection of the structure has been chosen because it includes:

- i) in its entirety the consolidated urban fabric of the city of Thessaloniki
- ii) the major areas of nonresidential activity of the peri-urban area
- iii) it serves as an adequate analysis interface for measuring the urban dilatation and detecting urban dynamics

The individual analysis of each of the three analysis sections will follow the H.A.M analysis scheme to fulfill its general and specific research objectives. The results from each section will then be combined form the synthesis for the entire Ring Road structure, an impression of the contemporary mosaic along the infrastructure under analysis. Before looking in more detail the research objectives proposed for this section, there are certain precedents / conditions to be taken under consideration.

### Precedents

1. The Ring Road structure (inner + outer) is a major mobility infrastructure on a regional and macro-regional level (Egnatia Highway-Outer Ring)
2. The peri-urban area of Thessaloniki presents characteristics of an urban periphery, characterized by a lack of proper urban structure and coordination of activity patterns
3. The car-dominated mobility scheme of the city puts a lot of pressure on the mobility infrastructures, reaching their load capacity in many cases and creating additional needs for further expansion and growth of the infrastructures.

### General objectives

- a. What impact did the construction of the Ring Road have on the preexisting mosaic ?
- b. What kinds of territorial situations has it given birth to?
- c. Has the Ring road structure in its gradual expansion served or serves actually as a limit for urban expansion ?
- d. What opportunities for transformation and restructuring are latent/possible along the formed edge area?
- e. Can the Ring Road structure be reprogrammed to provide a wide and coherent structure for the peri-urban area, increasing its degree of integration with the regional mosaic.?

### Specific objectives

- a. **(habitability)** Whats the relation of the Ring road with the residential urban fabrics? How does it affect them in terms of quality of the living environment and access to regional services
- b. **(activity)** What types of activity does the Ring Road attract? Are there territorial thematizations produced? Is there a broader structure emerging?
- c. **(mobility)** What levels of accessibility does the Ring Road offer to adjacent areas? What sort of flows does the Ring Road accommodate along it course? What degree of permeability does it have with respect to transverse flows

Having these objectives and precedents into consideration, the next part will perform the analysis on the individual three analysis sections aiming to answer to the specific objectives put forward by the analysis.





## First analysis section - *The West Exterior Ring Road (14km)*

The first analysis section of 14km length starts at the Kalochori node where the Outer Ring meets the national highway Athens-Thessaloniki and follows the Outer Ring all the way to the Efkarpia Node to the north of the city. This section of the outer ring is shared with the Egnatia Highway, as a bypass of the city of Thessaloniki. Around the initial node lies the Kalochori Industrial area, a quite vast area that extends north of the national highway with no definite structure, and a diffused growth pattern. The first stretch (5.3km) of the section runs parallel to the Gallikos river, creating a strip of agricultural land on the west between the river and the infrastructure, while on the east lies the Nea Magnisia agricultural plain, an agriculturally intensive peri-urban area that extends all the way to the north to the city of Nea Magnisia. Two punctual points permit connection between the two sides of the highway along this stretch. The Ionia/Diavata node of the Outer Ring provides access to the city of Diavata, but not equally to the city of Nea Magnisia. The same node provides access to the Sindos industrial area that lies west of the Gallikos River, one of the more important industrial areas and the only one with an organized structure.

The second stretch (8.7km) from the Diavata to the Efkarpia node presents similar characteristics to the first stretch but also some significant differences. The stretch crosses semi-natural and agricultural lands of lesser intensity / production, a local mosaic fractured by the diffused expansion of adjacent industrial

and manufacturing activities. On its western part, there is significant development of such activities along the Thessaloniki-Pentalofos and Diavata Oreokastro axes in no arranged manner, consuming and further fragmenting the agricultural land with no considerations or criteria. The same phenomenon appears in the east part approaching the Efkarpia node where the Oreokastro Industrial area lies. This also quite extensive area extends on both sides (north-south) of the Ring Road and is connected by transverse crosses, but it is lacking any direct connection / access to the Ring Road. In a similar manner, this stretch is lacking access nodes to local urban fabric or key industrial installations such as the EKO refinery.

At the same time the analysis shows that the superimposition of the outer Ring Road infrastructure on the preexisting mosaic also caused various disconnections between existing paths and territorial links. These continuities have been respected in certain but limited cases creating a barrier limit with regards to mobility and ecological flows and not so much in terms of urban expansion that seems to ignore this barrier effect and contrary even comes to act as an attractor element. The integration of the infrastructure in question is the principal objective for this section, along with specific objectives that will be showcased in the analysis.



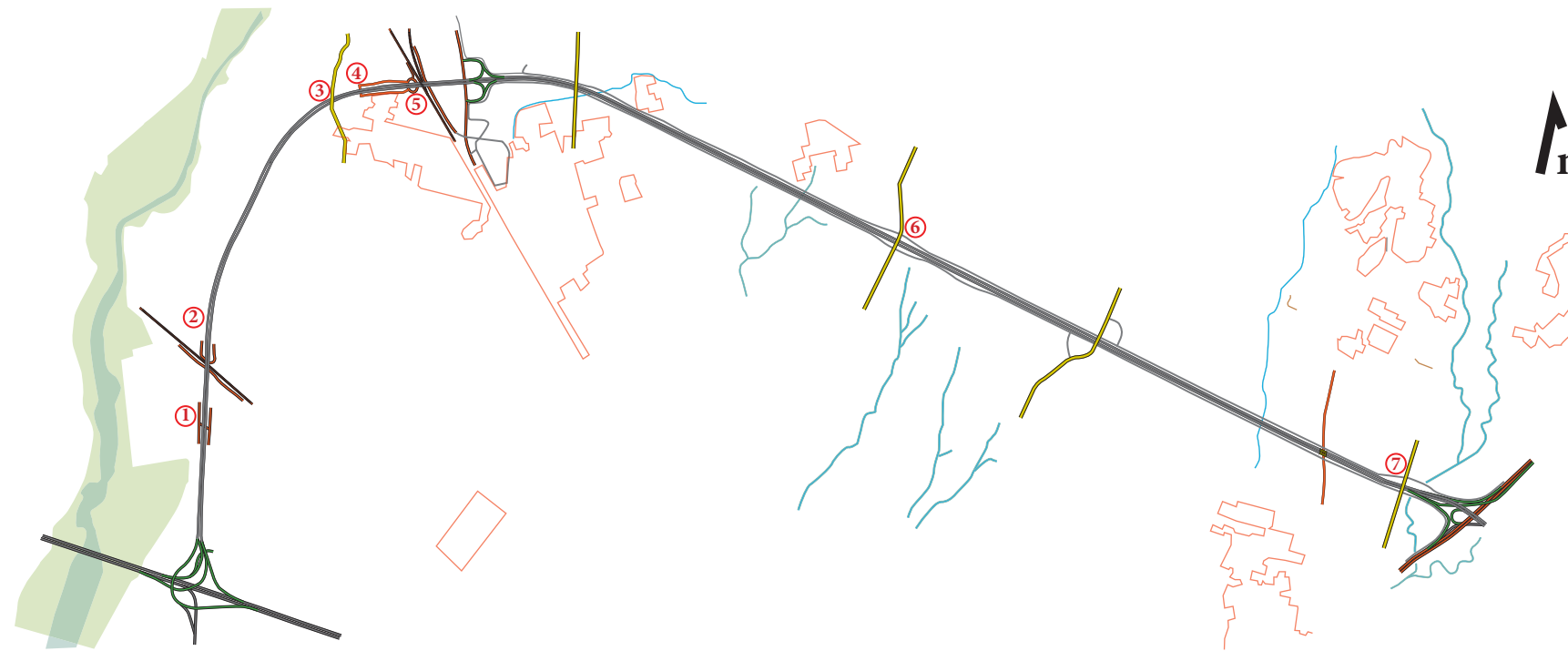
Road grid & hierarchy





2003 Hydrological map  
(source: TEE/TKM)



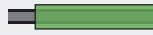


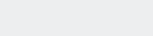






-  bridge
-  embankments

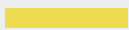
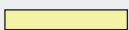


**Conditions along the course**

-  crossing
-  underpass
-  cut & cover
-  bridge
-  incorporations
-  streams

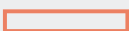
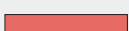




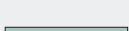
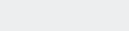
**Permeability / transversality**



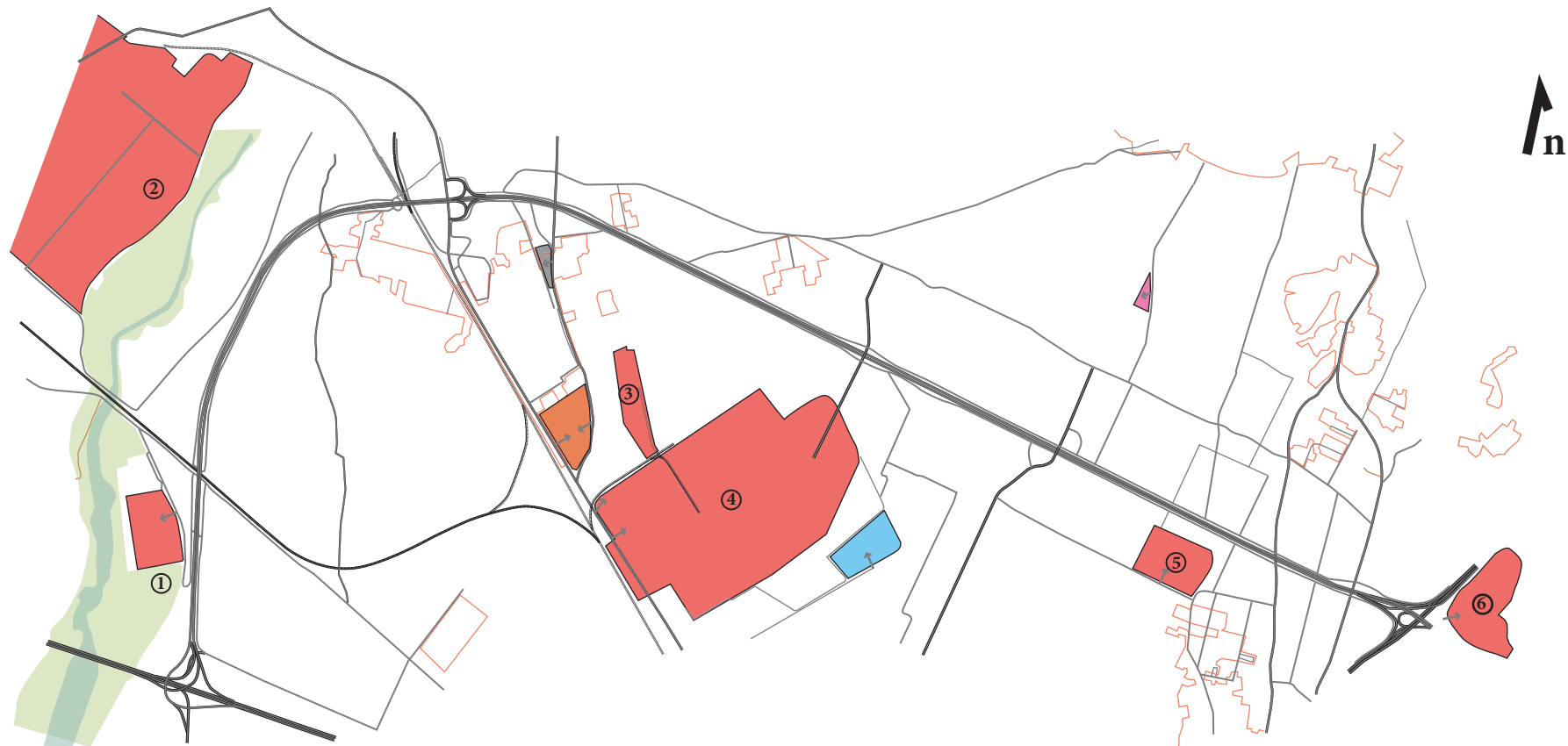


-  irrigated agriculture
-  non-irrigated agriculture
-  industry / manufacturing
-  green corridors

**Non/residential activity**

-  residential
-  industrial / manufacturing
-  commerce / leisure
-  education
-  culture
-  sport
-  health
-  voids

**Big areas and accesibility**







## Second analysis section - the Seich Su forest edge (12km)

The second analysis section of 12km length starts where the previous one ended, at the Efkarpia node, and continues in a south-east direction between the urban fabric and the adjacent forest mass all the way to the Konstantinopolitika node. This section is part of the Inner Ring Road and can be divided into two stretches for the purpose of the analysis based on the characteristics and conditions along each one. Part of the first stretch also serves as the connection between Inner and outer Ring Road. (see above)

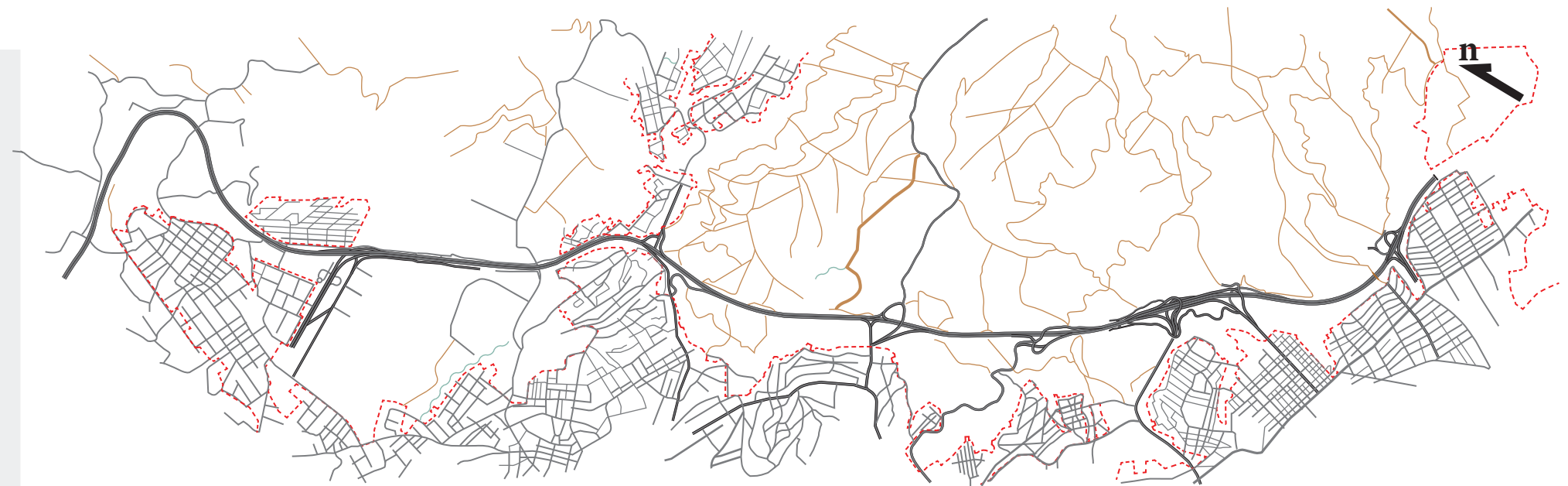
At the beginning of the first stretch (Efkarpia node) lies the Titan cement factory, a predominant landscape element situated right on the north gate of the city (and also along the Lagkadas avenue - Egnatia highway axis). The first stretch runs (5.5km) all the way to the Retziki node. On the west side of the highway the mountain mass lies in a relatively distance from the axis and one encounters agricultural and semi-natural lands, low density emerging residential districts (Efedroupoli), diffused nonresidential activity, abandoned extraction sites as well as large hospital areas. To the east of the axis one encounters similar conditions but with a notable difference, the presence of residential areas, products of the recent urban expansion for the most part. The node east of Efkarpia, serves as a connector between the Outer and inner Ring Road, and has developed increased activity given the proximity to the residential areas and the accessibility provided by the infrastructures. Also the abandoned Karatasiou military camp is a key regional area with a key location and existing building stock that is in the process of converting it into a park and passing it to civic use. As far as permeability along this first stretch is concerned, there have

been provisions to allow the continuity of principle streams. Transverse mobility flows are permitted on specific crossings and an increased concentration closer to the node and the hospital areas.

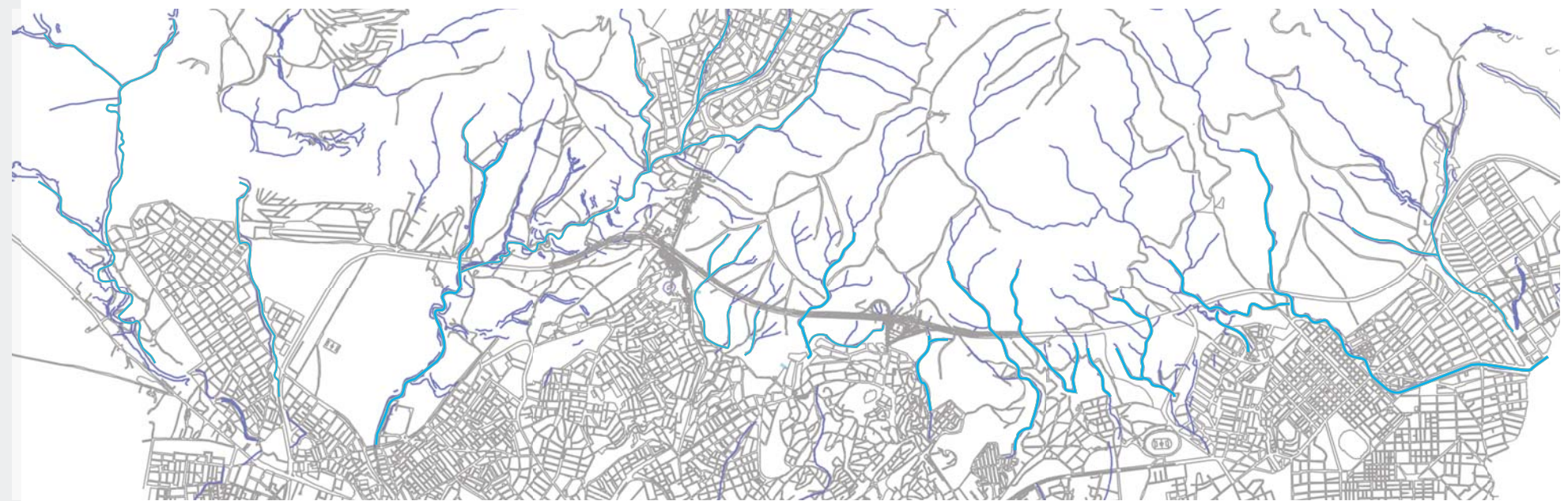
The second stretch (6.5km) from the Retziki node to the Konstantinopolitika presents distinct characteristics. The stretch runs through the western end of the Seich-Su forest, relatively along its contact line with the urban fabric. Thus the highway has the forest mass on its east side providing relative access to it through the various nodes. On the west side, the situation changes slightly: one encounters green fragmented patterns of the forest trapped in between the infrastructure and the expanding urban fabric. The urban fabric approaches the Ring Road closer in the proximity of the access nodes along the stretch, creating further fragmentation on a transvesal direction. Transverse mobility flows are served by the same nodes, as well as specific crossings. The cut-and-cover tunnel at the level of Konstantinopolitika provides transverse connection with the under development district of Kipoupoli. Permeability for natural flows is allowed for most local torrential streams. Nevertheless the highway presents a considerable barrier between the forest vegetation and the forest islets on the east of the axis. Accessibility to the natural although available, it is not encouraged actively despite the close proximity of the urban and forest fabric. Thus two major problems arise for this section: On one part the question of integration of the infrastructure in question and on the other the question of urban limits and peripheral activity.



**Road grid & hierarchy**



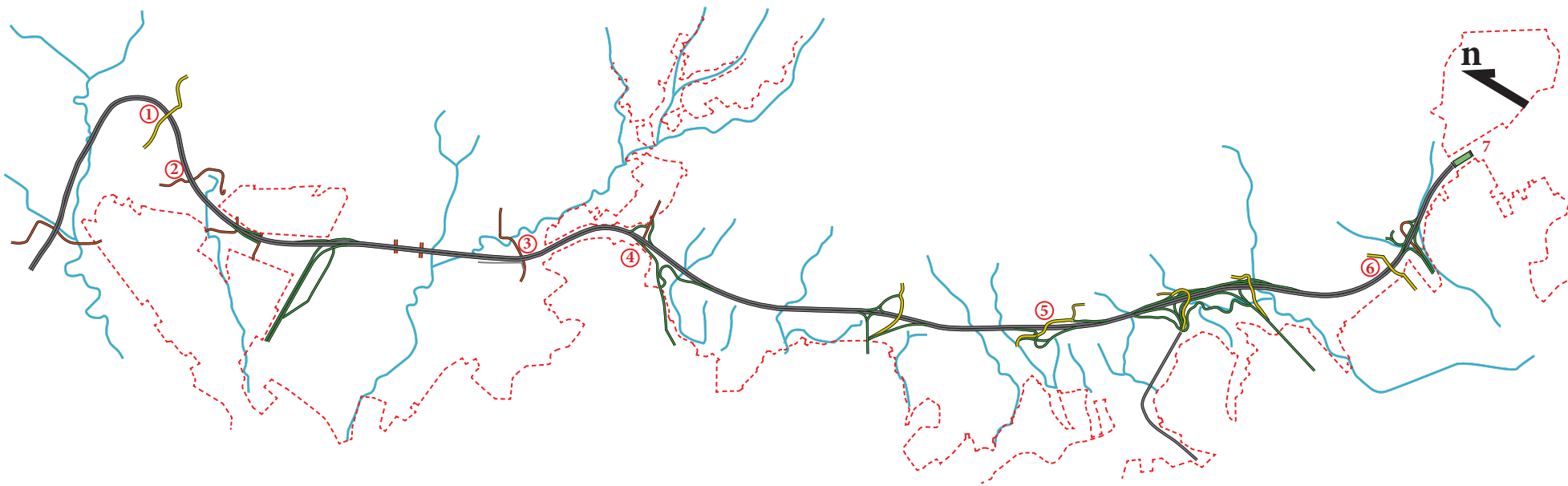
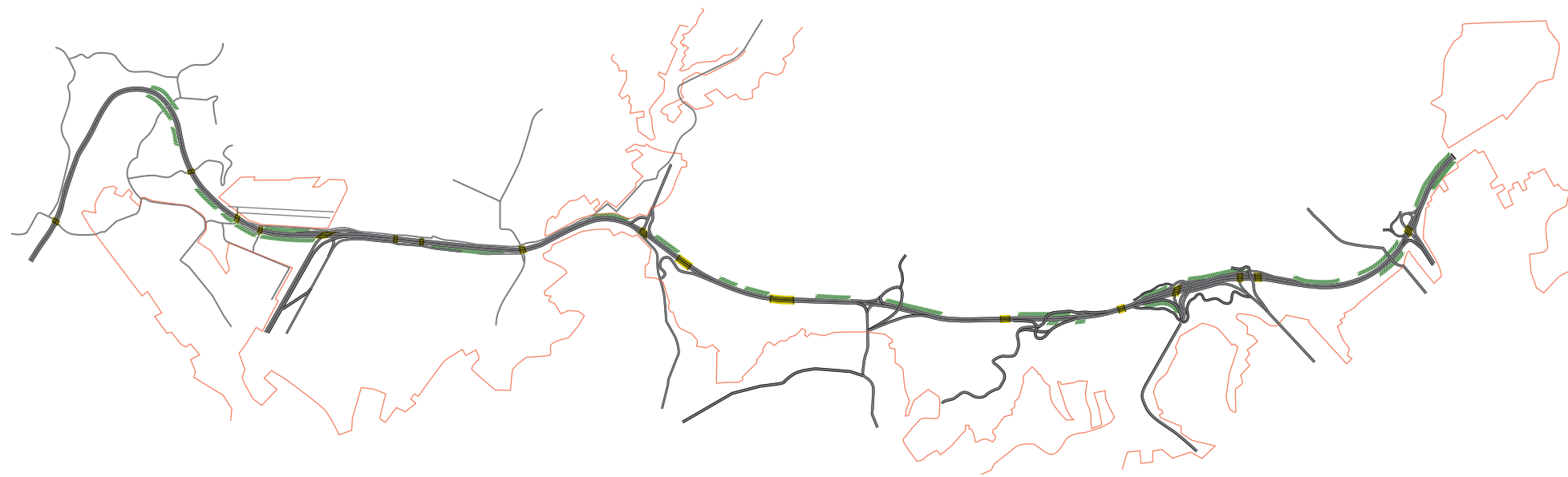
**2003 Hydrological map**  
(source: TEE/TKM)

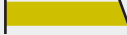



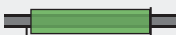





**1985 map**  
(source: National Map Archive)



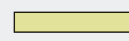
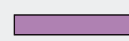





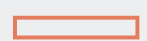



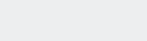
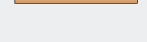


	bridge
	embankments
<b>Conditions along the course</b>	
	crossing
	underpass
	cut & cover
	bridge
	incorporations
	streams
<b>Transversal axes</b>	



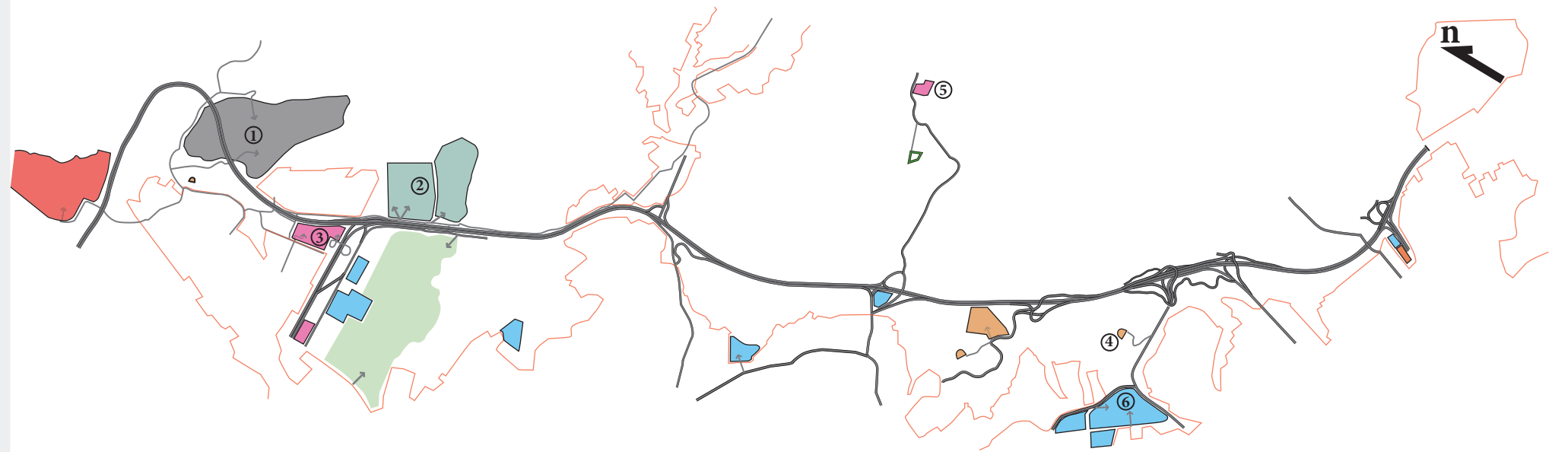
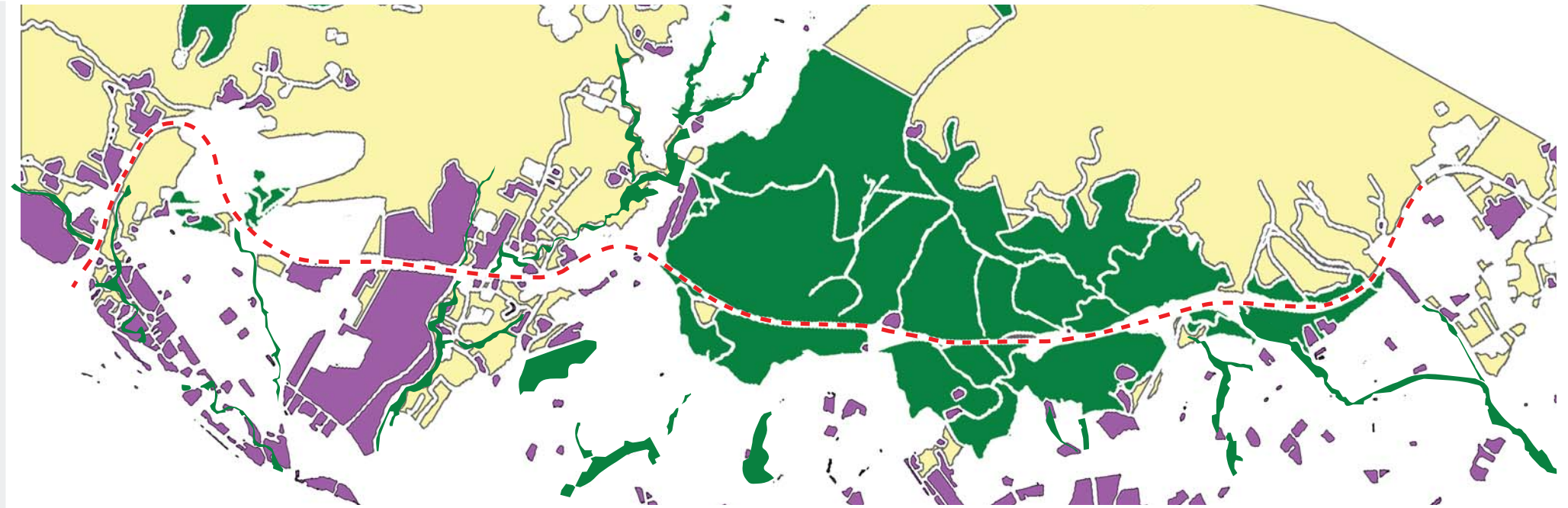


-  agriculture
-  industry / manufacturing
-  green corridors

**Non/residential activity**

-  residential
-  industrial / manufacturing
-  commerce / leisure
-  education
-  culture
-  sport
-  health
-  voids

**Big areas and accesibility**







### Third analysis section - The *East Inner Ring Road* (5km)

The third and last analysis section is the shortest of the three with a total length of 5km. It starts at the Konstantinoupolitika tunnel and heads south passing the municipality of Pylea to the west and reaching all the way to Kalamaria and the Agios Stylianos district. Similar to the previous section, this one is also part of the inner Ring Road. For the analysis purposes it will be divided into two stretches as well.

At the Konstantinoupolitika tunnel where the first stretch starts, the highway changes its parallel orientation with the mountain mass and curves to the south. The first stretch (1.8km) runs all the way to the Panorama-Pylea node. On the west side of the highway one finds low to medium density residential districts of the Pylea Municipality as well as undeveloped open areas of different sizes. To the east the situation is slightly different although the predominating use is the residential. At the beginning lies the Kipoupolis district that is in an early phase of its development with great numbers of open available space, within the district as well as in adjacent spaces to it. Further south one encounters two major clinics as well as a distinctive residential typology of low density and diffused edification. Shortly before reaching the Pylea-Panorama node, lies the Anatolia College campus, a key educational attractor in the area, in conjunction with other educational and sport activities in the vicinity. As far as permeability is concerned, the only transverse mobility flow is permitted at the height of the clinics, connecting them with the other side, while at the same time permits the crossing of the Eleorema torrential stream. The Pylea - Panorama node is also a key crossing for the urban fabric, although with a distinct character on each side of the highway, both on typological as well as socioeconomic terms.

The second stretch (3.2km) presents different conditions along its course. The stretch runs along the eastern plain of Thessaloniki, crossing extended areas of agricultural and semi natural peri-urban areas. On the west side of the highway lies initially the eastern areas of the Pylea municipality. Past the residential areas lies an extended area, delimited by the Ring Road the peri-urban canal and the Thessaloniki - Nea Moudania highway, that includes a diversity of uses and activities but lacks any proper planning and structuring, giving space to all sorts of uncontrolled development. Past the Kalamaria node big size retail/commerce stores occupy the greatest part of the available space on both sides of the highway. On the east of the highway starting from the Pylea node the low density sprawl transitions to agricultural land and finally to secondary and tertiary uses as it approaches the Thessaloniki Moudania highway. Transverse mobility flows are served by several punctual crossings that permit continuity of preexisting paths/flows. Permeability for ecological flows is not considered, given the absence of major corridors in this stretch of the analysis. Accessibility is problematic in many terms (lack of access to the clinics or EKAB) while it is better close to the Kalamaria and Nea Krini Node providing access to a great number of facilities. The integration of the infrastructure and the question of accessibility/mobility are the prevailing issues for this last section.



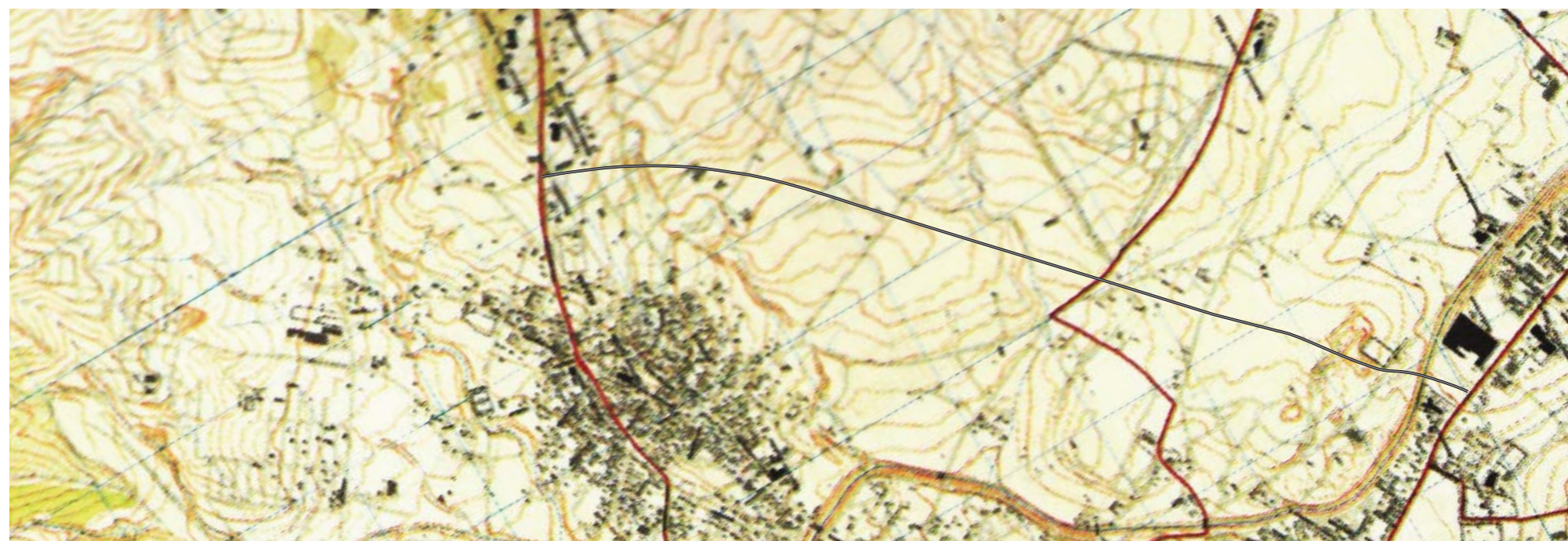
**Road grid & hierarchy**



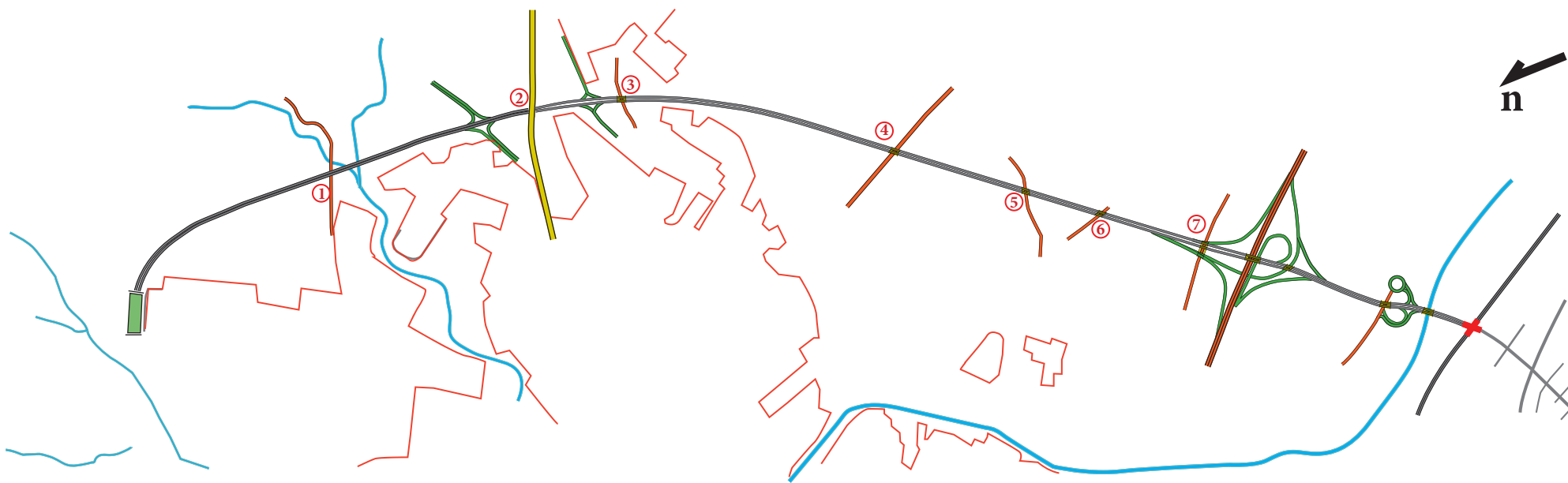
**2003 Hydrological map**  
(source: TEE/TKM)

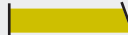





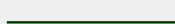



**1985 map**  
(source: National Map Archive)















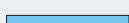
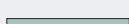
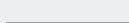
	bridge
	embankments
<b>Conditions along the course</b>	
	crossing
	underpass
	cut & cover
	bridge
	incorporations
	streams
<b>Transversal axes</b>	



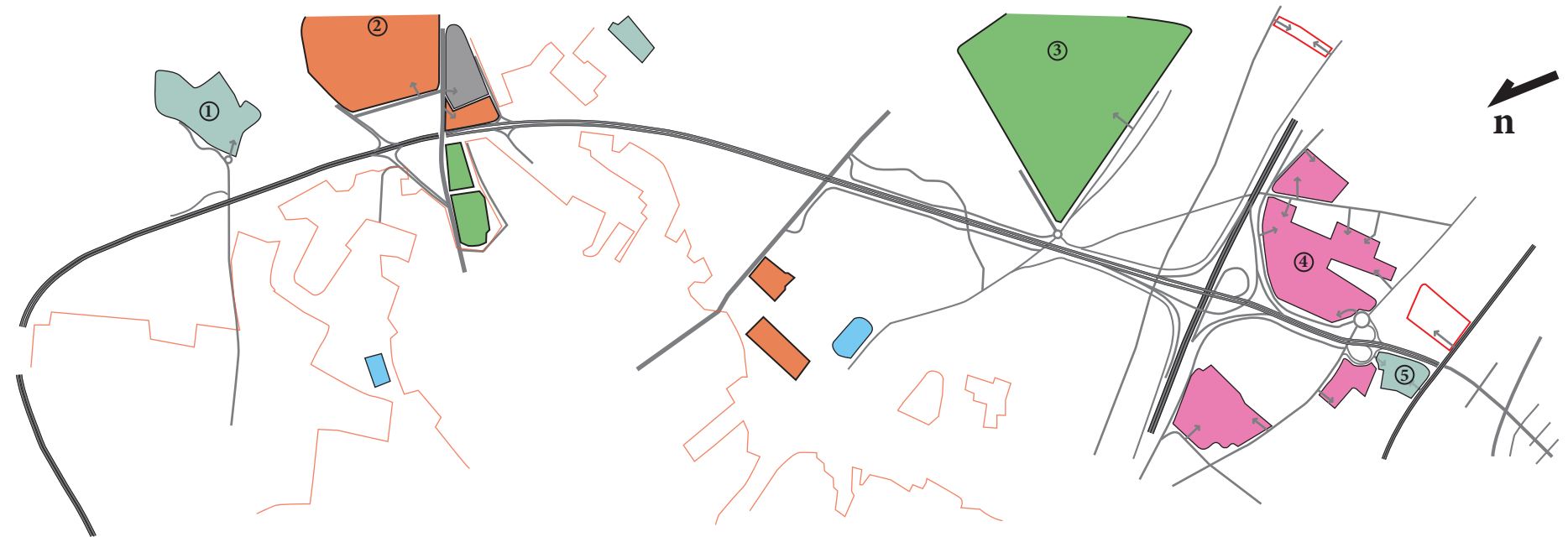
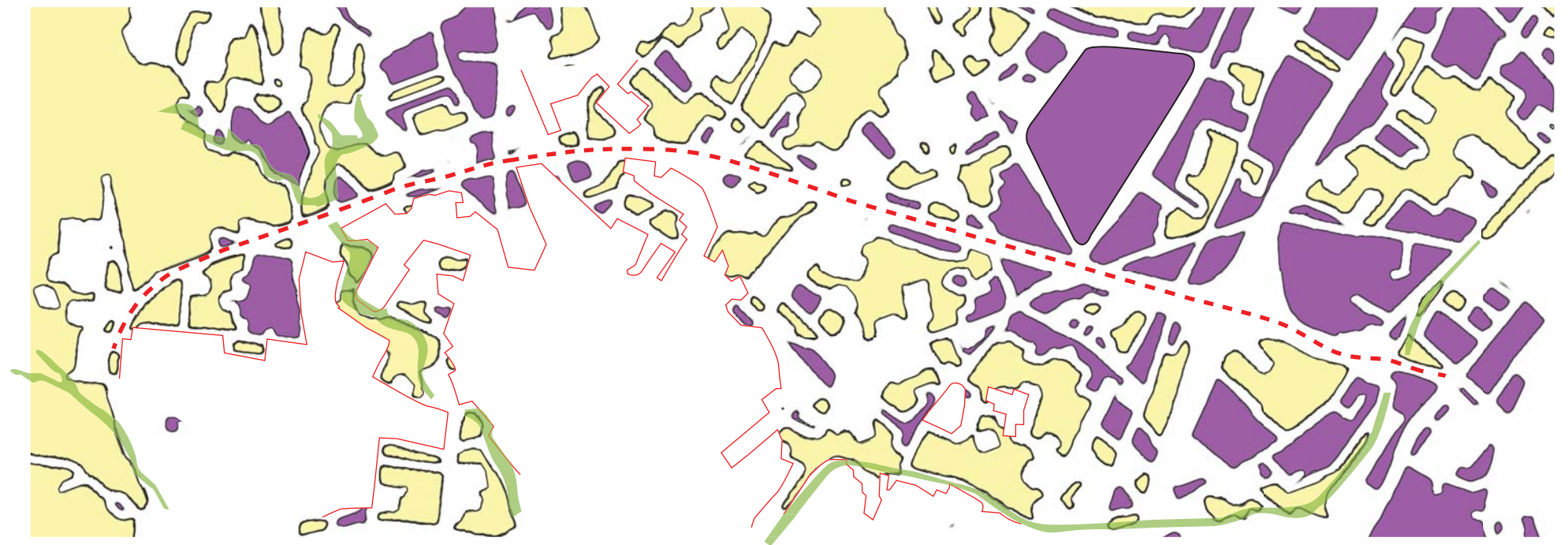


-  irrigated agriculture
-  industry / manufacturing
-  green corridors

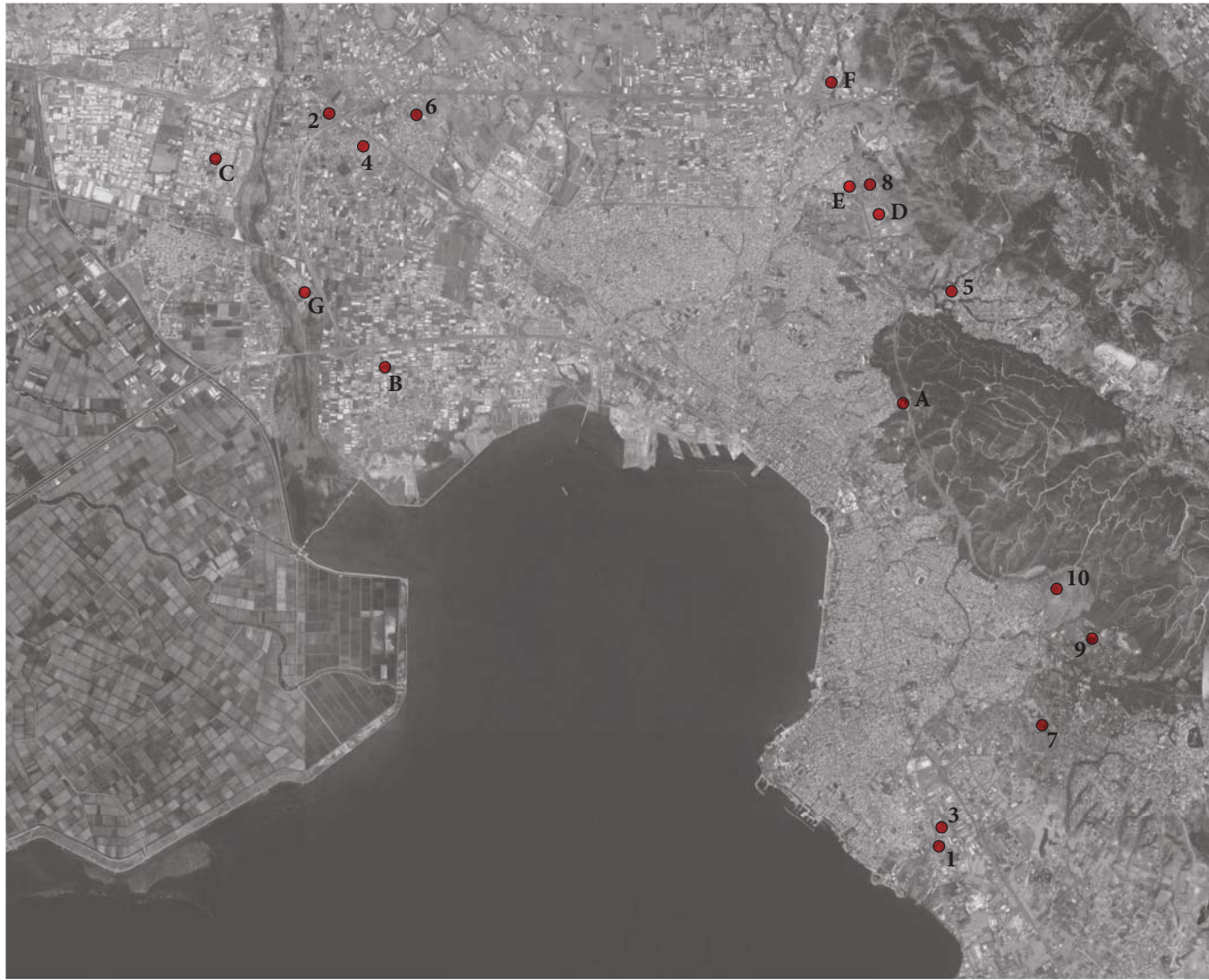
**Non/residential activity**

-  residential
-  industrial / manufacturing
-  commerce / leisure
-  education
-  culture
-  sport
-  health
-  voids

**Big areas and accesibility**





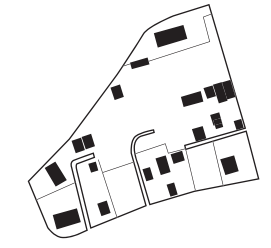


### Forms & typologies along the Ring Road

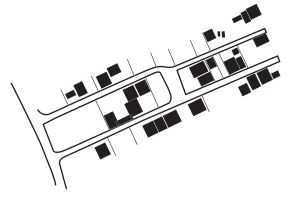
Following the analysis and of the distinct parts of the Ring-road ecotone, this part will demonstrate a representative selection of building typologies present along the area under investigation. The recent contemporary growth and the presence of the Ring Road as mobility infrastructure has rendered the ecotonal space along the Ring-Road as attractive for the location of diverse activities, demonstrated in the diversity of forms and configurations found in the respective contemporary fabric. Before proceeding with the synthesis part for the area the next two pages will demonstrate photos and diagrams of representative typologies within the area.

### Forms of habitat along the Ring - road

1. residential islets



3. elongated islets



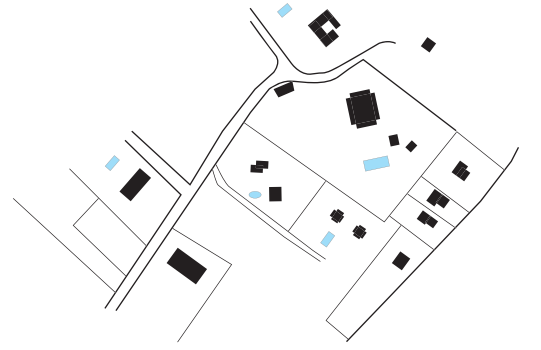
5. peri-urban settlements



7. High income housing



9. High income housing

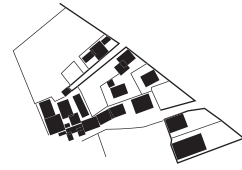


50m

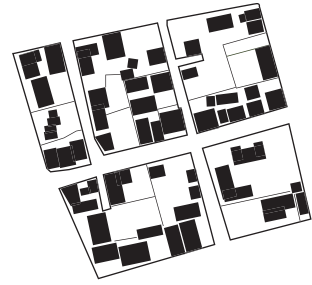


# Forms of activity along the Ring - road

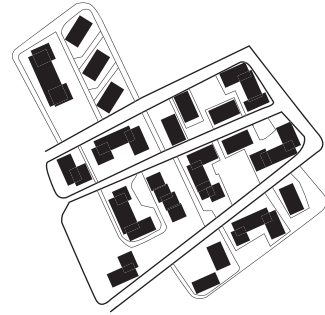
2. residential islets



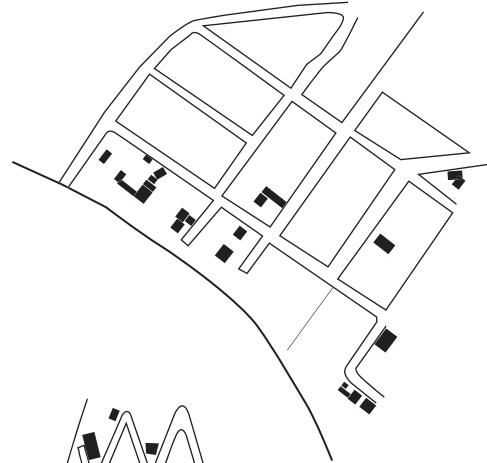
4. peri-urban settlements



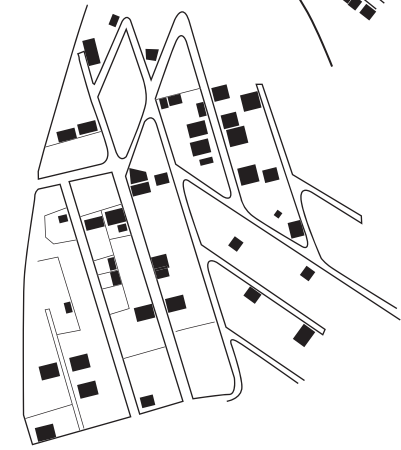
6. social housing



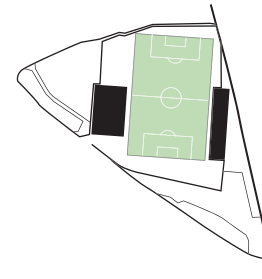
8. halted development



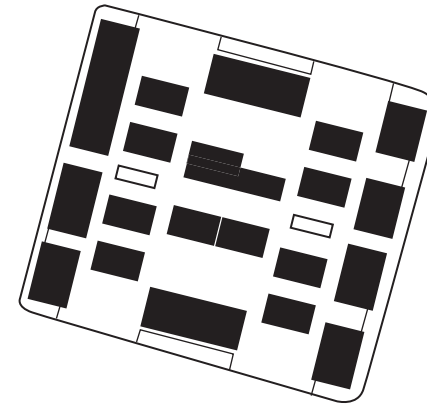
10. halted development



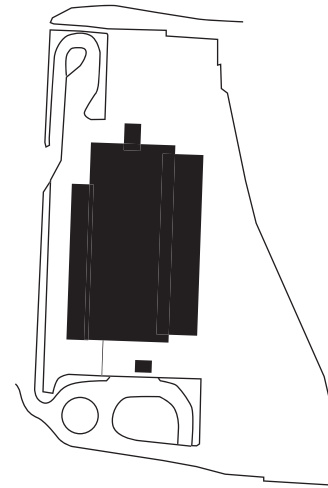
A. node In-Fills



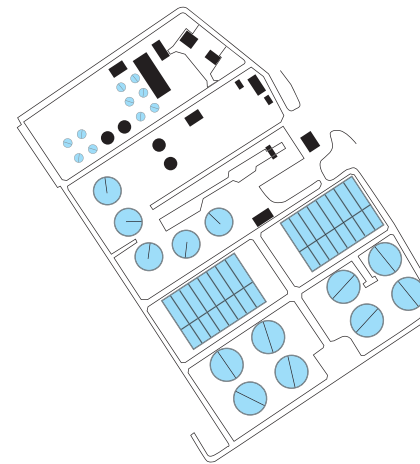
C. organized Activity areas



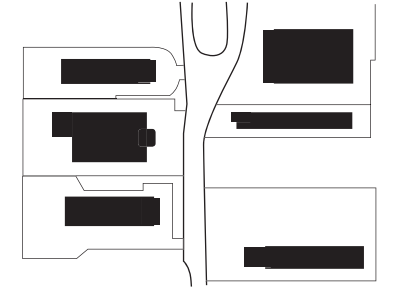
E. commercial Center



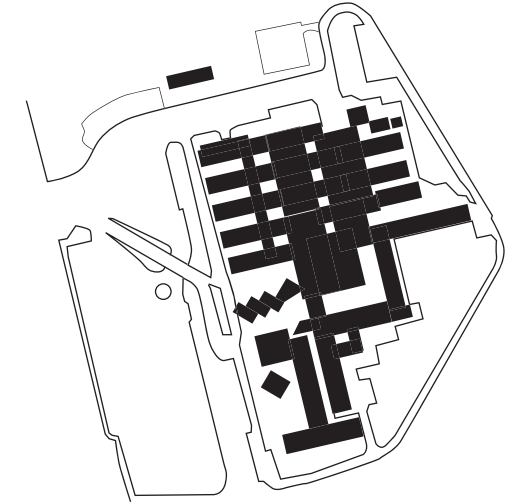
G. treatment plant



B. disperse Activity areas



D. hospitals



F. concrete plant



50m



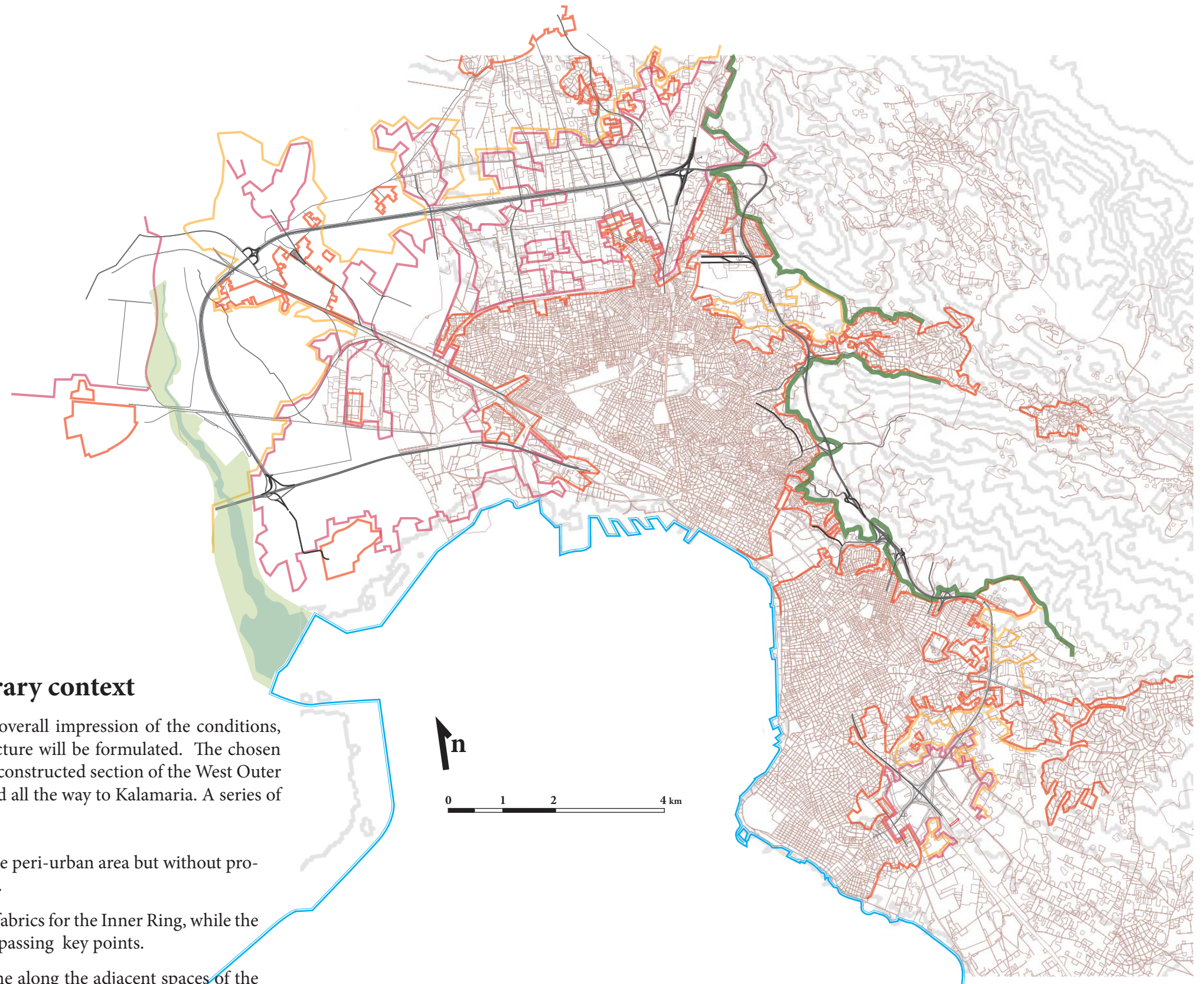


Aerial view

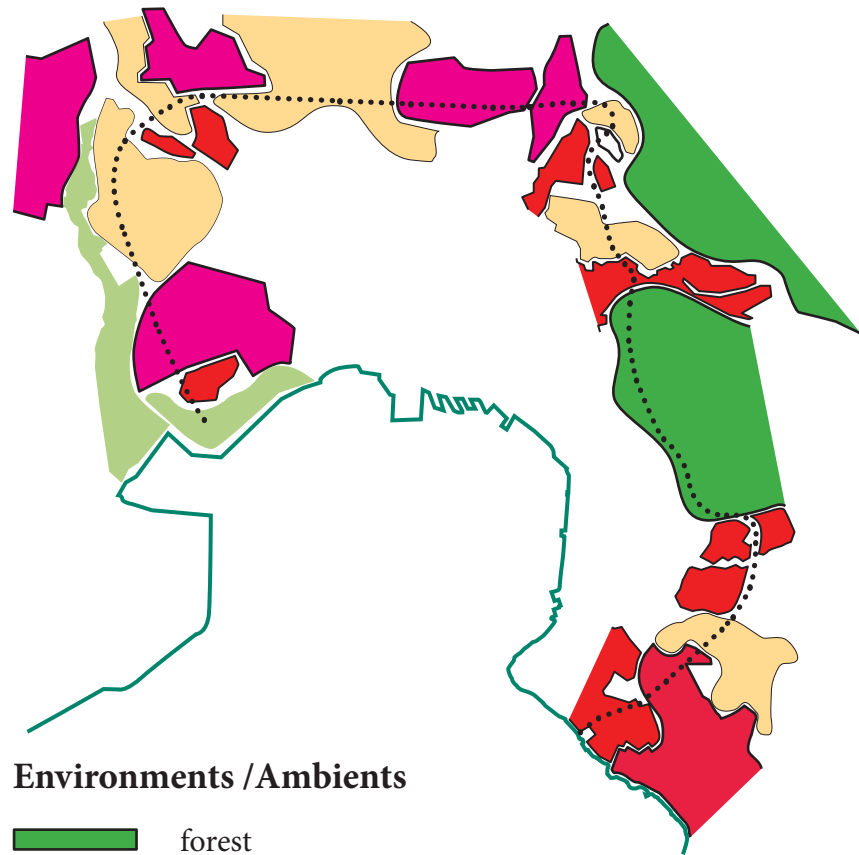
## The Ring Road structure in the contemporary context

After the analysis of the individual sections, a synthesis and an overall impression of the conditions, situations and dynamics along the totality of the Ring Road structure will be formulated. The chosen analysis structure for the purposes of the analysis consisted of the constructed section of the West Outer Ring and Inner Road starting from the Inner-Outer Ring node and all the way to Kalamaria. A series of first conclusions can be made from the analysis :

- i) the Ring Road is a key mobility infrastructure that crosses the peri-urban area but without providing a corresponding (peri)-urban structure along its course.
- ii) the Ring road structure provides convenient access to urban fabrics for the Inner Ring, while the Outer Ring is characterised by long distanced access nodes, bypassing key points.
- iii) the non-residential activity that has developed with the time along the adjacent spaces of the Ring Road highway adapted for the most part an improvised and not formal character with the exception of few nodes that have developed poles activity around their area.
- iv) part of the Inner Ring Road runs through and in a close distance to the forest of Seich Su and more precisely along the pronounced urban-natural ecotone, creating a barrier effect and fragmentation of the forest areas and a disconnection of the forest from the urban fabric.





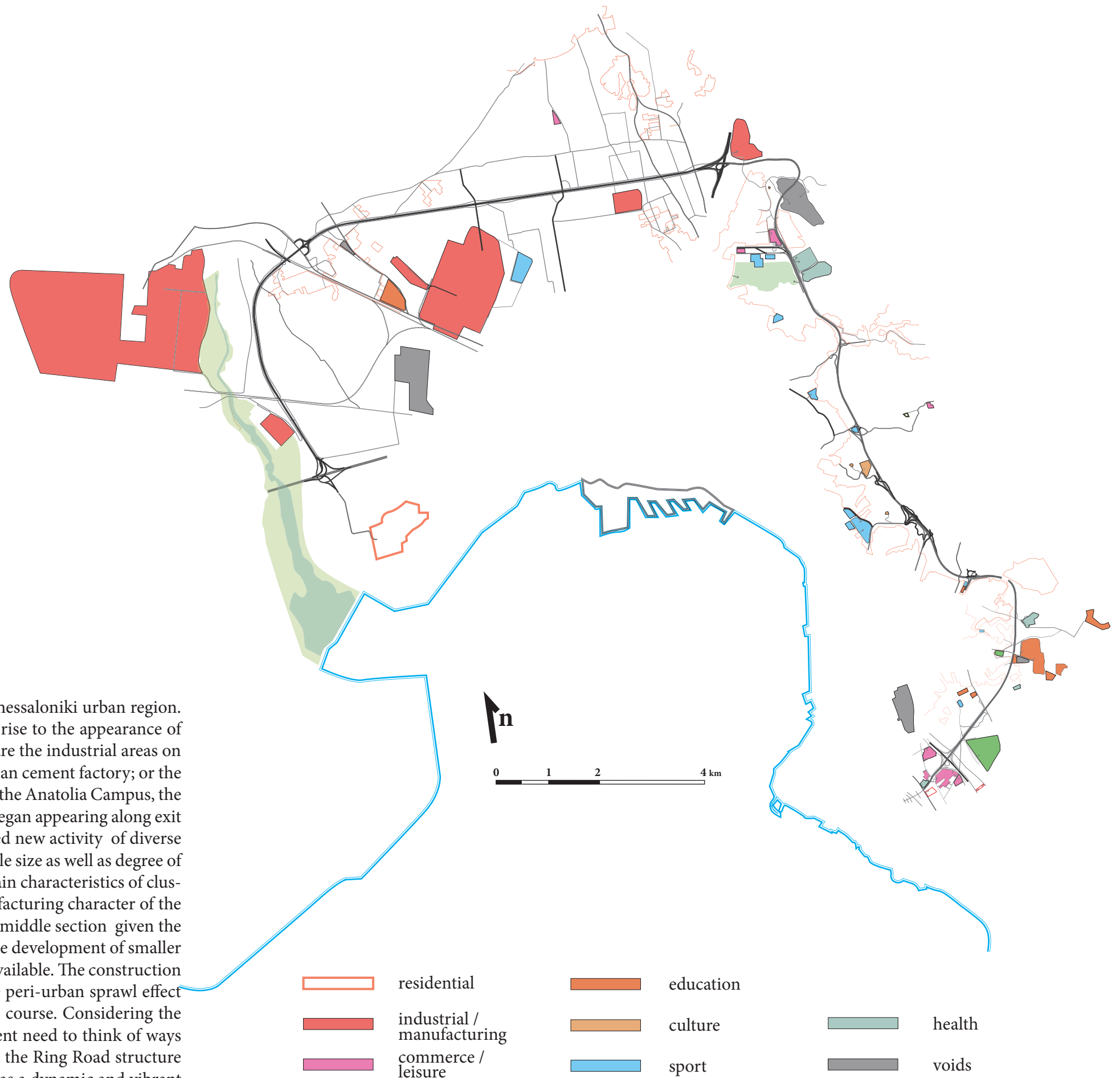


**Environments / Ambients**

- forest
- agricultural
- aquatic
- non-residential
- residential

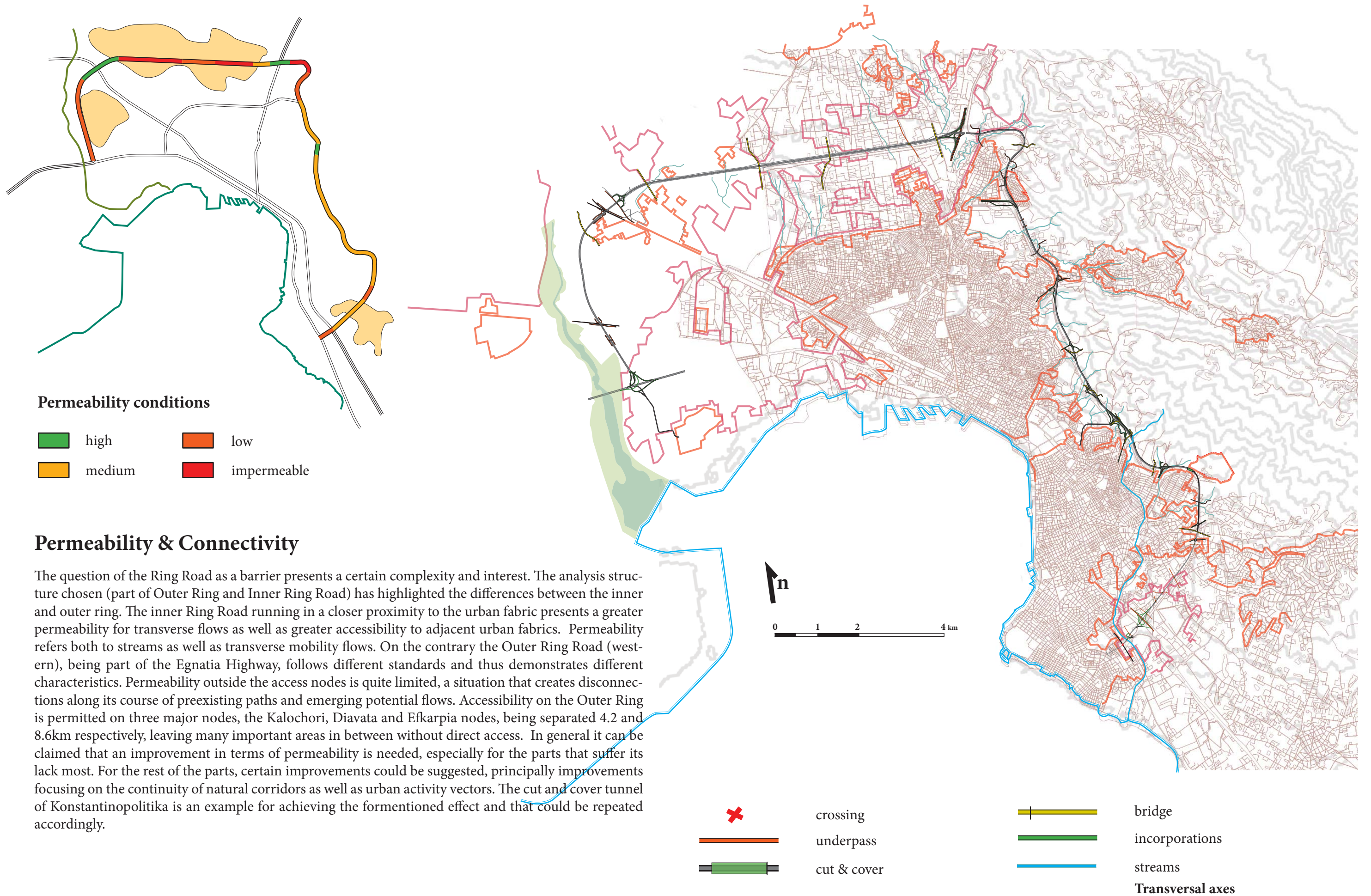
**Edge Activity / Big areas along the limit**

The Ring road structure has served as a major lineal activity attractor in the Thessaloniki urban region. The availability of unoccupied space in the Thessaloniki peri-urban area gave rise to the appearance of big sized areas even before the construction of the Ring Road. Such examples are the industrial areas on the west peri-urban area, the EKO refinery, the Sindos Industrial area or the Titan cement factory; or the respective areas on the eastern peri-urban areas off a different character such as the Anatolia Campus, the American Farm School, the Military Academy or the various retail stores that began appearing along exit highways of the city. The construction of the inner-road at a first stage, attracted new activity of diverse character; retail / commercial or leisure, sport and health related areas of variable size as well as degree of connectivity/accessibility to the ring road. These activities have developed certain characteristics of clusterization, creating distinctive ambients along its course; the industrial / manufacturing character of the west section of the ring and the retail/leisure character of the east section. The middle section given the proximity to the forest areas as well as the dense urban fabric has allowed for the development of smaller areas, that seek the easy access to the ring road, and adapt to the limited space available. The construction of the western Outer Ring as part of the Egnatia Highway has reinforced the peri-urban sprawl effect but without providing an adequate structure for the adjacent space along its course. Considering the contemporary conditions and activities along the Ring Road there is an urgent need to think of ways to structure and monitor developments in the peri-urban space and ways that the Ring Road structure can be configured to act as an efficient urban interface, with its course acting as a dynamic and vibrant membrane, reprogramming the current urban - peri-urban ecotone.

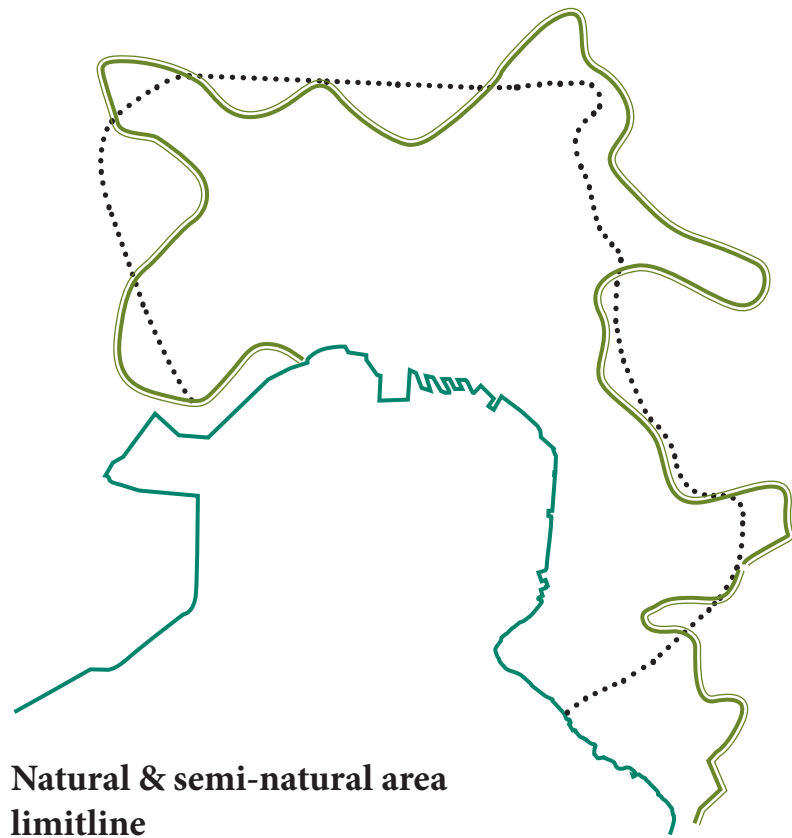


- residential
- education
- culture
- health
- industrial / manufacturing
- sport
- voids
- commerce / leisure



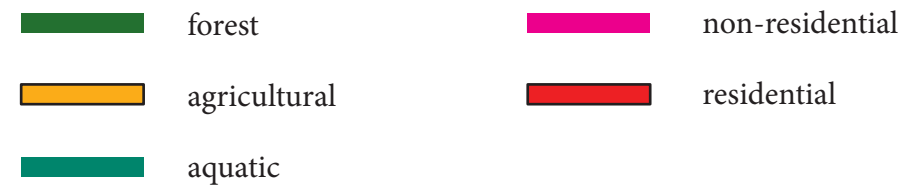
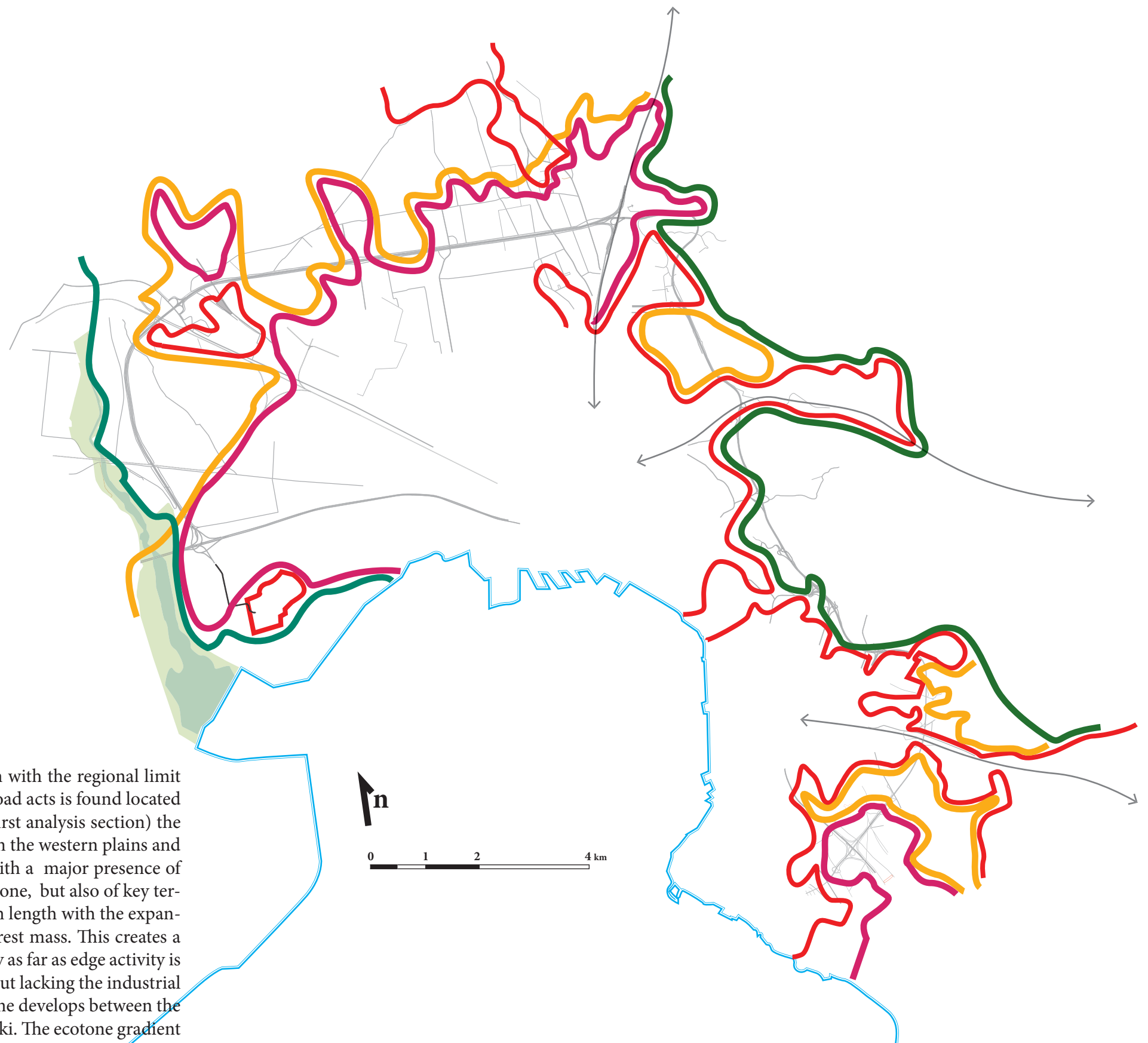






### Limits & Ecotones

The above and side diagrams show the Ring Road analysis structure in relation with the regional limit lines and the respective ecotones that they create. It can be seen how the Ring Road acts is found located in between and in the interstice of key territorial ecotones. On the west side (first analysis section) the highway is running along and in the vicinity of a key territorial ecotone, between the western plains and the urban fabric, consisting both of residential and non-residential activities, with a major presence of industrial activities. The second section is running along a different type of ecotone, but also of key territorial importance: the urban-forest ecotone. This ecotones has been growing in length with the expansion of the city and its approach and pressure on the adjacent mountainous forest mass. This creates a thin but pronounced ecotone of increased complexity and diversity, and intensity as far as edge activity is concerned. The third section presents similar spatial characteristics to the first but lacking the industrial character of the first, having more of a commercial / leisure character. The ecotone develops between the urban fabric of Pylea and Kalamaria on one side and the plain of East Thessaloniki. The ecotone gradient passes from a residential to a semi-natural /agricultural use to non residential uses, eg. retail / commercial /educational use from an east to the west direction. Taking into consideration the above points it can be asserted that the Ring Road structure is part of a wider territorial ecotone, corresponding to the one between the urban limits and its peri-urban surroundings.





# Situations detected

residential - activity

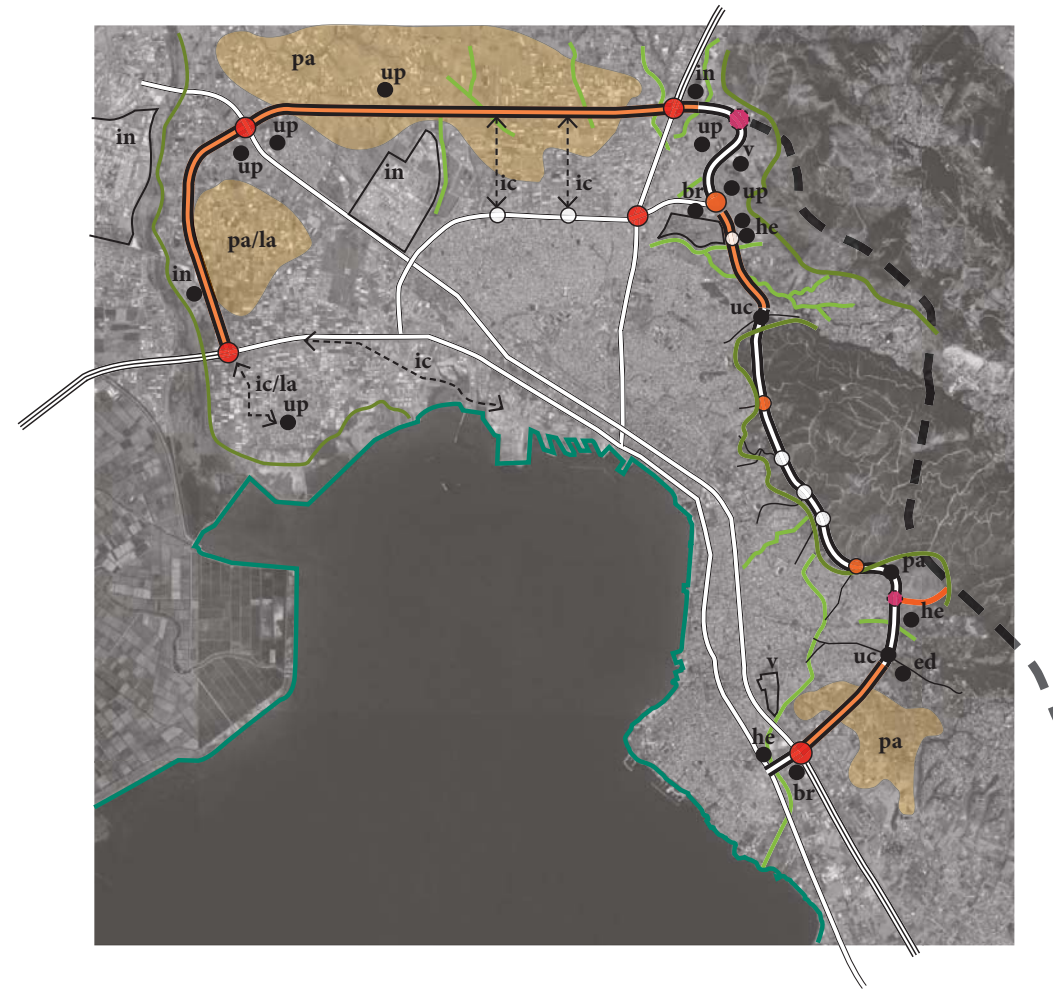
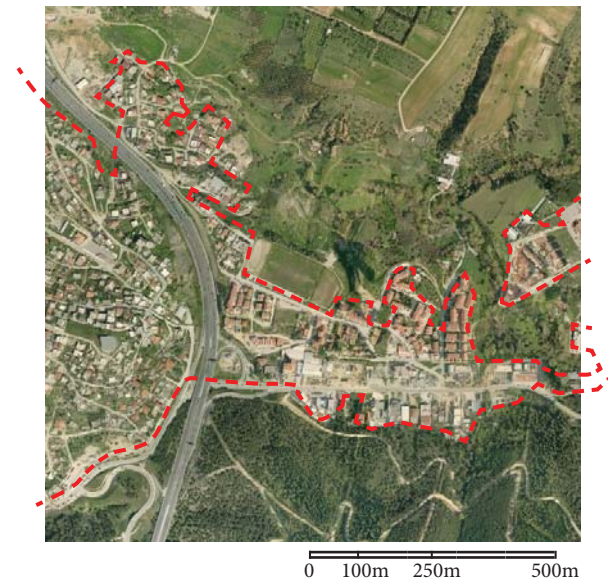
proximity to urban settlements



connectors



urban continuities



## legend

- br: big size retail
- in: big size industry
- he: health poles
- ed: education poles
- up: proximity to urban settlements
- uc: urban continuities
- ob: obsolete areas
- ne: extensive nodes
- na: nodes with activity
- fi: fragmentation by infrastructure
- ie: infrastructure excess
- di: disconnections
- ic: inconnections
- un: urban natural limit
- gl: green permeabilities
- pa: productive agricultural land
- ta: agriculture threatened by development
- pa: connectors / passes
- v: voids

## nodes

- existing
- existing w/ activity
- extensive
- inner-outer ring connection
- duplicated infrastructure

big size industry



big size retail stores



big size health installations



voids

obsolete military camps



industrial voids





## v. Situations Detected - Risks and Opportunities

Having analysed this particular and extensive edge area in its different aspects and scales, this following section will make an indicative listing of the different kinds of situations detected along and adjacent to its course, serving as a phenomenology of conditions and dynamics present in the contemporary mosaic. For each type of situation the risks detected as well as the possible opportunities that arise are listed.

### *Residential / Activity*

#### **proximity to urban settlements**

*Risk:* At certain points along the highway, the urban settlements (Nea Magnisia , Diavata, Nea Efkarpiia, Pylea etc) reach in a close distance to the highway with adverse consequences. (pollution, noise)

*Opportunity:* A green buffer zone between the urban settlements and the highway can and should be established. Also upgrade the accessibility of these settlements with respect to the Ring Road structure and its regional reach.

#### **urban connections**

*Opportunity:* The cut-and-cover tunnel at the height of the Konstantinopolitika district, also serves as a connector between the forementioned district and the under-development district of Kipoupoli. This is the only point that such type of connector exists along the highway. The construction of further connectors (urban & green) could reduce the barrier effect of the Ring Road

#### **urban continuities**

*Risk:* At certain points along the infrastructure (Retziki-Sykies, Pylea - Panorama etc) the urban structure and fabric overcomes the barrier effect of the Ring Road creating lineal expansions and adjacent sprawl.

*Opportunity:* Take advantage of these existing permeabilities and upgrade these points of urban continuity in terms of accessibility and activity. Put a limit to expansion.

#### **big size industry areas**

*Risk:* On the west side of the city a series of big size industrial areas are located within a close distance to urban settlements and areas of activity. Apart from the environmental impact there is also an important landscape impact.

*Opportunity:* Reconsider the use of these area on a long-term perspective, and the possible change of activity more friendly and compatible to the urban environment and landscape.

#### **big size retail stores**

*Risk:* On the east side of the city big size retail stores have sought a close distance to the Ring Road, occupying large lots of land, without special attention on landscape needs.

*Opportunity:* Possibility to structure the sum of these island into a coherent retail pole/-s, controlling land consumption and fragmentation and improving accessibility and quality of space.

#### **big size health installations**

*Opportunity:* Take advantage of the high accessibility that the proximity to the Ring Road offers, by connecting existing and developing new health installation that can have a regional reach.

### *Voids / Residual spaces*

#### **obsolete military camps**

*Risk:* The military camps that are found in proximity to the Ring Road are either partially in use (Ntalipi) or out of use (Karatasiou, Diavata). They represent critical reserves of open spaces for the city and their re-integration in the urban fabric is critical, overcoming the residual character that they have adapted so far.

*Opportunity:* These areas, considering the infrastructures and building stock that they contain can be ideal places for developing activities that have a regional reach. They also provide the opportunity to create key green areas for the regional green structure.

#### **industrial voids**

*Risk:* Another type of residual spaces are the abandoned industrial areas (Titan quarry, Allatini factory) that can be found along the course of the infrastructure. These apart from holding key and unexploited locations they also downgrade the overall quality of the adjacent areas.

*Opportunity:* Their key position can be the driving factor behind the recycling of these areas, restoring and converting them to key activity poles

### *Agriculture / peri-urban area*

#### **productive agricultural land**

*Opportunity:* The productive agricultural areas found in the peri-urban area of the city are critical reserves for the urban region that need to be conserved and organized on a regional level.

#### **agriculture threatened by urbanization**

*Risk:* This peri-urban agricultural land is found in risk and under pressure from the development of residential activity principally of a sprawl type expansion.

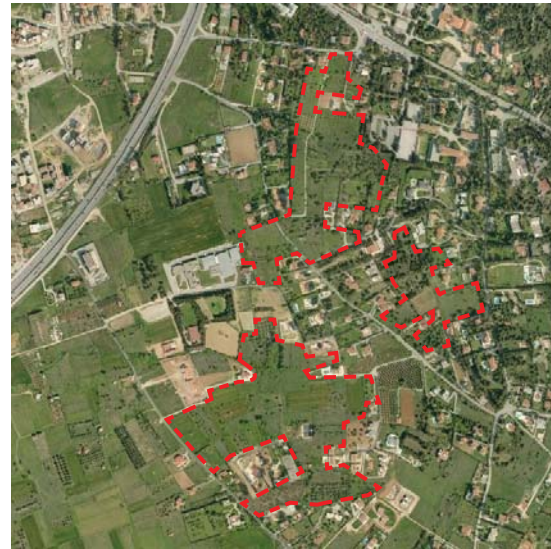


productive agricultural land



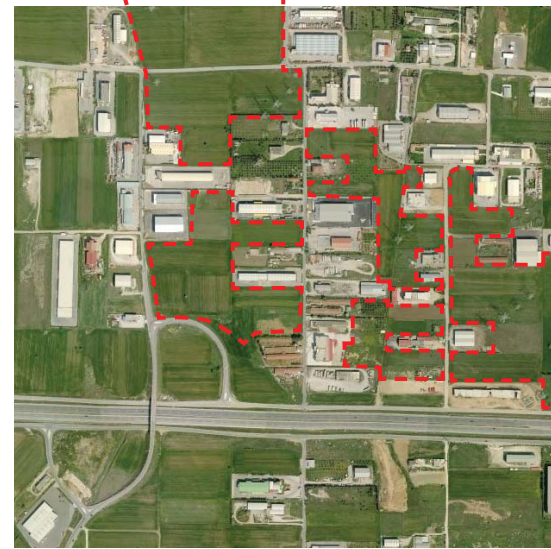
0 100m 250m 500m

agriculture threatened by urbanization



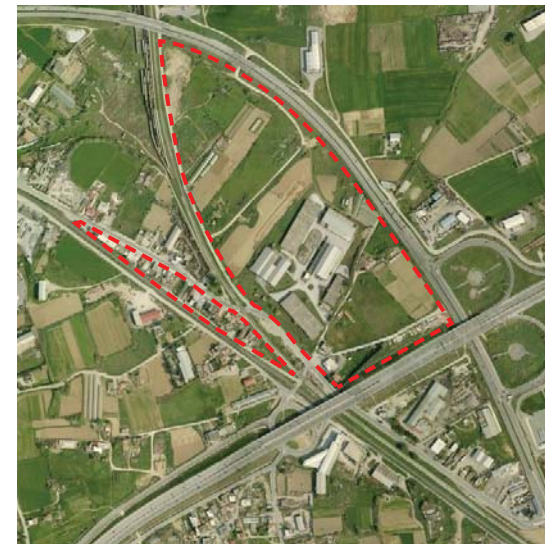
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agriculture threatened by secondary sector development



0 100m 250m 500m

fragmentation by infrastructure



0 100m 250m 500m

green areas linked to local hydrography



0 50m 175m 300m

urban - natural limit



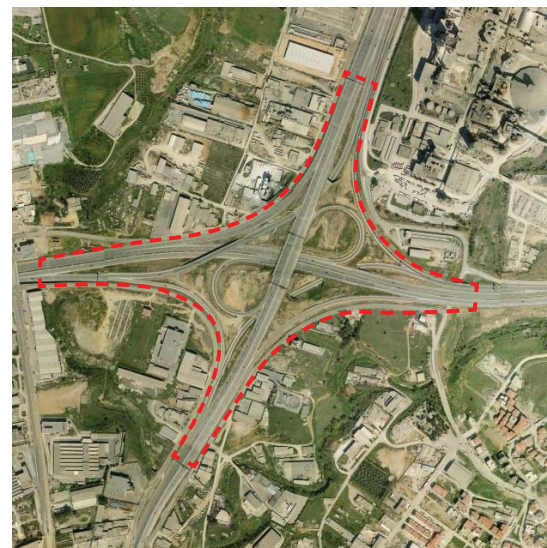
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nodes with activity



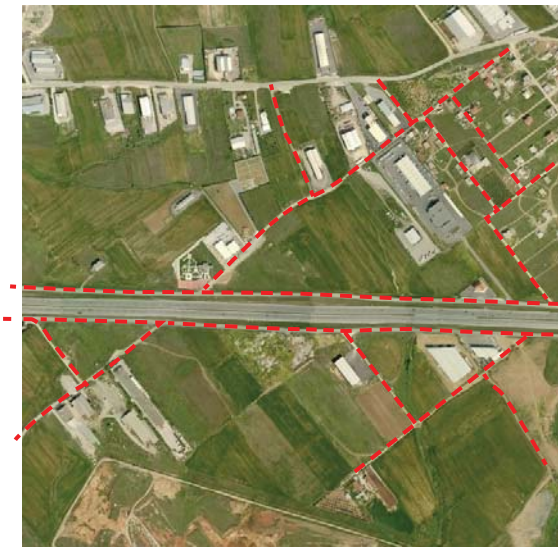
0 100m 250m 500m

extensive highway nodes



0 100m 250m 500m

disconnection / incontinuities



0 100m 250m 500m

infrastructure excess



0 100m 250m 500m



*Opportunity:* Establish a low density residential typology, combining productive land with residential activity, and establishing a structured transient zone between higher densities and agricultural lands.

#### **agriculture threatened by secondary sector activities.**

*Risk:* On another level the same agricultural land is also found threatened by the expanding sprawl of secondary sector activities (principally manufacturing and light industry), favoured by the availability of available land and direct connection with agricultural and peri-urban areas.

*Opportunity:* It is necessary to establish sufficient agricultural reserves in the peri-urban area and this can be achieved by establishing delimited areas of activity and containing all contemporary activity in organized and efficient poles.

#### **fragmentation by infrastructure**

*Risk:* The peri-urban agricultural land is also fragmented by the multiple infrastructures related directly or indirectly with the Ring Road structure or other mobility infrastructures, e.g. rail.

*Opportunity:* On one part a reconsideration of the excess of infrastructures (road and rail) has to be performed, thinking in the elimination of surplus infrastructures to improve the current fragmented state. The privileged accessibility of some of these areas can aid their possible transformation to thematic poles of regional reach.

#### **green areas linked to local hydrography**

*Risk:* These green corridors formed along the local torrential streams are vital elements of the regional ecological structure and are found under pressure from urbanization process, especially as ones approaches the denser urban fabric.

*Opportunity:* The correct and proper restoration of the green corridors can provide the city with a great length of lineal green spaces, connecting the urban fabric with the peri-urban area and natural areas.

#### **urban - forest ecotone**

*Risk:* The ecotone formed along the dense urban fabric and the Seich - Su forest, is a pronounced and intense edge area of great interest and is characterised by a thin and sensitive equilibrium.

*Opportunity:* the ecotone can be converted into a dynamic interface, increasing the urban natural interaction, and creating a synergic relation. This can be accomplished by defining precisely the limit line, the activities along the edge as well as the transversal connections.

#### **nodes with activity**

*Opportunity:* Many of the nodes of the Ring Road structure have served as attractors of activities of different characteristics, principally sport and retail facilities. Their reconfiguration and upgrade can enhance existing activity along the Ring Road and structure activity patterns along its course.

#### **extensive highway nodes**

*Risk:* A great number of the existing as well as planned highway nodes consume great amounts of lands creating at the same time micro-fragmentations on the existing mosaic.

*Opportunity:* Similar to the previous category, these nodes can be reconfigured to host activities of different kinds with a privileged access to the Ring Road structure, transforming them to attractor poles and reconsidering their extension.

#### **disconnection / discontinuities**

*Risk:* The construction of the Ring Road and especially the external ring has created various disconnections on previously existing paths and routes.

*Opportunity:* An increase in the permeability of the Ring road structure should consider these existing disconnections, and re-establish previous continuities and connections when deemed positive and necessary.

#### **infrastructure excess**

*Risk:* At the same time the formentioned disconnections were produced a complementary infrastructure had to be created to accommodate the diverted flows, resulting in a great length of side roads parallel to the Ring Road, in between nodes and transverse passes.

*Opportunity:* These special edge areas could be recycled to *i)* create lineal green buffer zones. *ii)* accommodate light rail or bicycle flows along the peri-urban area.

The diversity of situations detected along the Ring Road structure demonstrate the diversity and richness of situations in the mosaic of the peri-urban area of Thessaloniki. A landscape that is being found under pressure from different activities and dynamics, and a richness that if intervened rapidly and adequately can preserve its quality (diversity) and quantity (reserves). The opportunities that emerge from each situation highlighted for each case will aid in the composition / synthesis of the reprogrammed mosaic of the peri-urban area in the next section.



# Emerging Mosaic Synthesis

## *From an edge area to an urban interface*

This next section will compose the synthesis of the emerging mosaic along and adjacent to the Ring Road Structure. This will be done by taking into account the both the results of the previous analysis sections of the three Ring Road sections as well as the results from previous analysis chapters (Central Axis, Peri-urban canal & Seafront and Double West Arc) combining the different analysis scales and types of analysis, while taking into consideration the situations detected in the previously and the corresponding opportunities that were discerned. These will serve as the base for developing adequate strategies to reprogramme the existing mosaic with the aim of converting the contemporary edge area along the Ring Road to a dynamic and well structured peri-urban area that can function as an urban-natural interface. The updated role of the Ring Road structure as it emerged from the previous analysis and results can be seen in the plan on the right page, presenting the proposed strategies and corresponding spatial structure of the emerging mosaic. A mosaic that recognizes the peri-urban area as a key ecotonal area occupying a critical area for the urban function and that hosts a diversity of uses / fabrics (urban & natural) of regional importance. Thus the strategies proposed need to consider these ecotone characteristics in order to be able to propose improvements, presented in more detail in continuation in two broad categories:

### A. Permeability

In this first category the strategies refer to ways of achieving a selective and intelligent permeability: Permitting ecological continuities and flows on one part and controlling and managing urban activity and expansion on the other.

- **connectors** : The creation of a number of cut-and-cover tunnels along the course of the Ring Road serving as connectors both for natural patches and between urban districts on both sides of the highway can prove crucial in reducing the barrier effect of the Ring Road and restoring the continuities disturbed by the initial construction of the highway. Apart from the cut and cover passages, a series of designated pedestrian / bike bridges could help reestablish micro-connections.
- **urban continuities** : Take advantage of these existing permeabilities and upgrade these points of urban continuity in terms of accessibility and activity while structuring the territory.
- **green corridors** : The correct and proper restoration of the green corridors can provide the city with a great length of lineal green spaces, connecting the urban fabric with the peri-urban area and natural areas. A further improvement of the permeability for this corridors related to the torrential streams, will improve further the ecological functioning on a regional scale.
- **urban - forest ecotone**: The ecotone can be converted into a dynamic interface, increasing the urban natural interaction, and creating a synergic relation. This can be accomplished by defining precisely the limit line, the activities along the edge as well as the transversal connections.

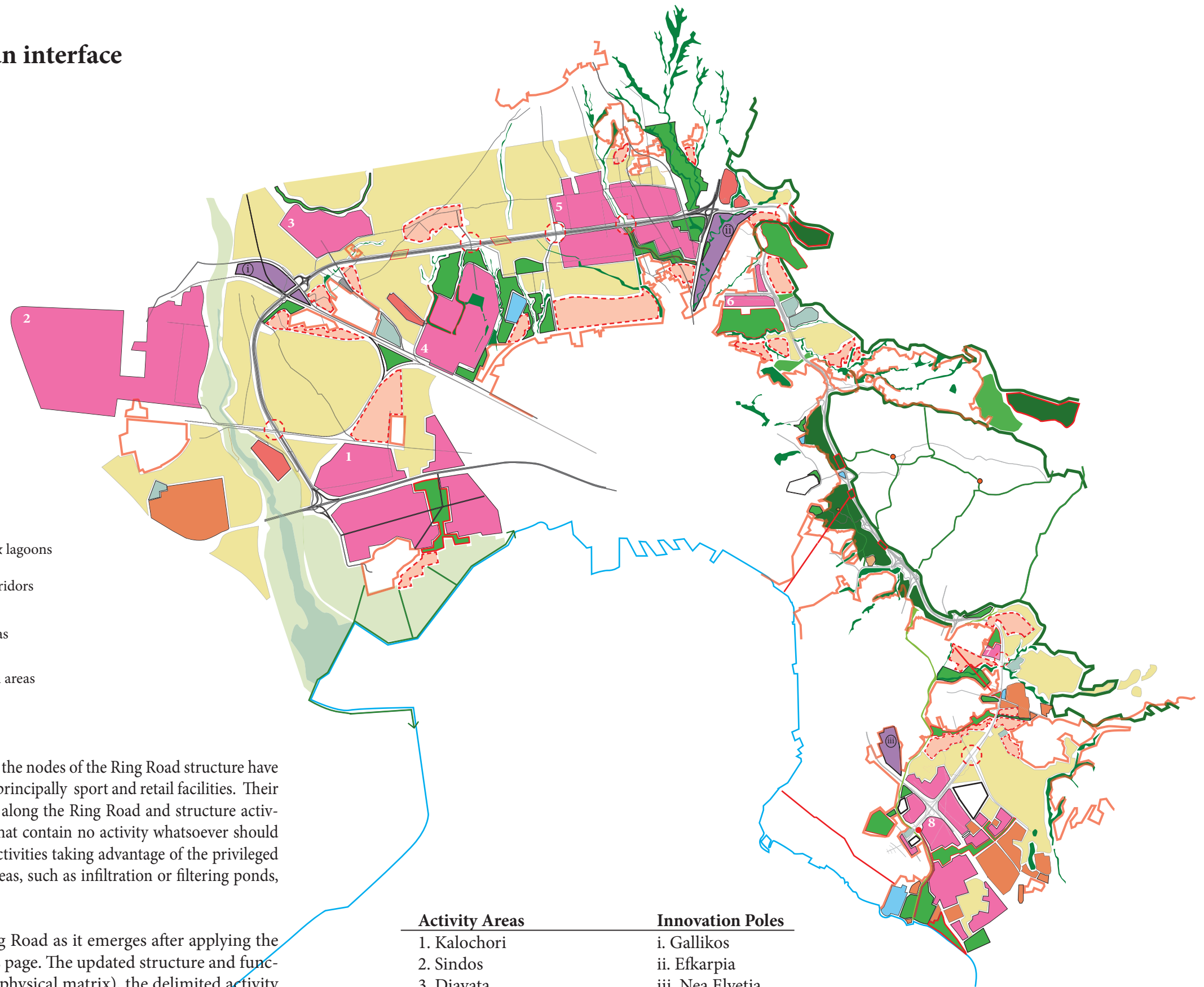
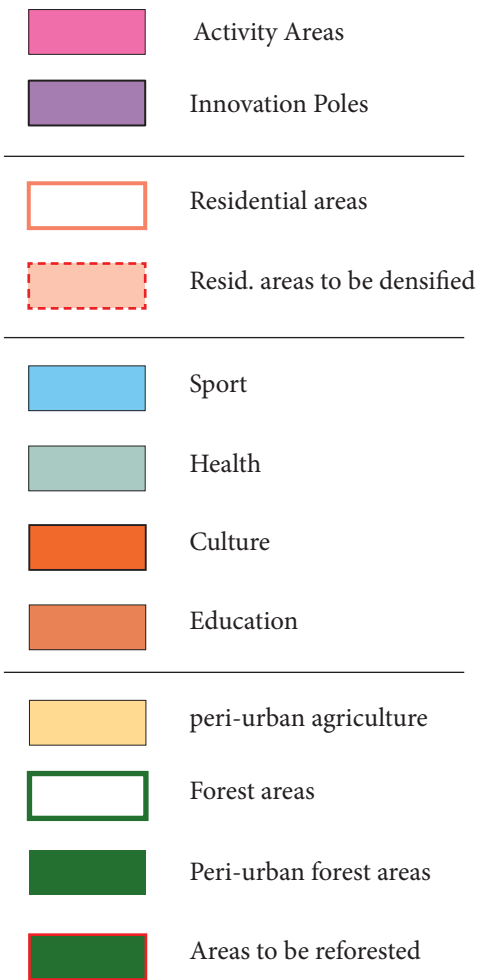
### B. Edge Activity

The second set of strategies refers to ways of achieving a vibrant and dynamic edge activity taking advantage of the latent potential of the local mosaic and the Ring-road structure. To achieve this two factors are taken into consideration: the diversity of types of activities and the intensity of each and the totality of the activities.

- **green buffer zones** : The creation of a green buffer zone established between the urban settlements and the highway. The principal function of this buffer zone is to reduce and control noise and atmospheric pollution caused by highway traffic, upgrade in landscape terms the adjacent Ring Road areas, reducing landscape impact of the infrastructure. On another level these particular edge areas could also be utilized apart from creating lineal green zones to accommodate light rail or bicycle flows along the peri-urban area.
- **regional health poles** : Create a series of regional health poles by taking advantage of the high accessibility that the proximity of the existing health installation have to the Ring Road, and to natural areas. The existing installations need to be supplemented by additional health units, satisfying regional patient needs and ensure direct and fast access to the Ring Road. With an addition of a minimum structure these health agglomerations can develop into key and dynamic health poles.
- **regional manufacturing & industrial poles** : structure and contain diffused secondary activity within the existing activity areas, updating and upgrading their functionality to modern standards and contemplating their resizing coherent to contemporary needs and conditions. The industrial area of Sindos could be the base example for reconverting the rest of these areas.
- **regional retail poles** : Structure well organized retail poles including big size as well as smaller stores and all diffused activity. These poles can offer advantages for the relocation of businesses with the offering of services, accessibility as well as high quality public / open spaces. At the same time the delimitation of these activity areas and the tidily relocation of diffused installations will reclaim vital agricultural land consumed by earlier urban growth processes.
- **voids reactivation** : These areas as seen can be summarised in two big areas: **i)** the old military camps and **ii)** the industrial voids. These areas considering the infrastructures and building stock that they contain can be ideal places for developing diverse and dynamic activities of a wide regional reach. They can for example provide the opportunity to create key green areas (patches) for the regional green structure and for upcycling / recycling industrial heritage with updated and contemporary uses, converting them to key activity poles.
- **repair local fragmentations by infrastructure** : Consider the elimination of surplus infrastructures to improve and repair the current fragmented state. Reconsider the accessibility of some of the key areas in terms of efficiency.
- **peri-urban agriculture** : The productive agricultural areas found in the peri-urban area of the city are critical reserves for the urban region and need to be recognized structured and serviced as such, giving an added value to these productive fabrics. An equally important question is to link current consumer and nutritional demands of the city of Thessaloniki with the regional agricultural and bio-productivity.
- **agricultural and natural land reclamation**: The establishment of delimited activity areas with the relocation of diffused activity and its concentration within these areas will aid in reclaiming previously consumed natural and agricultural land, and reconsider an integral restoration of the regional ecological structure.



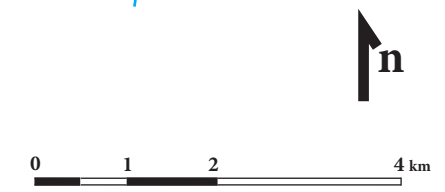
# The Ring Road structure as a peri-urban interface



- **dynamic and productive highway nodes :** As seen many of the nodes of the Ring Road structure have served as attractors of activities of different characteristics, principally sport and retail facilities. Their reconfiguration and upgrade can enhance existing activity along the Ring Road and structure activity patterns along its course. The existing highway nodes that contain no activity whatsoever should be reconsidered **i)** to host where possible human related activities taking advantage of the privileged access to the Ring Road or **ii)** host green infrastructure areas, such as infiltration or filtering ponds, pollution reduction vegetation etc.

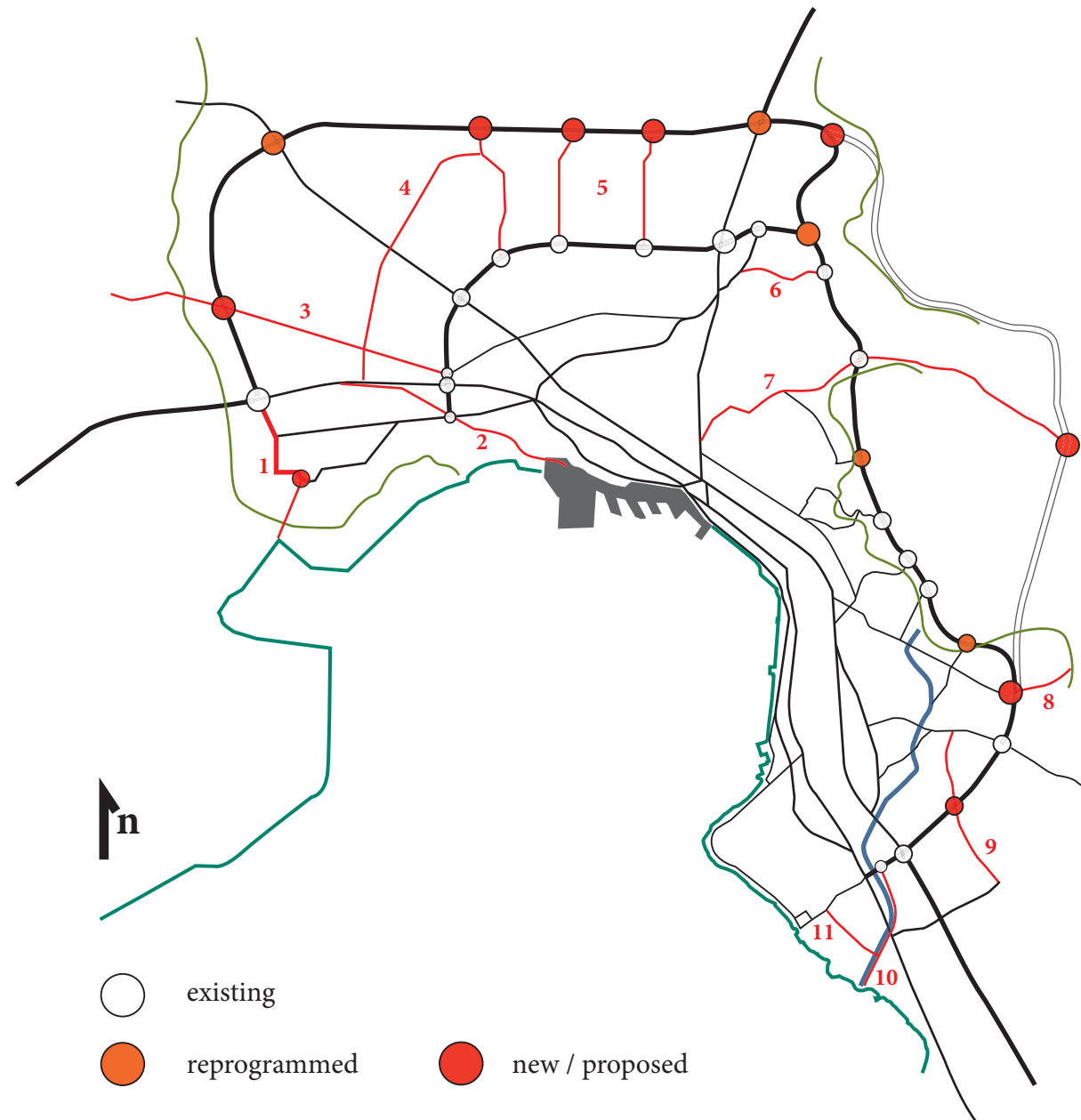
The final mosaic of the peri-urban area and along the Ring Road as it emerges after applying the formentioned strategies can be seen in the diagram on this page. The updated structure and function can also be seen along with the natural structure (biophysical matrix), the delimited activity areas and attraction / innovation poles. The Ring Road structure infrastructure is converted from a territorial pathology to an integrated an dynamic urban element. And from a peripheral edge zone it is reprogrammed into a vibrant and structuring urban-natural interface capable of managing urban growth and activities and dynamics in the peri-urban area. The next two pages demonstrate the individual parts and function of this mosaic in more detail.

Activity Areas	Innovation Poles
1. Kalochori	i. Gallikos
2. Sindos	ii. Efkarpia
3. Diavata	iii. Nea Elvetia
4. EKO	
5. Oreokastro	
6. Efkarpia	
7. Konstantinopolitika	
8. Pylea	





### Ring Road and hard mobility structure.

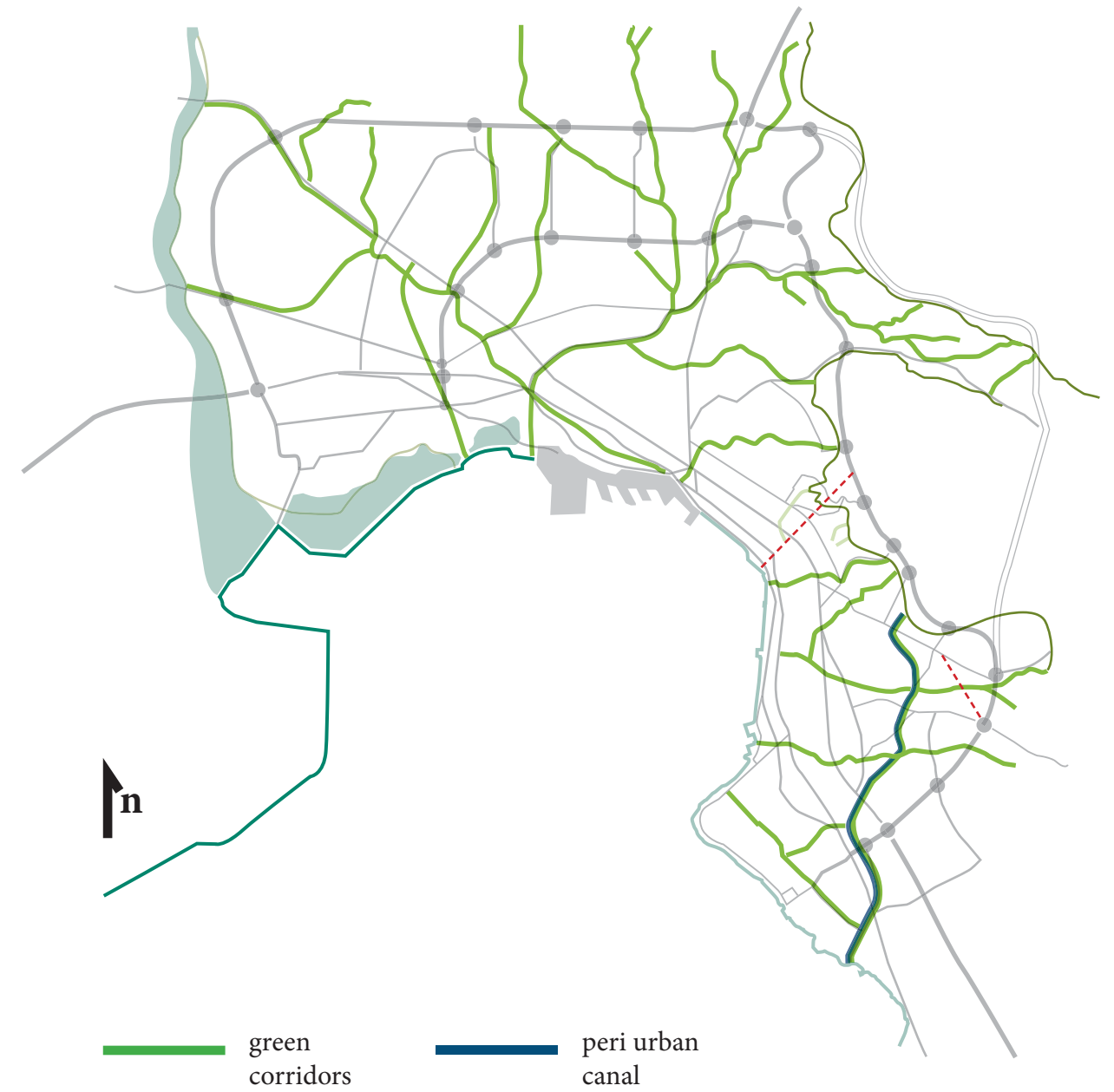


#### New / upgraded arteries

- |                                       |                                      |
|---------------------------------------|--------------------------------------|
| 1. Connection Kalochori               | 7. Thessaloniki-Retziki axis upgrade |
| 2. Port access                        | 8. Kipoupoli access                  |
| 3. Sindos-Thessaloniki axis           | 9. East West Pylea axis              |
| 4. Intermediate Ring                  | 10. Peri-urban canal axis            |
| 5. Exterior/Interior Ring connections | 11. Kalamaria - canal connection.    |
| 6. Karatasiou access                  |                                      |

The updated ring road structure seeks an increased relation and interaction between the two rings as well as other major urban arteries and the city’s seafront. The proposed structure aims to provide a coherent mobility matrix that in combination with public transport and light mobility can help restructure reactivate and reprogramme the peri-urban space. A series of new nodes are proposed to increase accessibility in combination with the upgrading of existing and new arteries to complete the connectivity and accessibility coverage.

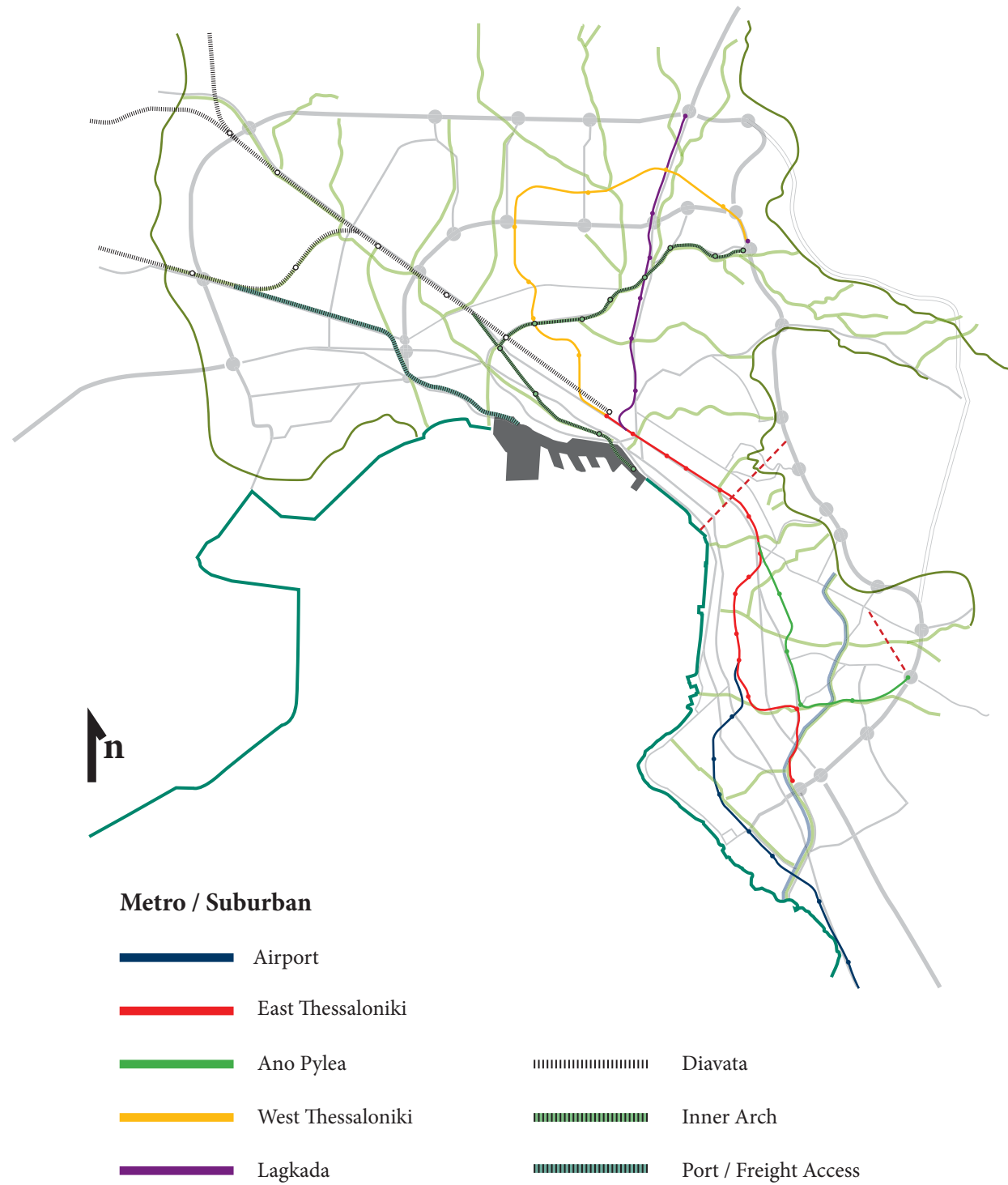
### Ecological structure and continuities



The peri-urban area holds a key role in preserving the natural functioning of the regional ecological structure by **i)** maintaining continuity of natural corridors on a regional scale and **ii)** preserving ecological connectivity of the urban area with the regional biophysical matrix and the immediate urban surroundings. The ring road as a key urban interface and emerging ecotonal area, is crucial in intelligently identifying the flows and dynamics and permitting transverse communication / interaction of natural systems. At the same time guarantee an increased synergic interaction between natural and anthropogenic systems, aiming in the increased resilience of urban and territorial ecosystems and a long term restoration and preservation of the ecological structure.

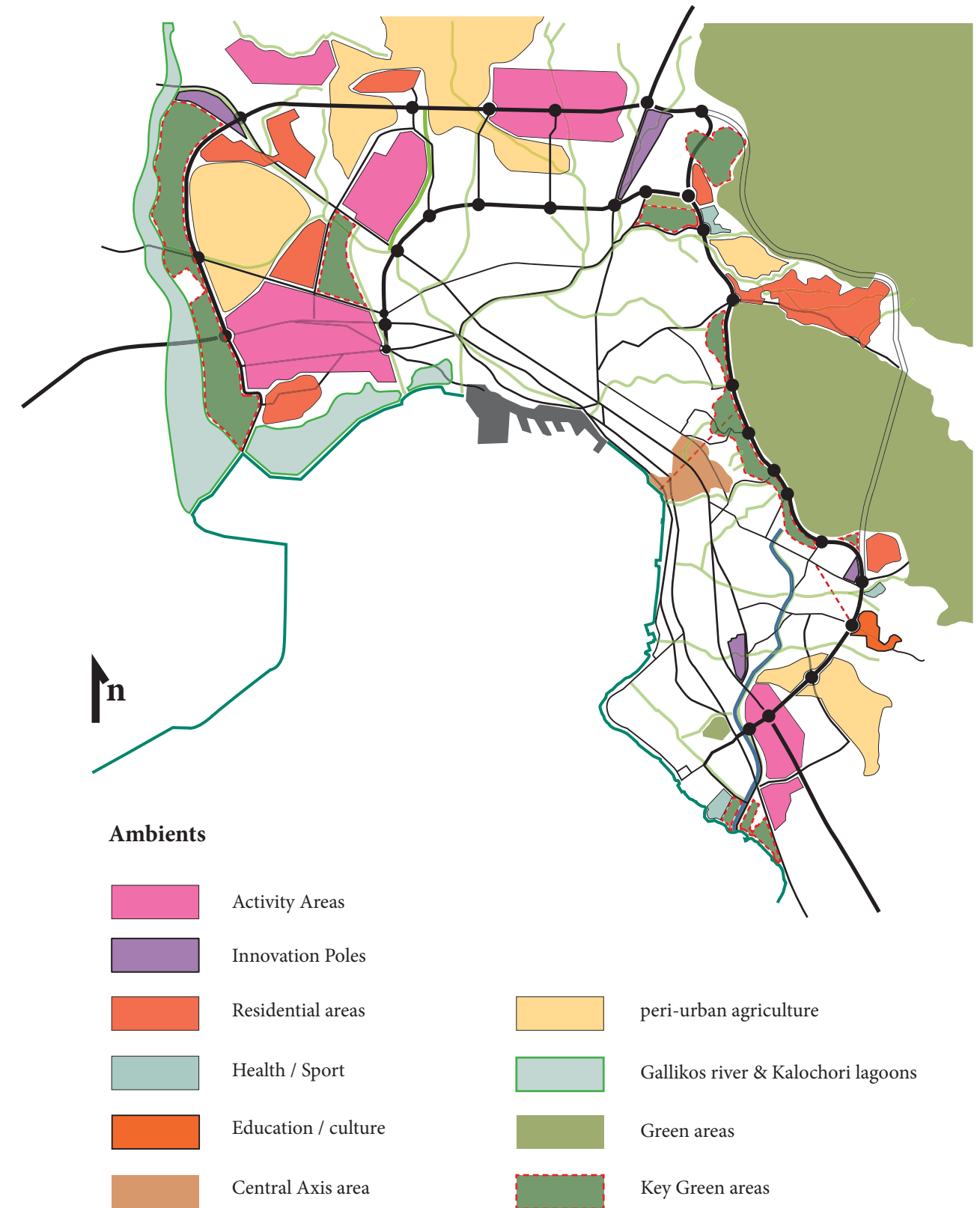


## Public transport network structure



The public transport system is another element that holds a key role in reprogramming the peri-urban areas and ensuring to a great extent a critical (in terms of intensity and size) edge activity that can reactivate these areas and support the development of the right kind of activities that characterize a dynamic periphery while at the same time retaining expanding sprawl. The metro system proposed is based on planned (and in construction) and proposed metro lines but is proposing certain alterations and extensions to cover the extended peri-urban area.

## Peri-urban environments / ambients



The diverse ambients for the proposed peri-urban area in relation with the Ring-road structure can be seen in the diagram above. A structured diversified and synergetic activity scheme is envisioned. A scheme that can retain urban expansion, putting a limit to the city while establishing a vibrant and dynamic edge activity.