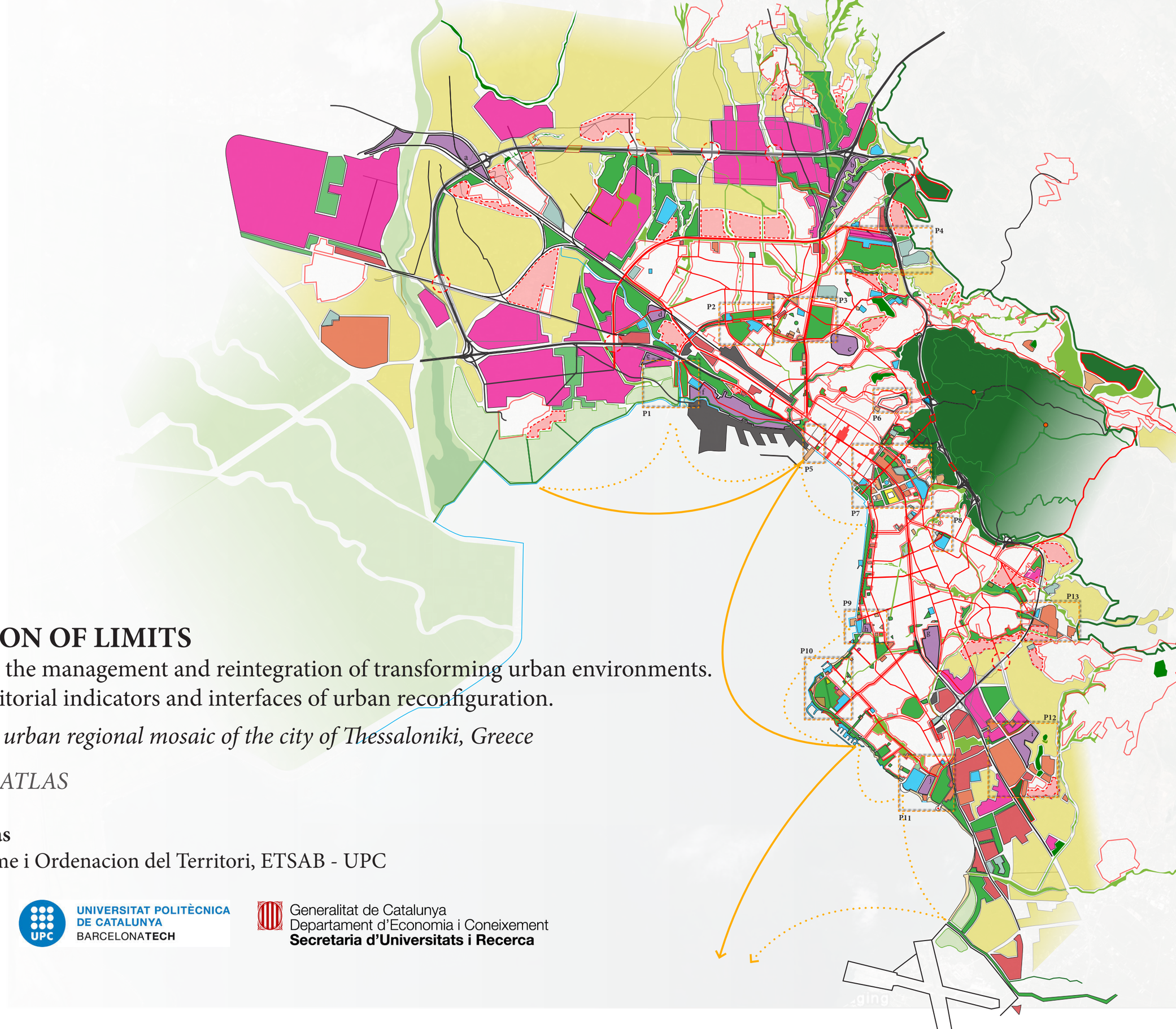


ON THE QUESTION OF LIMITS

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

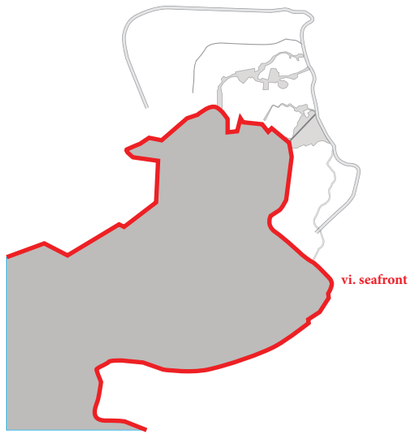
An applied study of the urban regional mosaic of the city of Thessaloniki, Greece

BOOK II - ANALYSIS ATLAS

Konstantinos Kourkoutas
Departament d´Urbanisme i Ordenacion del Territori, ETSAB - UPC

DUOT Departament d'Urbanisme i Ordenació del Territori
UPC UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH
Generalitat de Catalunya
Departament d'Economia i Coneixement
Secretaria d'Universitats i Recerca

location



vi. The Thessaloniki Bay Seafront

A natural limit & a regional structure

Top: Thessaloniki from the sea - June 13th 1852 . (source: National Map Archive)

The next analysis section will cover city´s waterfront , both the imminent, built and developed part, as well as the extended waterfront that is naturally delimited by the Thessaloniki Bay arc. Thessaloniki´s seafront has been the object of debate and the theme of numerous studies and competitions in the recent years of the modern history of the city, but despite the wealth of conclusions/points/observations and proposals produced , very few managed to materialize. Thus it presents an interesting research topic, on two dimensions, the morphological/morphogenetic involving the various processes present along the coastline and the organisational dimension that involves all projectual vectors and intends of organization of the formentioned space.

The purpose of this specific analysis will consider a series of corresponding objectives to have in consideration when performing the analysis:

a. Investigate and identify growth patterns and activity along the seafront

b. Investigate the coast formation processes of the past and present and the ways that they have conditioned activity along the coast and vice versa

c. Detect and analyse flows and dynamics along and close to the coast as well barriers and connectors that condition accessibility

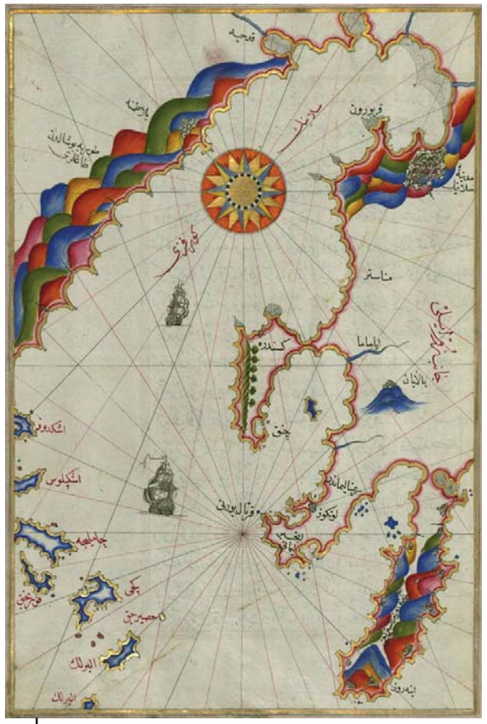
d. Identify areas of conflict (operational/social/ecological) as well areas of opportunity that can help restructure and revitalize the seafront

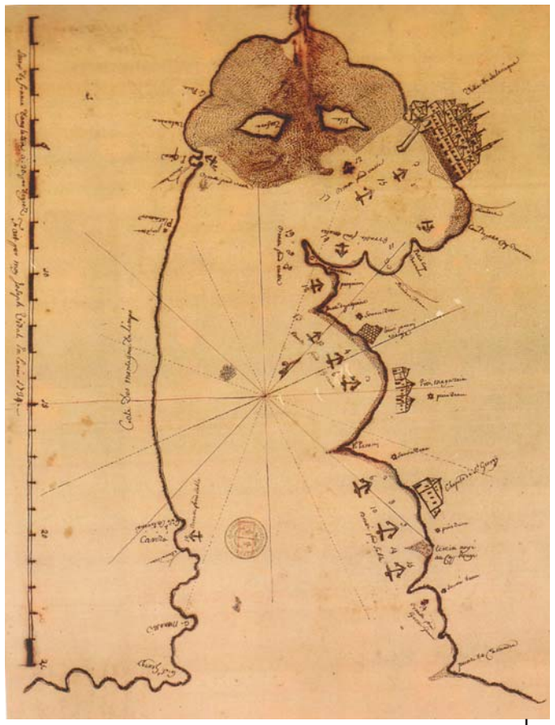
Accordingly in order to investigate the research objectives, the analysis scheme will have the following structure, covering an intrascale-interterritorial range.

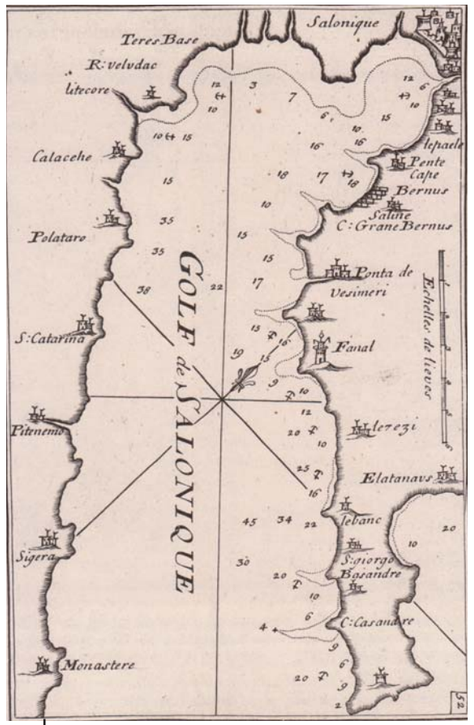
A. Thermaikos Gulf - general information and extended range analysis
B. Thessaloniki Bay - focused analysis
   i. Biophysical matrix
   ii. Habitability-Activity-Mobility analysis
   iii. Plans / Projects
   iv. Synthesis

The seafront comprises an important element for the regional structure in diverse ways. First as a landscape element and the reciprocal relation that the city develops with it; Second as an important ecotonal zone with magnified edge zone characteristics; Third, as a complex and sensitive hydrological unit, whose influence zone surpasses the strict city limits. Thus the corresponding investigation will help analyse the sea-city across a large extend while investigating in more detail the local level, the co-radial growth patterns along the bay and the resulting mosaic that emerges from these processes. The conditioning role of the coast morphology will be highlighted through the analysis and establish a historic relation/reflection in the sea-city relation realm. The results of this part, will be combined with the next part of the analysis of the urban road-ring structure to form a complete impression of the regional radial structure.

The Thermaikos Gulf in the cartography







1555 1600 1700 1734 1738 1764 1800 1810

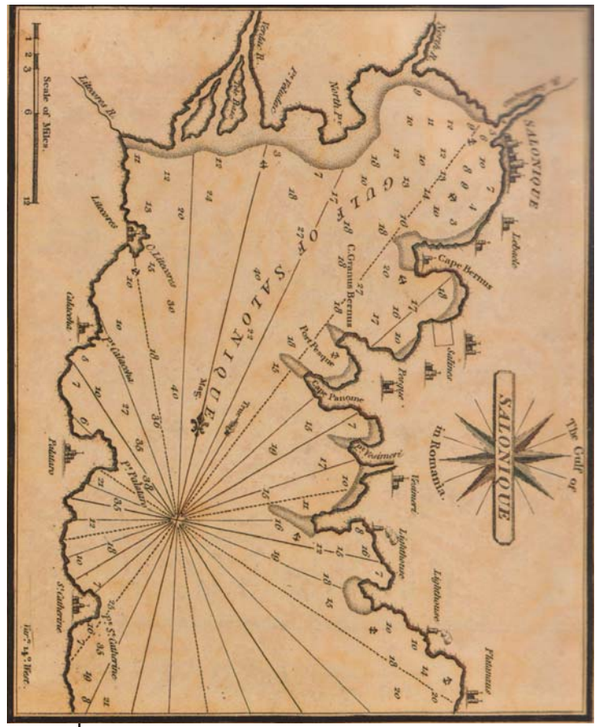
Illuminated Manuscript, *The Bay of Salonica* by Piri Reis from Book on Navigation, Walters Art Museum. Originally composed in 1525 CE and dedicated to Sultan Süleyman I, this great work on navigation was later revised and expanded in 1555 CE. The present manuscript was made mostly in the late 17th CE century.
(source: Walters Art Museum Illuminated Manuscripts)

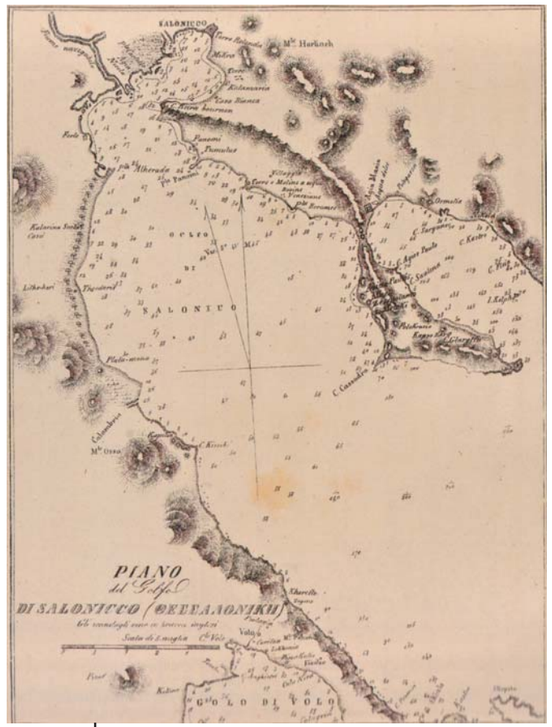
***Partie de gulf de Salonique* by J. Vidal.** Hydrographic map of Thermaikos bay. Thessaloniki is depicted a complex of towers and fortification, demonstrating its importance at the time. The map also shows the available ports/docks and an impressive depiction of the delta area of the Axios and adjacent rivers.
(source: National Map Archives)

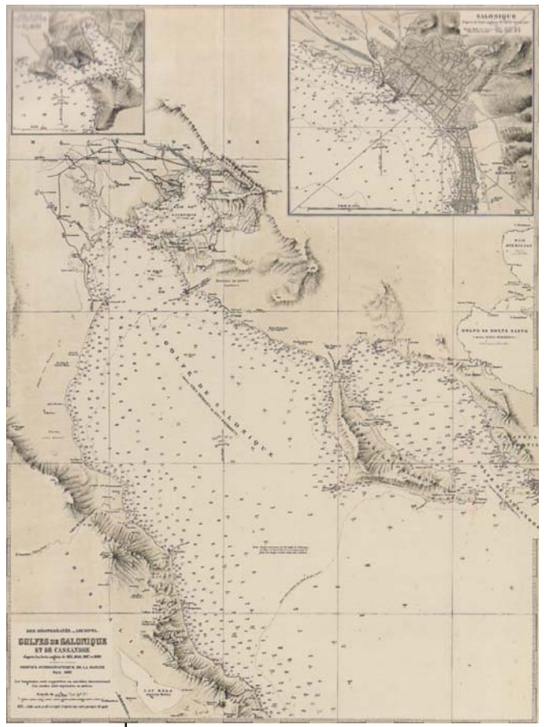
Plans du Gulf de Salonique. French Hydrographic Map depicting the Thermaikos and Thessaloniki gulf along with the principal coastal settlements and coastal depths. The city of Thessaloniki is depicted on the top of the map east of the extended estuary area, marked and written in such a way to stress its importance.
(source: National Map Archives)

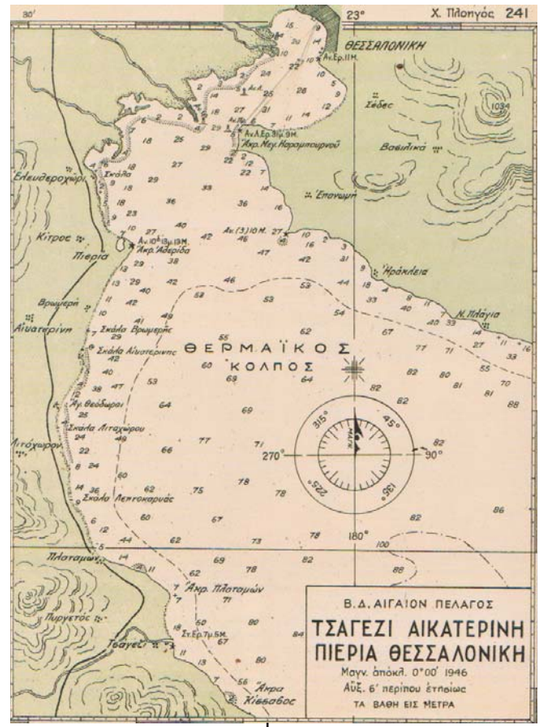
***Golf de Salonique* by Jacomo Alagna di Messina .** Map of the Thermaikos Gulf published in London, where Thessaloniki is seen on the top of the map, depicting clearly the seafront fortification of the city. The map also shows the names of the settlements and different activities taking place along the coast.
(source: National Map Archives)

The historic cartography available for the city of Thessaloniki and the Thermaikos Gulf, are mirrors of the historic journey, and evidence of its path highlighting its historical importance. These maps as scientific tools place the city of Thessaloniki in the geographical timespace and show the key position and power that the city hold for various centuries. This position is closely related to the Thermaikos Gulf, and the Thessaloniki Bay that forms a natural protected enclave, and thus renders Thessaloniki as an important city-port from early on in the history. The depiction of the city in the roman road map Tabula Peutingeriana[1], demonstrates this added importance that the city holds both in terms of its position in the wider Roman network, but at the same time in terms of size, activity and power. This placement of the city along important trade routes, such as the Via Egnatia or the gateways to the Balkan hinterland, helped maintain the positioning of the city throughout history, appearing in all sorts of different maps and periods[2]: Ptolemeic maps, Portolanos as well as consequent maps drafted by various travellers in the 15th-16th century. Starting in the 16th century the fist geodesic and topographic maps start to make their appearance, and the form and characteristics of the gulf become more defined and detailed. During this period a series of maps were drafted by agencies of various countries, representing the road and rail networks, the principal settlements with local toponyms, and often the local terrain and hydrological features. These maps provide useful and unique information about the changes in the coastline of the Thermaikos Gulf, and of the course of the important rivers. At the same time the urban grid of the city appears with more detail, and surpasses the historic walled part displaying the respective extensions









1871 — 1900 — 1935 — 1946 — 1950

No. 158 The Gulf of Salonique in Romania from *The New Mediterranean Harbours* by Michelot, Tofino, Bremond, Ayrunard, Galiano et. al. published in London. The city of Thessaloniki is depicted as a complex of Towers, stressing the importance of the city and its port.
(source: National Map Archives)

***Plano di Golfo di Salonicco* by L. Lamberti,** published in Livorno. Map showing a more precise and correct depiction of the coastline, The local geomorphology, adjacent to the coast, is also exaggerated to demonstrate its relation with the gulf. Other details (toponymy, natural features etc) are also displayed.
(source: National Map Archives)

***Golfes de Salonique et de Cassandre* by Service Hydrograpique de Marine**, published in Paris. French Hydrographic Map of the Thermaikos Gulf and Cassandra based on a 1893 map. The embedded map depicts the city of Thessaloniki in 1917. Apart it displays additional information on coast conditions, traffic networks, etc.
(source: National Map Archives)

Β. Δ. ΠΕΛΑΓΟΣ by Tsagezi Aikaterini, map of the Thermaikos Gulf published in Pieria, Thessaloniki. The map shows the expanded Thessaloniki urban cover as well as a numerous toponimia that can still be found today. It also displays information on the state of the coasts and coastal depths inside the Gulf.
(source: National Map Archives)

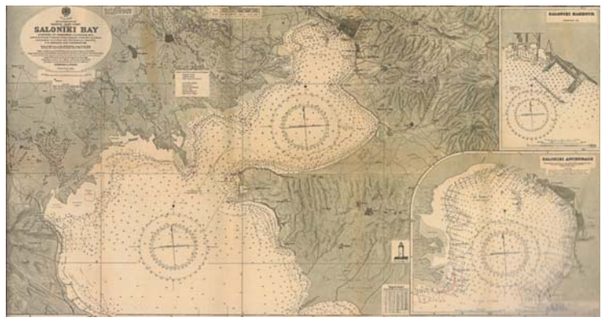
of the city and its respective spatial activity. Later on in the 19th century the evolution and the development of the major european centers created the need for detailed topographic plans of extended regions and with specialized measurements, a cartographic base that would help the planning activity achieve a better efficiency. This impulse also affected the Ottoman empire and the city of Thessaloniki, and in the second half of the 19th century, the local administrations began the drafting of important maps of large scales, employing various foreign topographers and engineers. In the posterior period, the city attracted the attention of cartographers in various occasion. The two world wars, and the arrival of great numbers of troops, also created the need for detailed depictions for informational and operational use. Also the 1917 city fire and the posterior new city plan, created an additional and urgent need to survey the burnt area for its rehabilitation and the exterior areas for the subsequent city expansions a envisioned by the planning committee. Nevertheless what remains evident of the cartographic exploration is the timeless link between the city and the sea, the pronounced geomorphology created by the Thermaikos Gulf and surrounding features. This aquatic element and the edge relation its has developed with the city has served as a conditioning feature for the forms and rhythms that the city extension has developed over the years.

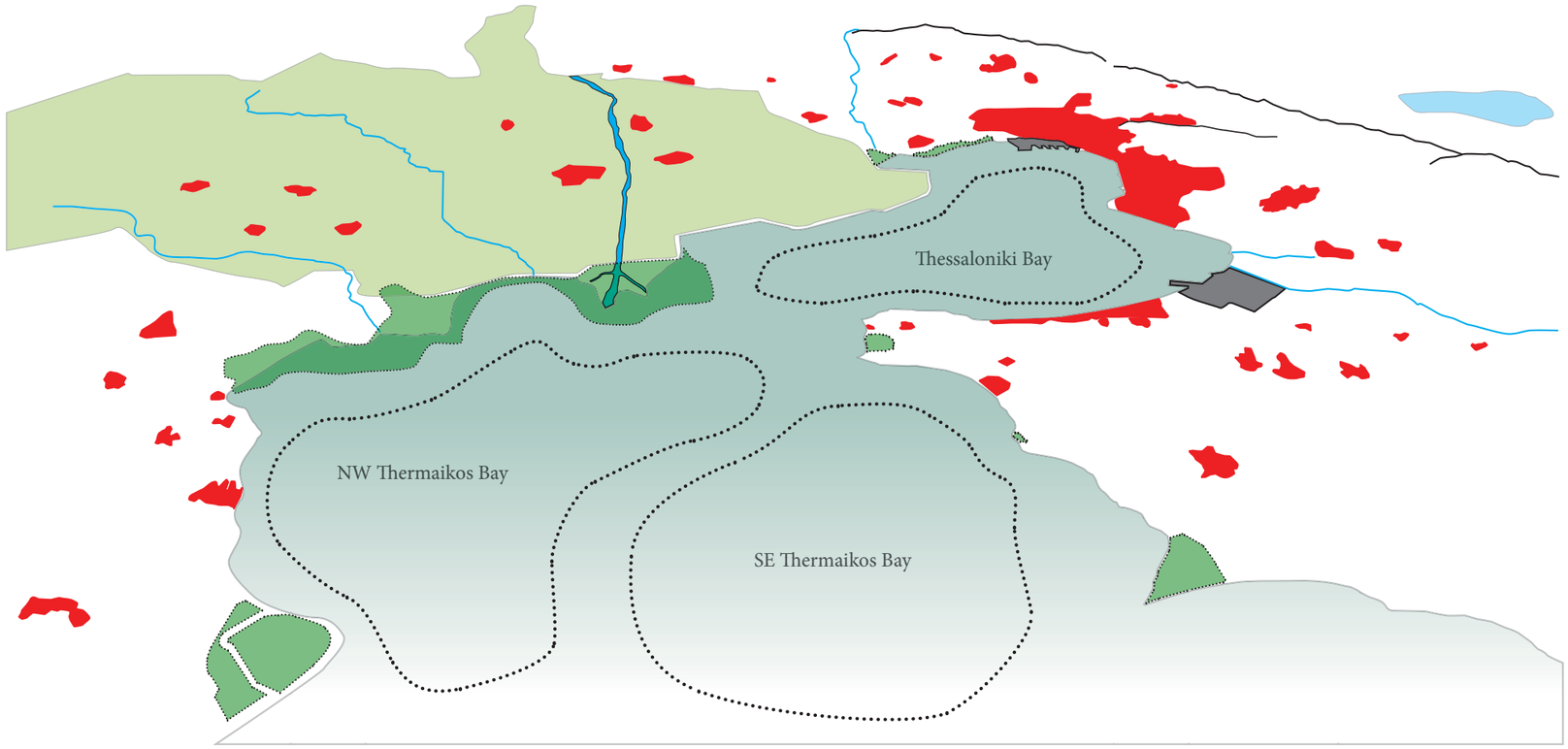
1, 2 : Savaidis P. " Θεσσαλονίκης Ανάδειξις - Χαρτών Αναμνήσεις" from: National Map Archive, 2008

From the Saport to Macedonia Palace hotel

Παραλία - *Seafront*

(image sources: left page, panoramio.com; right page. Giorgos Tsaousakis)





images (source: National Map Archives)
top: Color Post-card: *Salonique avec Macedoine Orientale*,1915, isometric aerial view of the city and the Thermaikos gulf, looking to the north.

bottom: *Saloniki Bay*, 1:40000, 1916 by Commander J. A. Edgell (British Admiralty). Map of the Thermaikos Bay, complemented by two additional maps, *Saloniki Harbour* and *Saloniki Anchorage*. Hydrographic map with sufficient detail of coastal conditions of the Thermaikos Bay, a less detailed depiction of the urban fabric but a quite accurate depiction of the city´s port.

top right: Schematic representation of the Thermaikos gulf showing the principal territorial elements and ekistic network.

3. Karageorgis et.al., 2005
4. Poulos, 2000
5, 6. Ghilardi et.al., 2007

i. Thermaikos Bay - Presentation and Analysis

The Thermaikos Gulf is a closed, shallow bay on the northwestern Aegean. Characterized by smooth bottom with low slopes and depths from 2 to 200m maximum, on the south side. The accumulation of sediment from the three major rivers that flow in has formed the sea basin and the geomorphology of the western and northern coastline[3]. The Thermaikos Gulf receives fresh water from the three major rivers (Axios, Loudias, Aliakmonas), draining a total area of about 35,000,000 acres. The average annual supply of freshwater that the Gulf accepted, according to historical data was 276 m^3/sec but the most recent measurements show a dramatic reduction in the amount of freshwater that reach the bay and now estimated to be approximately 130 m^3/sec.

The coastal zone of Thermaikos Gulf, hosting more than 1 million people, is the second most important socioeconomic area of Greece and one of the most important in the southern Balkans. The fertile deltaic Thessaloniki plain provides a variety of crops, while the coastal zone accommodates a large number of industrial, tourist and trade enterprises. The adjacent seas are used extensively for maritime transportation, fish production, and fish-farming, mostly mussels. The Thermaikos Gulf coastal area, as in the case of any coastal zone, forms only part of a broader geographical unit: The Thermaikos Gulf Coastal System. This complex geosystem consists of a variety of terrestrial and oceanic sub-units, covering a total area of some 52,300 km^2. Of this area, some 90% belong to the terrestrial sub-system and 10% to the oceanic sub-system. The coastal zone is regarded to consist of the lower part altitudes -75m of the terrestrial sub-system 2650 km^2 and the shallow part water depth -40 m. of the oceanic sub-system 1100 km^2; thus, its total area of 3750 km^2 represents only 7% of the whole system.

History of Thermaikos Gulf

Before about 24,000 years the area of Thermaikos Gulf was dry land and the sea level was at todays isodepths of 120 to 150 m, roughly where today Posidi in Halkidiki and the Kokkino Nero, south of the mouth of the Peneus are located. The basin of the Thermaikos Gulf was dry drained by the rivers of Axios, French, Aliakmonas and Moglenitsas in Almopia[5].

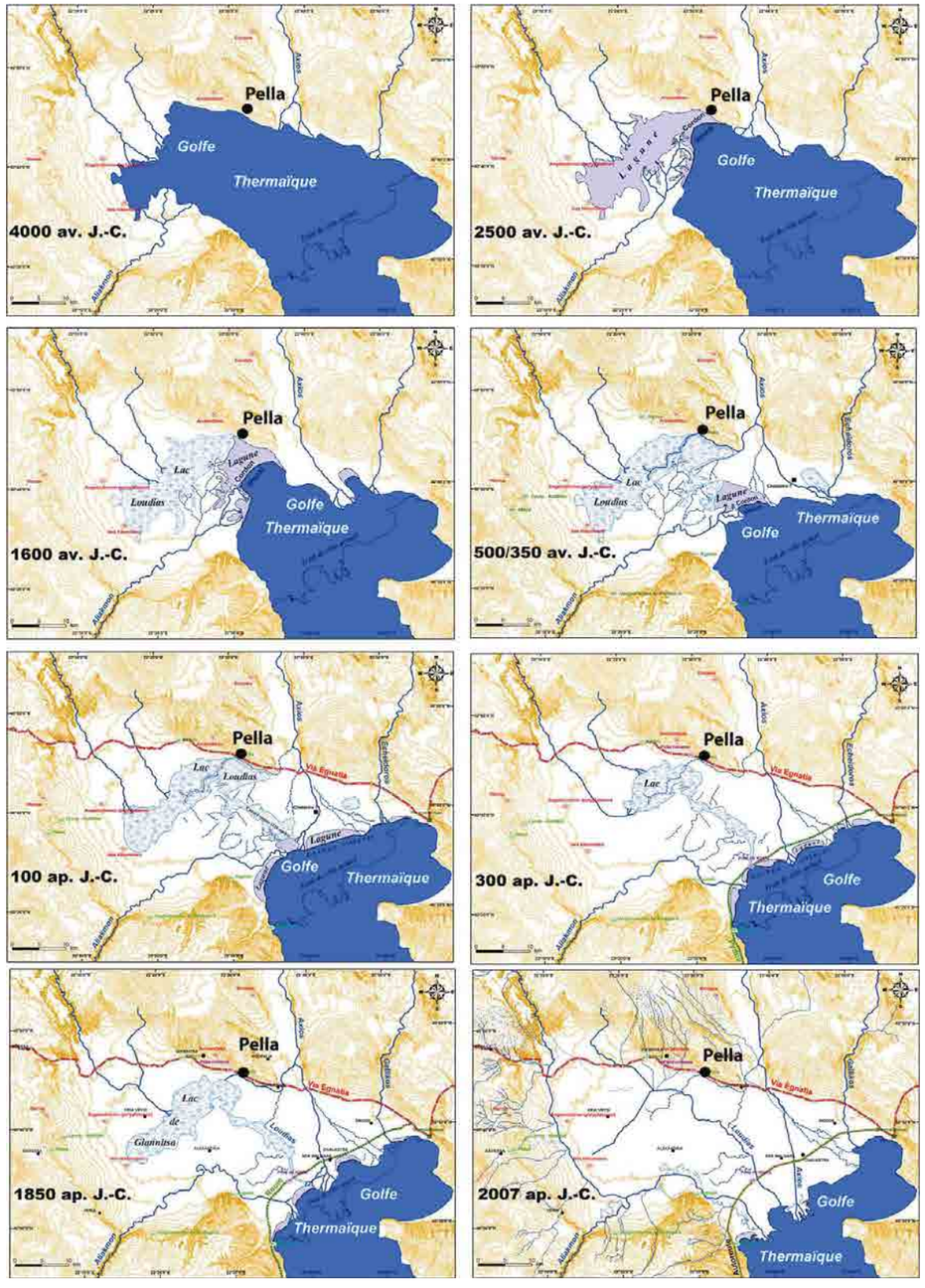
Before 18,000 years, with the melting of glaciers the Holocene, the bound water returned to the sea. The sea levels began rising, which penetrated to the north inundating the depth of Thermaikos and the lowland basin of Thessaloniki - Giannitson all the way north to the foot of the mountains. Historical data from the 5th BC century show the rapid evolution of the deltaic system of the four rivers. At that time the cities Skydra and Pella were coastal, when today the city of Pella is located about 30 km from the coast of Thermaikos[6]. The estuary area moved significantly and at the new river mouths began the rapid sediment deposition. The Axios and the French rivers formed an extensive delta between Thessaloniki and Yannitsa.

Within a few hundred years, the delta of the rivers Axios, French and Aliakmonas joined creating a new land strip that divided the Thessaloniki Bay. The interior part was first transformed into a lagoon with brackish water and later, when cut off completely from the Thermaikos, was transformed to a swamp. Historical data indicate that the coastal city of Pella had been cut off from the coast as early as 1st AD century. Gradually the alluvial lake of Giannitson or Loudias was created. Later the lake was turned into a shoal with drain voltages of the Thermaikos Gulf. Furthermore, the rivers forcefully opened new beds across.

In the 1920's a number of communities were established in this plain and the delta, mainly to accommodate refugee settlements. It was then realized that a major part of the plain, comprising swamps, lagoons, small lakes and river flood planes was highly vulnerable to flooding. As a remedy, extensive anti-flooding construction works were made, mostly between 1927 and 1934 and shortly before 1950; especially barriers along the riverbeds and water divergence channels. The aim of the latter was to dry the swamps and to protect the Thessaloniki harbour from silting. A major part of this project was completed by the "The Foundation Company of New York", and was based to an extensive leveling network covering the whole of the plain[7]. These works still control outflow of rivers, but since the 1980's they were supplemented by additional works. The aim of the latter was a further protection of the plain and land reclamation near Kalochori, in the vicinity of Thessaloniki (SE part of the plain). This last area is mostly below sea level and very unstable: it was repeatedly covered by sea, snowmelt and rain water and its major part remains dry thanks to a number of coastal barriers and pumping, while a part of it was lost under the water[8].

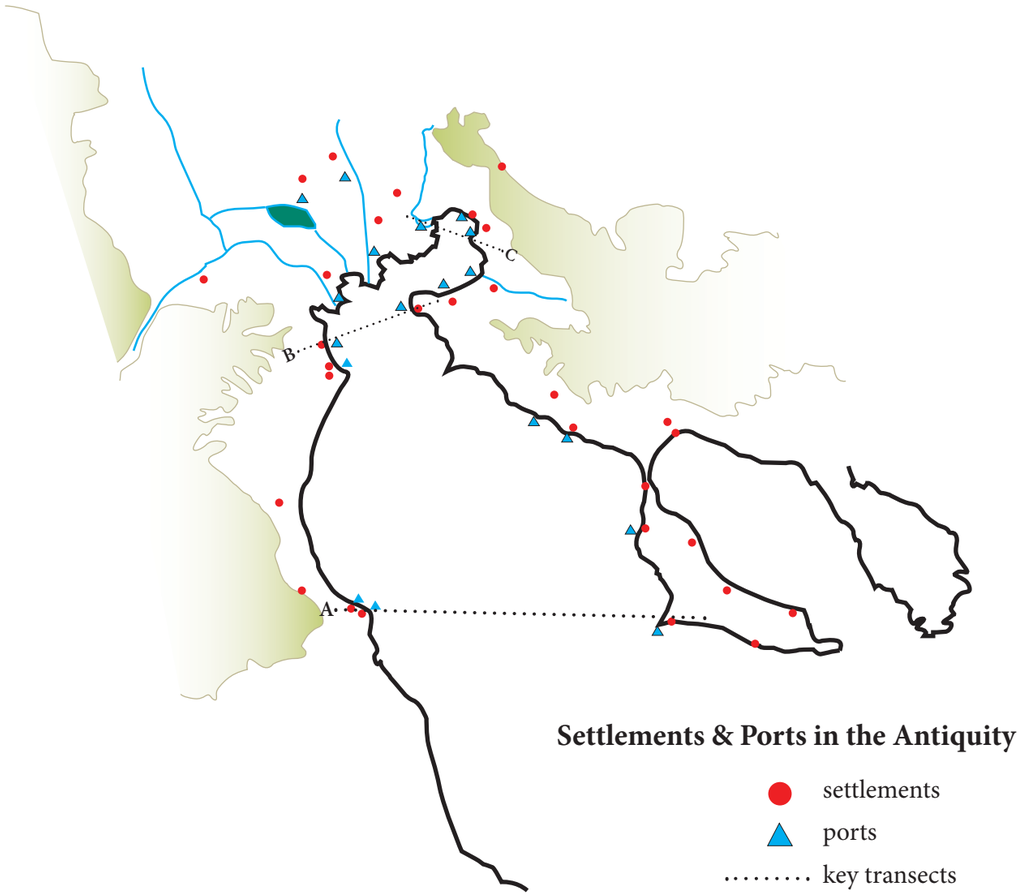
In the early 20th century, the lake of Giannitson was drained and was attributed to agriculture use. At the same time an artificial channel that carried the waters to the Thermaikos was opened which is the current Loudias River. Alongside the river of Moglenitsas was diverted and joined the riverbed of Aliakmonas. The constant shifting of the riverbeds, changes in the coastalfronts of deltaic formations and the torrential character of their flow, created a new and extensive fertile valley and the largest delta formation of the country[9].

The last fifty years the reduction in water supply and sediment discharge from all rivers led to the eventual retainment of the deltaic evolution. This phenomenon is more noticeable in the old mouth of the Axios and Gallikos river where an area of approximately 90 sq. km has experienced a respective settlement[10].



Palaeogeographic reconstruction of Thessaloniki Plain from Neolithic period to the present-day.
Panel 4000 B.C.: the actual plain of Thessaloniki is occupied by a large marine gulf. This period corresponds to the maximum shoreline extension during the last post glacial sea level rise. Panel 2500 B.C.: the bay starts to be infilled by terrestrial deposits coming from Aliakmon and Axios rivers mainly. The rapid growth of their respective deltas created some levee gradually transformed into natural dams and lagoon—brackish environments around the margins of the bay. Panel around 1600 B.C.: the novel feature of the plain is the appearance of a lake, confined to the western part of the bay. In the area of the Ancient Pella, at these times, shallow marine conditions appear. Panel 4th century B.C.: the Aliakmon and Axios deltas grow in size. The probable narrowing of the bay happens during this epoch: the junction between the two main rivers draining the plain is not efficient, but there is a very small strait which permits the passage of boats until Pella. Panel around 300 A.D.: gradual silting up of the harbour of Pella and the lacustrine occupation. Panel 2007: morphology of the plain nowadays and the dried-up plain.
source: Ghilardi, M. (2008)

7, 8. Psimoulis et. al, 2007
9. Ghilardi et.al., 2007
10. Poulos et. Al., 2005



original map source: Archaelogical Museum of Thessaloniki, 1998

Thermaikos Bay Analysis

The sea was a intrinsic part of the ancient Greeks' idiosyncrasy. The importance of the sea as a natural and geographic element as well as a key criteria for spatial perception, differentiation and location. The sea-land limit served as the reference line, intercepted and defined by the rivers and their estuaries as perpendicular mark-lines. Accordingly two distinct words were developed in the vocabulary to describe the seafront situation: the word **παραλία** (seafront) and **μεσόγαια** (media-terra). The first word came to describe the viewpoint of a person observing the seafront, its continuous coastline with its variations. It provides a concept of the perspective and the relations between people and landmarks. The second, on the other hand, goes beyond the concept of the coastline and the horizon, to describe the adjacent space where people live and act on a permanent basis; It provides the space for inland mobility and the development of contacts and relations between the people.

The ancient ports are a characteristic landscape of the ancient Greek cities that seem to be directly linked to the favourable geomorphology, accessibility, technology advancements, the historic condition and the ambitions and strategy of each city in relation with its surrounding space and ekistic development. Ports can be generally divided into *natural* and *artificial ports*, based on their origin and initial coastal conditions.

Consequently depending on the use of the port they could be divided into three type:

i) shelter ports
ii) trade ports
iii) military ports and
iv) combinations of the above.

Accordingly based on the coast morphology they can be described respectively (*open to the sea, closed, lagoons, river estuaries*). The principal conditioners are the access of the settlements to the seafront, the occupation of key geographical sports (capes, hills), sailing needs, and regional economy and trade.

The Thermaikos bay in the antiquity

The ancient geographic areas that enclosed the Thermaikos bay from the east to the west are the following[11] :

a. the peninsula of Chalikidiki, with the sections knows as Pallini (Παλλήνη), Bottiki (Βοττική) and Krousida (Κρουσίδα).

b. the valley of the Anthemountas river, west and south of the Kissos (Chortiatis), Kalavros, Vavdou and Cholomontas mountains

c. the area of Migdonia (Μυγδονία), the section from Anthemountas river and all the way to the Axios river, west of the Kissos river.

d. the Bottiaia (Βοττιαία) of lower Macedonia, that included the area between the Axios and Aliakmonas river, west of the Vermio mountain and south of Vora and Paiko mountains.

e. Pieria (Πιερία). that extended from the Aliakmonas river to Pinios river, east of the Olympus mountain.

These coastal areas of the Thermaikos bay were the setting for important historic events and for the development a long and continuous activity under different conditions and dynamics. One key transformation process was the creation of colonies along its coast in different historic phases. Such was the colonization from Evia (Sani, Mendi, Methoni) or from Corinthos (Potidaia). These colonies served under the influence of the Athenian kingdom till they were conquered progressively in their entirety by the Macedonia kingdom. This marked a key strategic takeover of the sailing infrastructures of the bay with the all its key locations for sailing, trade, economic and military elements. The different settlements that developed throughout history showcased different characters and activities from sailing ports/stops, trade with the inland, strategic military installations, religious and political centres. Most of these coastal or close to the coast cities had ports or port cities to cater to their needs.

A different classification can be made in terms of geophysical & spatial distribution of the bay based on the three following transcects (see diagram on left page).

A. Exterior. Mendi and the cape of Posidi to the east and the river Pinios on the west

B. Middle / central. The Megalon Emvolon cape, where the settlement of Ainia was located, on the east and the river of Aliakmonas, close to the ancient settlement of Methoni

C. Interior. The Karampournaki cape, that served historically as Thermi´s port, and on the west the river of Echedoros (Gallikos) in the Sindos area.

This conceptual classification helps explain the historic events that marked the development of the area, such as the ekistic development, trade and communication routes, military maneuvres and sailing activity.

11, 12, 13. Archaelogical Museum of Thessaloniki, 1998

Principal Settlements

The principal settlements that developed around the bay are described in continuation and can be seen in the adjacent diagram[13]:

1. Mendi (Μένδη): A renowned port-city from prehistoric times, south of the contemporary village of Kallandra that served as a port, wine-making and the temple of Poseidon.

2. Sani (Σάνη): Key port settlement with a clear control of the horizon, served as a key and strategic spot for sailing and trade as early as 8th century BC and all the way to the byzantine era. Also location of the temple of Artemida, located by the sea.

3. Potidaia (Ποτίδαια): A Corenthian colony that was established in the 6th century BC and developed a rapid development due to its strategic position on the thinnest point of the Palini Peninsula joining the Thermaikos bay with the Toronaiou bay in the east. The isthmus served not only for the safe passage of ships but also for their transport from one side of the peninsula to the other even before the canal was opened. The city was destroyed by Phillipos B in 432 BC. and refounded in at the end of the fourth century BC by Kassandros under the name of Kassandreia. Its strategic position was later highlighted through the roman and byzantine eras.

4. Veria Chalkidikis (Βέροια Χαλκιδικής): Intermediate port city with a strong nautical activity. Served as point of departure for the transverse connection with Pydna, from the east to the west coast of the Thermaikos bay

5. Antigonia (Αντιγόνεια): Neighbouring city to Veria, founded in 3rd century BC in a short distance from the coast that survived through the hellinistic and roman period.

6. Ainia (Αίνεια): The ancient port-city of Ainia was situated in the Megalon Emvolon, in the area between Aggelochori and Nea Michaniona, at the beginning of the coastline of Chalkidiki. The settlement was also one of the one chosen by Kassandros to form the city of Thessaloniki in 315BC. The city always holded a strategic position for the Thermaikos bay´s entry/exit with an important role for the sailing routes and the control of the flows in and out of the bay, and site of the temple of Aphrodite, protector of the sailors.

7. Anthemous (Ανθεμούς): The city was located in the valley of the Anthemountas river, somewhere between the modern town of Galatista and the city´s airport, and was absorbed in 315 BC. in the creation of the city of Thessaloniki.

8. Dikaia (Δίκαια): A small settlement located between Ainia and Thermi a short distance from the coast that ceased activity after the 5th century BC.

9. Thermi (Θερμη): The port of Thermi in the archaic and classic era (6th-4th century BC) served as the principal port for the region and gave its name to the wider area. It served as a key port throughout history all the way to 315 BC when it joined along with other settlements the formation of the city of Thessaloniki.

10. Thessaloniki (Θεσσαλονίκη): The city was formed in 315 BC when Kassandros founded the city by joinning the city of Thermi along with 25 other settlements, in a single city. Thus successor to the city of Thermi was the city of Thessaloniki with its port. .Starting in 315 BC when Kassandros constituted it as the metropolis of Macedonia, property which has maintained up to this day due to its strategic position and principally its port.

11. Sindos (Σίνδος): In the vicinity of the modern era Industrial area of Sindos resided the settlement of Sindo with traces all the way to the prehistoric times and all the way through the hellenistic and roman era. It peak time was in the archaic era (6th-5th century BC) with an intense metal working activity. The Echedoros river (now Gallikos river) was strongly connected with the city and the gold processing activities.

12. Chalastra (Χαλάστρα): The settlement of Chalastra was mentioned in ancient texts being located downstream of the Axios river. The city historically served as control for the axios river and its estuary area.

13. Ichnai and Pella (Ιχναι και Πέλλα): Herodotes mentioned that the cities of Ichnai and Pella were coastal areas in the Thermaikos bay. The foundation of the city also served as the designation of the Macedonian kingdom due to its contemporary strategic location, offering easy access to the sailing and trade flows of the bay. The alluvial deposits eventually blocked off and the port activity eventually diminished.

14. Aloros (Άλωρος): The city of Aloros was known in the classical, hellenistic and roman times as coastal settlement in the orifice of the Aliakmonas river whose port later decayed due to the alluvial deposits that blocked off the port.

15. Methoni (Μεθώνη): The city-port located on the west coast of Thermaikos between the Aliakmonas river and the city of Pidna was probably formed in the 8th century BC and served as a critical port station for sailing boats as well as trade until it was destroyed in 353 BC by Phillipos B.

16. Pidna (Πύδνα): The city port of Pidna was known for its trade activity and as a sailing stop, dotted with special installation and fortifications. It was located in the area of Makrigialos Pierias, and was one of the most prominent cities up to the arrival of the romans. In the post-roman era, the city of Pidna was replaced by the city of Kitros.

17. Herakleion (Ηράκλειον/-α) : The city of Herakleion was the southest point of Macedonia before the Pinios river. Its historic continuity can be seen both in the mycenaean ruins on the feet of Olympus as well as the post roman settlement of Platamonas.

This brief overview of historic activity along the bay will serve as a historic layer when analysing the contemporary conditions. It also serves as a testimony of the rich and continuous activity in the area and the relations, dynamics, relics, monuments and landscapes that they have created. The next section will examine the current conditions in the Thermaikos bay, before zooming in the Thessaloniki bay.

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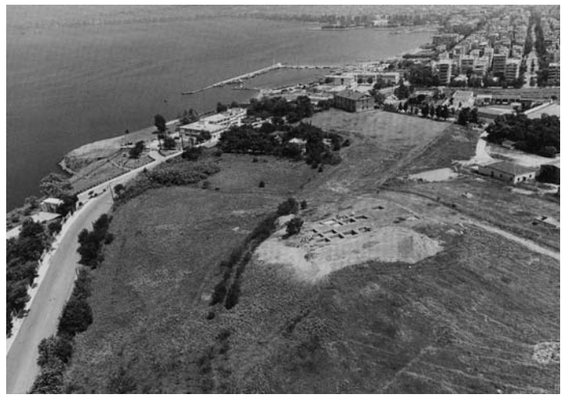

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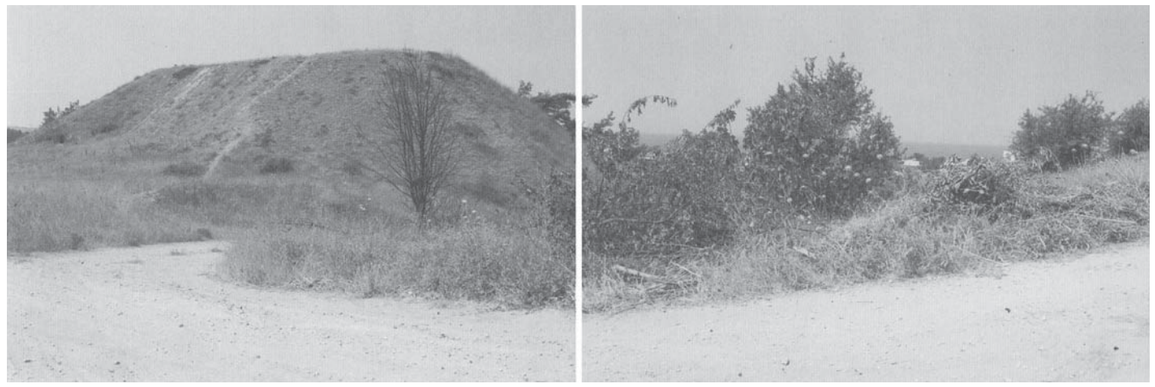

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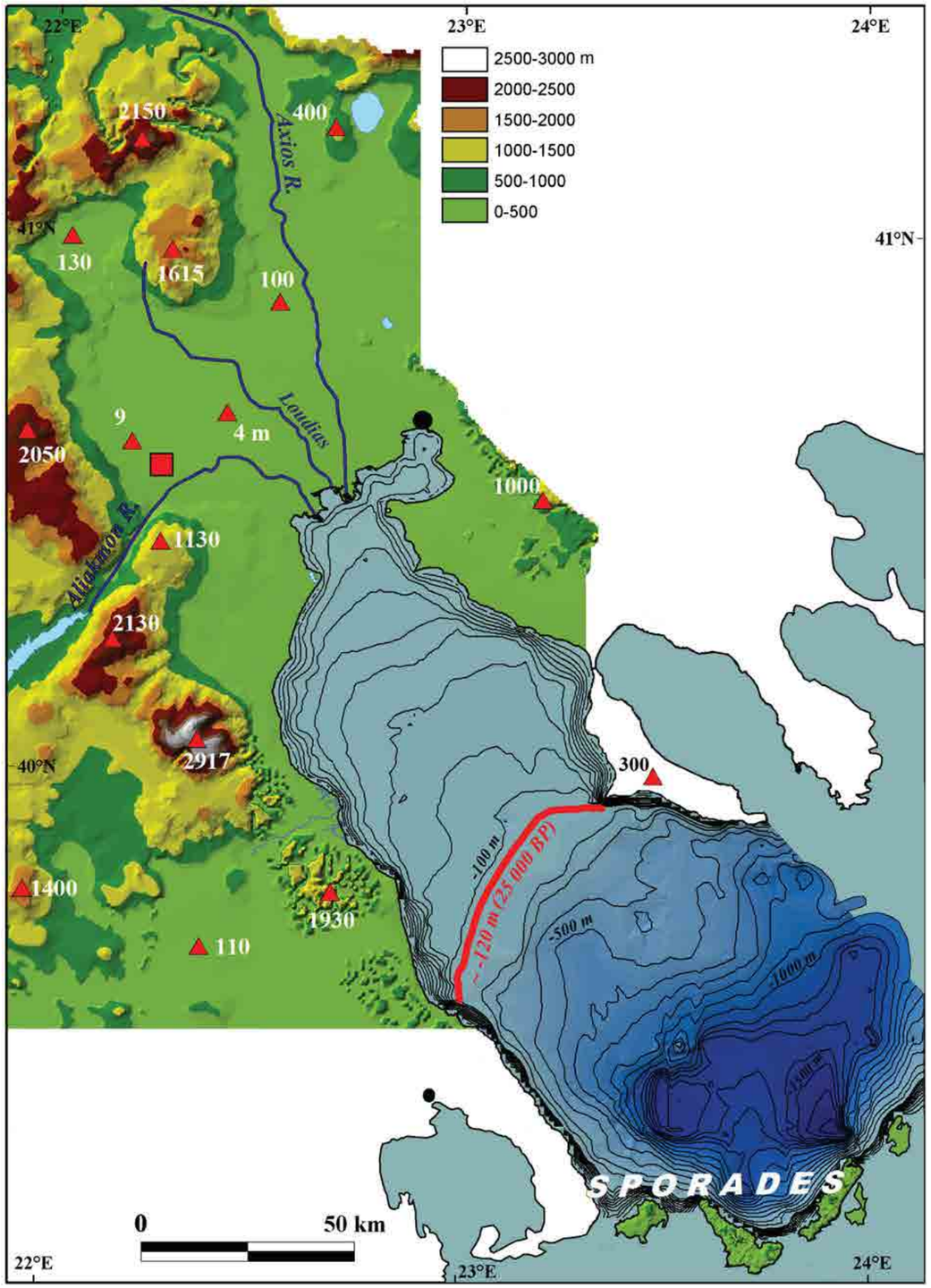
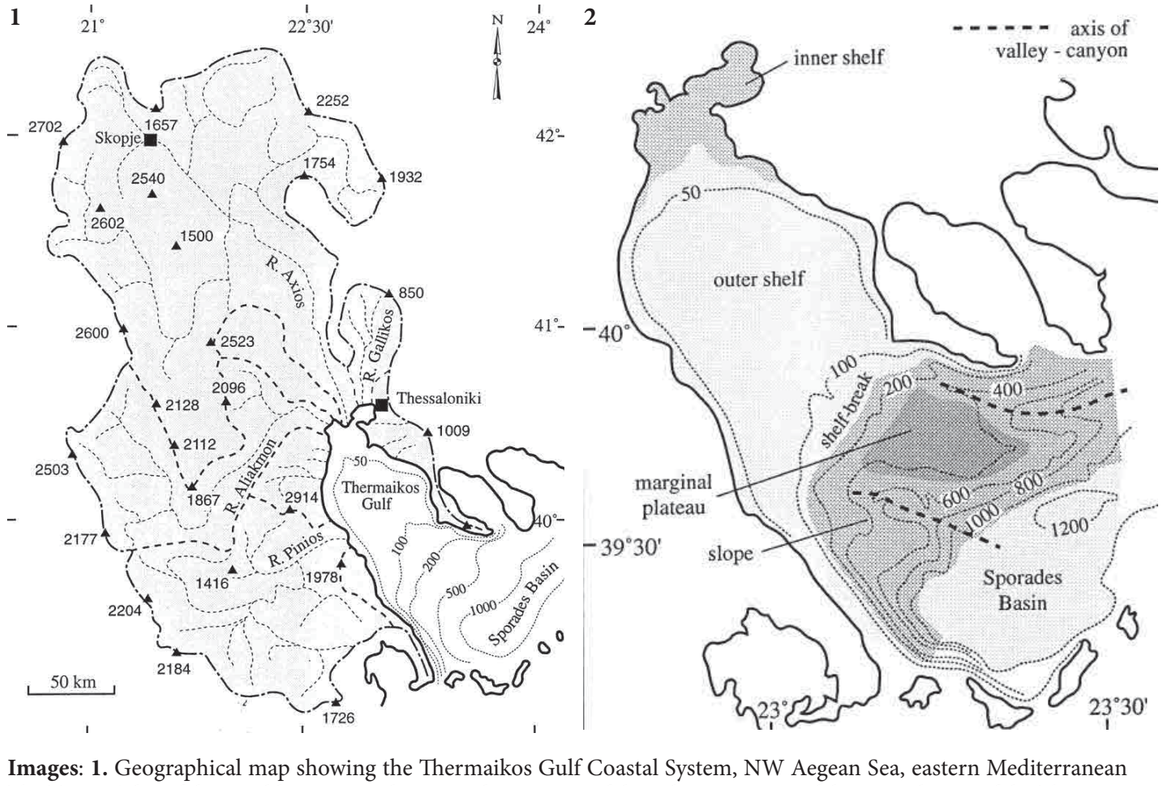
Prehistoric settlements and Toumbas (Τούμπες)

i. The Toumba of Thessaloniki **ii.** Archaelogical site in Karampournaki with the old cape visible on the left **iii.** Fener & Platia Toumba in Plagiari **iv.** Toumba Kritsanon in Epanomi **v.** Trapeza in Karampournaki **vi & vii.** Toumba in Neoi Epivates **viii & ix.** Tampia Toumba in Nea Michaniona **vii.** Fener & Platia Toumba

(photos´ source: **i.** Babis Papaioannou & History Centre of Thessaloniki, **ii.** Georgios Tsaousakis **vi & viii.** Kostas Soueref **rest.** Theofilos Stoupiadis)



Location map of the study area. Elevations were derived from the Shuttle Radar Topography Mission (SRTM) dataset and bathymetry was inferred using results from the METROMED project (Lykousis et al., 2005). These data have been included in a Geographic Information System. The palaeo-shoreline (25 000 BP) reconstruction is after Lykousis et al. (2005).
source: Ghilardi, M. (2011)



Images: **1.** Geographical map showing the Thermaikos Gulf Coastal System, NW Aegean Sea, eastern Mediterranean The Times Atlas of the World, 1994, **2.** Physiographic regions of the subaquous part of the coastal zone of the Thermaikos Gulf Coastal System after Lykousis et al., 1981.

Biophysical Characteristics of the Bay

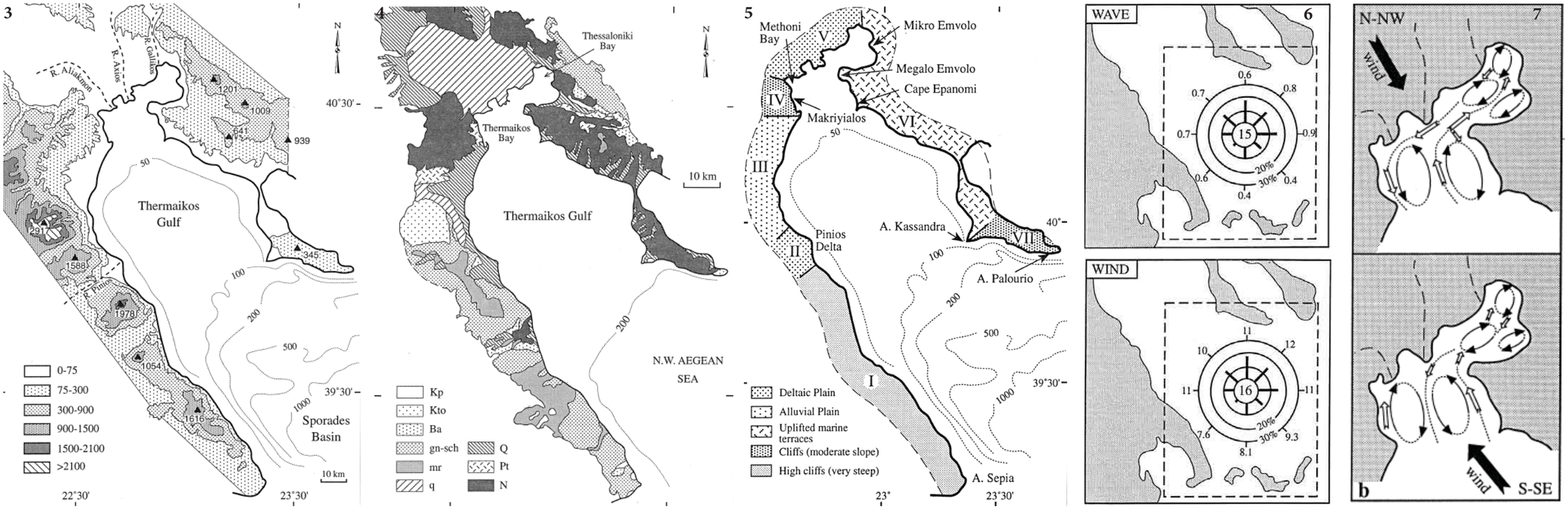
The length of the associated bay coastline exceeds the 350km. To the west, especially the southwest, the coastline is bounded by high mountains with altitudes up to 2000m; its eastern part is bounded by lower relief, with topographic heights of between 300m and 1000m. The topographic relief of the coastal land area varies considerably and is controlled by a number of interrelated factors and processes[14]:

i. the general geological and tectonic evolution of the region, especially within the Quaternary;
ii. the underlying lithology;
iii. the climatic conditions and the associated weathering processes; and
iv. the presence of various river networks. Within the context of a global distribution,

The coastal zone as part of the extended coast of southeastern Europe, can be characterised as a coastal plain developed on a wide continental shelf. It can be further distinguished geomorphologically into[15]:

i. deltaic Holocene plains,
ii. alluvial coastal lowlands;
iii. low cliff coasts; and
iv. high cliff coasts.

The latter two categories often incorporate pocket beaches. Thus, on the basis of the aforementioned classification, the coastal zone of Thermaikos Gulf can be divided into different geomorphological sectors., as demonstrated in Fig.4 above.



3. Generalised topography and bathymetry of the coastal zone excluding the drainage basins of the main rivers. of Thermaikos Gulf based upon a topographic map 1:500,000., produced by the Hellenic Army Geographical Service in 1979. and an adjacent bathymetric map 1:50,000, **4**. Lithology of the coastal zone region of Thermaikos Gulf based upon a geotectonic map produced by the IGME, 1989, **5**. Schematic representation of the different geomorphological regions of the sub-aerial coastal zone of the Thermaikos Gulf, **6.** Wave and wind roses relating to Outer Thermaikos Gulf and the Sporades basin area abstracted from Athanasoulis and Skarsoulis, 1992, **7.** General circulation patterns of the surface waters of Thermaikos Gulf: Shallow solid vectors. and deep-water open vectors. circulation patterns of the inner shelf Thermaikos and Thessaloniki Bay. after Ganoulis, 1987
(source: S.E. Poulos et al. (2000))

Hydrogeological investigations undertaken in the Thessaloniki deltaic plain have revealed the presence of three different aquifers[16]:

i. a shallow phreatic aquifer, at about 10m depth and a thickness of 6–8m;
ii. an intermediate artesian aquifer, usually observed at between 40m and 60m locally 30–80m.; and
iii. a deep artesian aquifer, lying at a 100–200m depth.

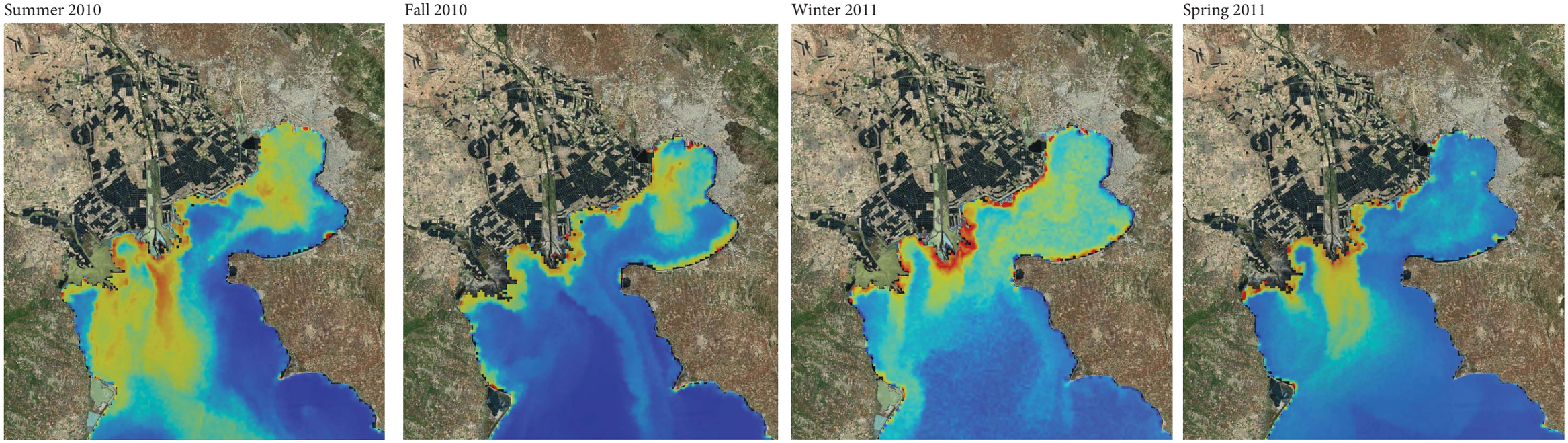
The shallow phreatic aquifer receives water from the rivers, streams, rainfall and through irrigation activities. The intermediate and deep artesian aquifers receive also water from such lateral water movement and as intake from the marginal highland areas surrounding the plain. Furthermore, the shallow phreatic horizon is characterised by high salinisation and alkalisation, due to the marine origin of the surficial sediments. Similarly, the intermediate artesian aquifer is not suitable for drinking, as it receives sodium chlorate through infiltration of the surface waters. The deep artesian aquifer exhibits satisfactory quality; it is used for domestic use by the habitants of the city of Thessaloniki and its suburbs. Moreover, overpumping of the ground water in the region of Kalochori a few kilometers to the north- east of the mouth of the R. Gallikos. for supply of the city of Thessaloniki, has enhanced the subsidence some 2.5m over the past 30 years. of this part of the coastal deltaic plain. Such movement is in response to the natural compaction of the sedimentary sequences and the reduction in sediment load delivered by the river over the years.

Coastline - conditions and conditioners changes

The most active parts of the Thermaikos coastal zone are those related to the evolution of the river deltas and the formation of the sandy spits. The former is associated primarily to the riverine sediment fluxes, while the latter is a combination of the presence of headlands and the prevailing nearshore hydrodynamic conditions[17]. The climate of the coastal zone of Thermaikos Gulf can be described as a semi-arid Mediterranean type, with rather cold winters. Air temperatures range between 08°C and 38°C, while the mean annual precipitation is some 480mm in the city of Thessaloniki. In addition, the climate of the Thermaikos coastal zone is affected by the regional wind regime. Northerly winds blow throughout the year and are enhanced during the winter; these are Balkan cold air masses named locally the Vardaris wind, originating from the north-northwest and following the valley of the Axios River. During the summer, the wind climate is dominated by the presence of the "Etesians"; these blow from the northrnortheast and are relatively strong. When the "Etesians" are not present, small-scale "sea breezes", generated by differential heating between the land and the sea, blow from the south and the southeast. Overall, the northerly component of winds has the highest frequency of occurrence during every month of the year[18].

Deltaic coasts. The deltaic plains of the rivers Axios, Aliakmon, Pinios, together with those of the Gallikos and Mavroneri form the most active part of the shoreline. In particular, the deltaic complex of the rivers Axios, Aliakmon and Gallikos form the Thessaloniki plain, which is of great socioeconomic importance to Greece, ,historical evidence dating from the 5th century BC indicates the rapid progradation of the aforementioned

14, 15, 16, 17. Poulos et. Al. (2000)
18. Region of Central Macedonia



Seasonal Aquatic Chrophylle levels in the Thermaikos Bay, (source: EYECOAST, *e-platform*, 2012)

deltaic complex[19]. At this time, the ancient towns of Skidra to the west. and Pella to the north were located originally adjacent to the sea. Nowadays, the city of Pella is located some 30 km to the northwest of the present coastline. The evolution and the associated morphology of the deltaic coastline, in the case of the essentially tideless environment of the Greek waters, results mainly from interaction between the water sediment discharge and the prevailing wave activity[20].

Sandy spits. Along the coastline of Thermaikos Gulf, there are a number of small or larger sandy spits; that of the coast of Epanomi being the largest and one undergoing substantial seasonal changes. Such changes relate to the fact that the promontory of the coast of Epanomi forms the natural boundary between the inner Thermaikos shelf characterised by shallow waters and limited wave fetches and the outer Thermaikos shelf associated with deeper waters and long wave fetches, especially to the south[21].

Socio-economic activities

The coastal zone of Thermaikos Gulf Coastal System is an area of great socio-economical importance, as more than one-tenth of the total population of Greece live here. Most of this population is concentrated within or close to the City of Thessaloniki. As seen in the regional analysis section, the region incorporates significant agricultural, industrial, tourist and trade including services. The city of Thessaloniki presents a high figure of density population 270 inhabitants/km^2, while the mean value for Greece is only 77.7 inhabitants/ km^2. The region of Chalkidiki is characterised by a relatively low-density population of 30 inhabitants/km^2, while the eastern coastal zone of inner Thermaikos Gulf has a density of 77 inhabitants/km^2 a figure close to the average value for the whole country. In contrast, the eastern coast of the outer Thermaikos Gulf is the least densely populated area with 15 inhabitants/km^2. Furthermore, considerable tourist activities are taking place along the coastline of Chalkidiki, Pieria and some parts of the eastern shoreline of Thessaloniki Bay. Such activities involve a great number of hotels and tourist housing, including commercial shops and entertainment facilities. Many villages experience a significant seasonal summer population shift.

Anthropogenic activities within the coastal system of Thermaikos Gulf have initiated deviations to the natural evolution of the terrestrial and aquatic ecosystems. Thus, the reduction in water sediment fluxes to the coastline, due to the construction of dams for electricity generation and irrigation purposes, has initiated degradation of the coastal zone. In addition, eutrophication and pollution of the aquatic environment have occurred, in response to the untreated flow of fertilisers, agrochemicals, industrial and domestic sewage. Moreover, future climatic changes, associated with a predicted increase in air temperature and sea level, could cause large-scale changes with radical consequences within the Thermaikos Gulf Coastal System.

Regional scientific questions & objectives

Taking into account the vulnerability of the coastal system, in conjunction with human impact and climatic changes, an integrated regional management programme concerning the socio-economic and environmental issues should be established; this could be set as the foundation for any future planned socioeconomic development and ecosystem protection. Such an approach has to place, in order: the demands of energy; the required future infrastructure, in terms of transportation by land, sea and air motorways, railways, ports, marinas and fishing resorts, the expansion of the airport; the growth and density of the population; agriculture development; industrial activities; tourism; and, fishing and aquaculture, as well as the rich cultural fabric present. Further, such a plan has to incorporate related environmental issues, such as: reduction in the water sediment riverine fluxes; treatment of city, industrial and agricultural wastes / affluents; sea transport and the use of the Port of Thessaloniki; coastal changes, in response to the disturbance of the littoral sediment; clear and safe bathing waters for swimmers and sea-sports; and a response to future climatic changes[22].

19. Ghilardi, M. (2008)
20, 21. Poulos et. al. (2000)
22. Poulos et al, 2000, Region of Central Macedonia

Mussel-cultures areas in the Thermaikos bay, **A**: Axios-Aliakmonas deltra area. **B**: west Thermaikos coast, Methoni area, (source: EYECOAST, *e-platform*, 2012)

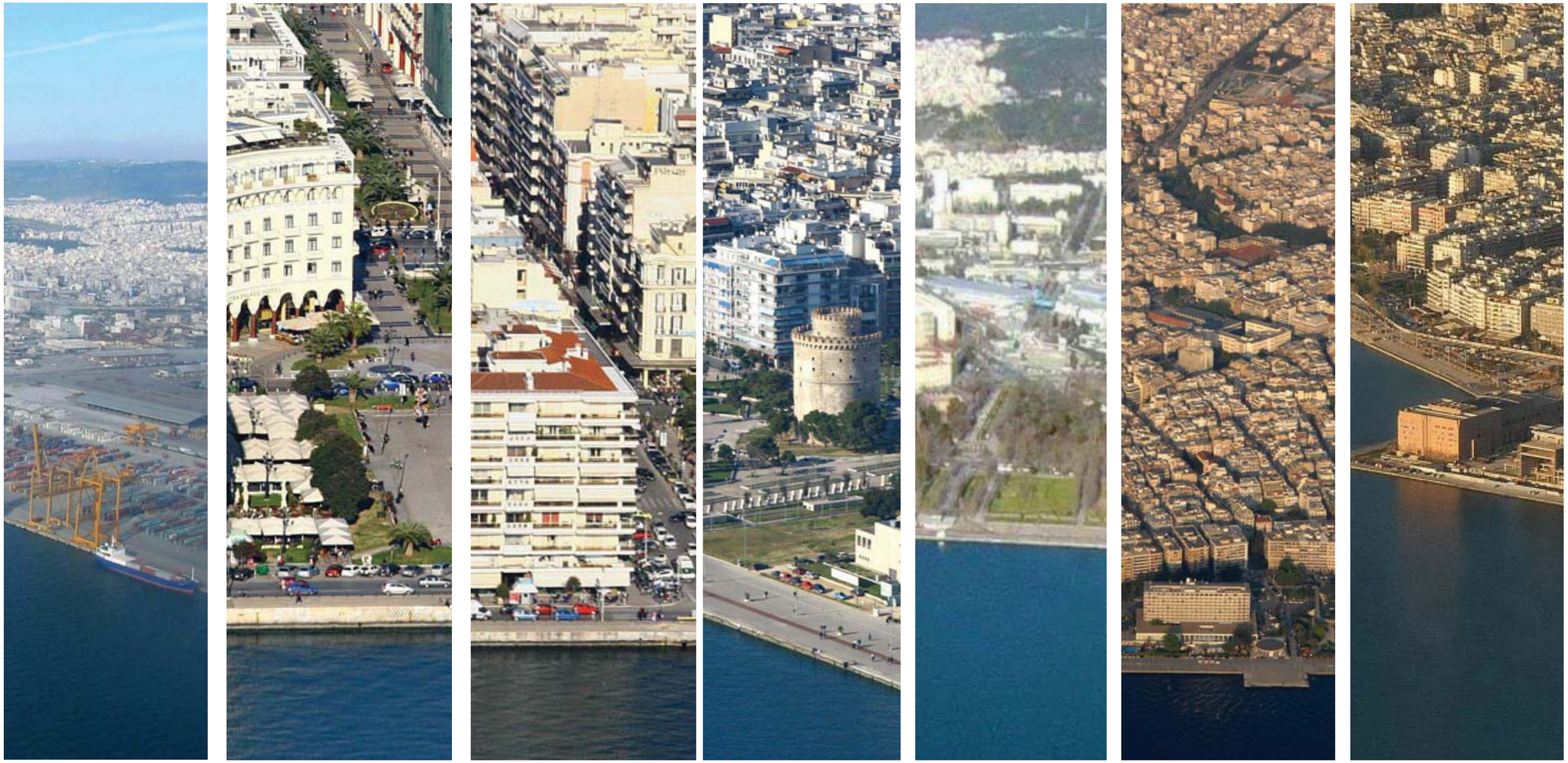
Such an integrated approach to coastal system management requires, as its scientific objectives, the careful monitoring of localised and long-term changes of weather patterns and their seasonality; fresh-water sediment yields and fluxes; underwater quality and water-table elevation; soil quality and the salinisation of any reclaimed nearshore lands, nearshore sediment dynamics; the identification of background levels of nutrients in the water column and trace metals on the surficial sediments; and the monitoring of the faunal and floral communities. A increased number of data to accompany the respective consideration and questions raised earlier.

The observed coastal changes in the Thermaikos bay can be distinguished as macro-scale, being primarily inter-annual in character e.g. the deltaic coasts., and seasonal. meso-scale as in the case of the sandy spits. Thus for example, the progradation of the deltaic coast of Thermaikos Bay, by some 35km the last 2000 years is a macro-scale change., a response to the high sediment loads delivered by the Rivers Axios, Aliakmon and Gallikos[23]. On the other hand, meso-scale coastal changes may be attributed either to the seasonal fluctuations of the wave-induced longshore transport, as in the case of sandy spits, and the localised anthropogenic influence, i.e. the construction of small ports. The high levels of terrigenous fine-grained sediments delivered by the Rivers Axios, Aliakmon and Pinios and smaller streams, apart from their controlling influence on coastal evolution are responsible for the modern Holocene sedimentation patterns over the subaqueous part of the Thermaikos Gulf Coastal System. Sand deposition is restricted to nearshore areas, originating mainly as the products of coastal erosion and supplied by ephemeral streams. Especially close to the river mouth areas, the Holocene sedimentary cover has a thickness of between 5m and 20m[24].

The substantial amounts of freshwater carried annually, by the various river systems and other smaller streams, not only contribute to the evolution of the coastal zone via the transport of high sediment loads but also have a major influence on the functioning of the whole coastal environment by recharging the ground water table, influencing the estuarine environments and lagoons at the river mouth areas with the offshore dispersion of the finegrain sediment, enriching nutrients in the waters of the nearshore areasinfluencing the coastal water circulation patterns etc. Finally, not to forget the human related activities and benefits i.e. agriculture, fishing, irrigation, electric power production, leisure etc.

Any coastal system and particularly its coastal zone, is vulnerable to both natural and human-induced changes, thus, the various socio-economic activities within the coastal system of Thermaikos Gulf have a distinct and clear impact on the natural evolution of the terrestrial and aquatic environment. The construction of dams and canals has drastically altered the hydrological functioning of the area and has reduced the water sediment fluxes reaching the coastline, causing the degradation of the coastal zone. Likewise, the untreated flow of fertilisers, agrochemicals, industrial effluents and domestic sewage has caused eutrophication and pollution in the aquatic environment. These phenomena are more pronounced in Thessaloniki Bay and northwestern Thermaikos Bay, where increased levels of non-residual trace-metals have been observed. Finally, a future climatic shift towards more arid climatic conditions, together with a rise in sea level, will have a series of environmental impacts, such[25] as the coastal retreat, a reduction of freshwater inputs, a northward shift of the bio-climatic zonation; degradation of the soil structure; and a change in the prevailing nearshore hydrodynamic regime. Hence, any future socio-economic activities and possible climatic changes should be considered carefully, within a regional programme of coastal management and environmental protection, in order to secure sustainable development of the Thermaikos Gulf Coastal System.

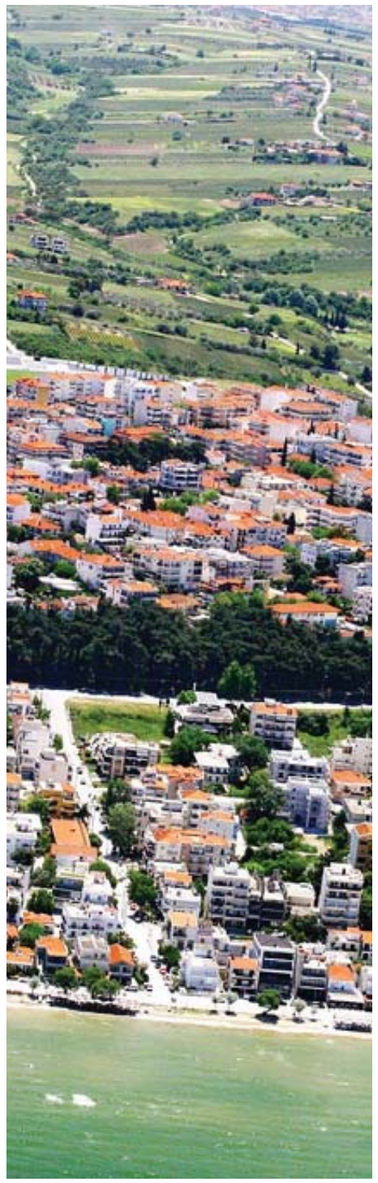
23, 24, 25. Poulos et. al. (2000)

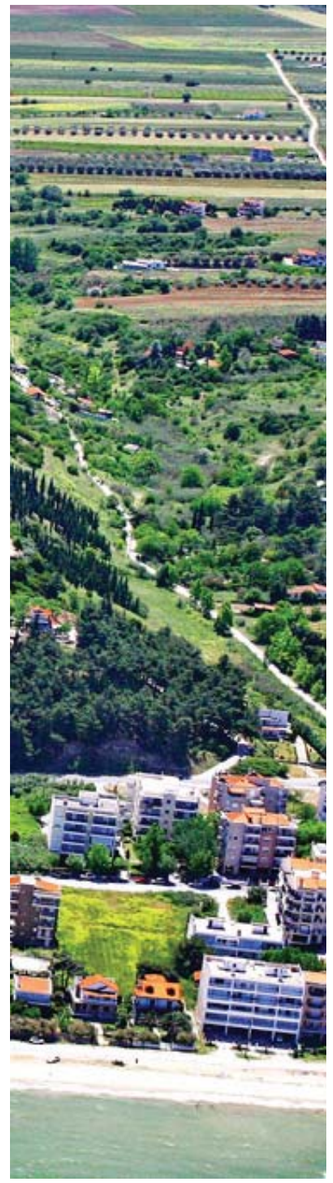


Παραλία - Seafront









(image sources: left page, panoramio.com; right page. Giorgos Tsaousakis)

ii. The Thessaloniki Bay Analysis

Following the Thermaikos Gulf general analysis that that tried to highlight the macro scale characteristics of the hydrological unit this next part will focus on the Thessaloniki bay, the principal stage of urban activity and development. The analysis will try to show the direct connection between the bay´s historical form and the present urban form. The evolution of the activitiy patterns developed along the coast are also a key indicator of this evolutionary relationship. The analysis will seek the following order:

A. Historical Evolution
B. Biophysical Matrix & key elements
C. Habitability Assessment
D. Activity " "
E. Mobility " "
F. Plans / Projects
   i. Old City Seafront (Palia Paralia)
   ii. Seaport facilities
   iii. New Seafront (Nea Paralia)
G. Situations detected
H. Synthesis

The Thessaloniki Bay has an approximate coastline of 45km, of which almost half (approx. 21 km) are urbanized, 8km on the west form part of the extended river estuary, 2.8km are part of the Kalochori lagoon, and 10km to the semi-natural undeveloped shores. The rest of the length is taken by infrastructures (airport and port) and industrial/manufacturing facilities. The coastline is also shared in its length among nine municipalities: (clockwise) Axios - Kalochori - Menemeni - Thessaloniki - Kalamaria - Pylaia - Thermi - Thermaikos - Michaniona. The municapality with the largest coastline is that of Thessaloniki with its intensively urbanized seafront. The Thessaloniki bay has served as the natural geographical stage for the expansion of the city. The city-sea relation has been transforming continuously under the natural and man-made influence, and currently it is found in a critical point, where the development pressures endanger important ecological and social features of this relation and thus of the wider bay structure and function.

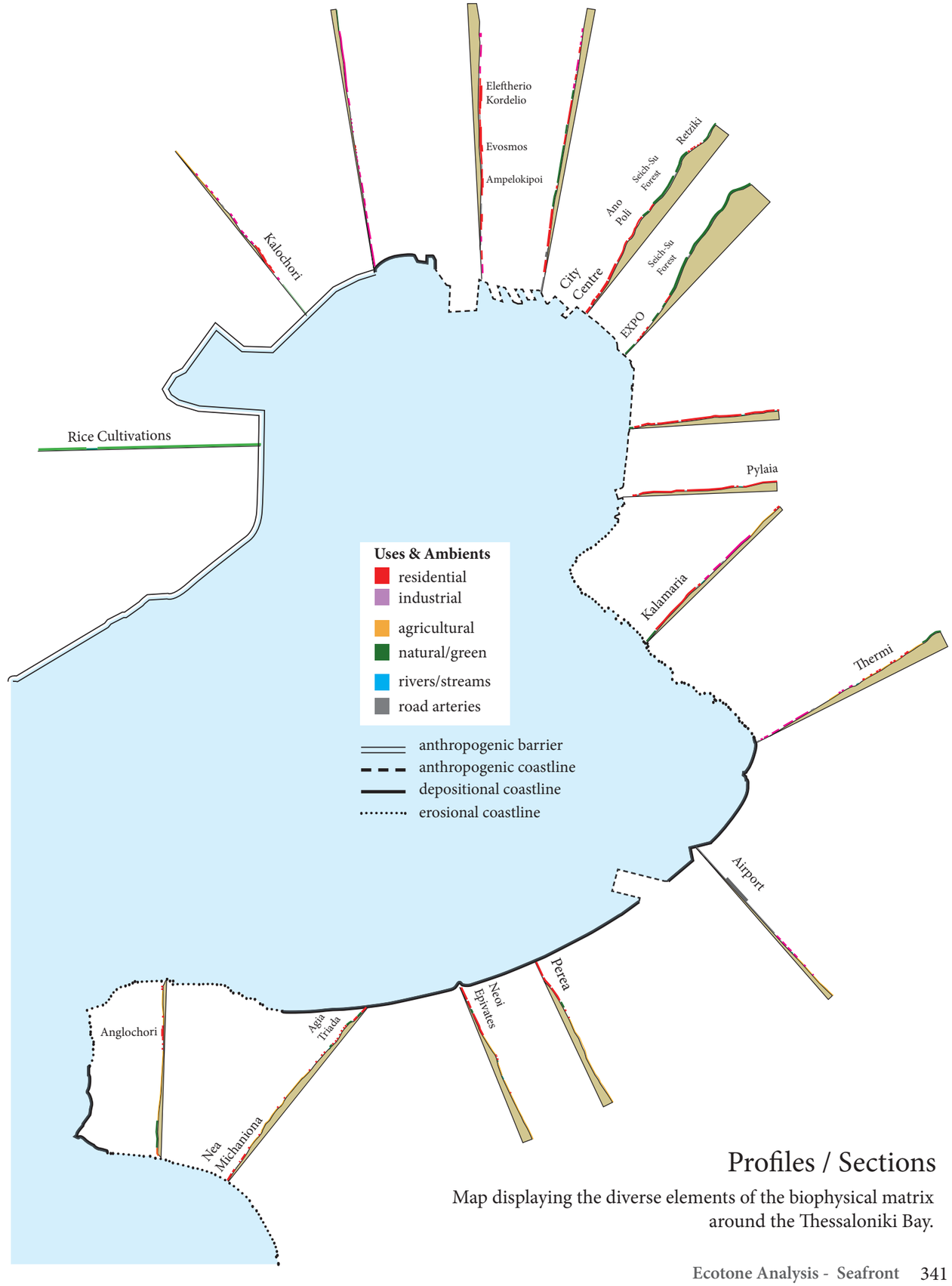
The Biophysical Matrix

The Thessaloniki Bay, apart from being a relatively closed ecosystem, is a system in a dynamic state changing significantly over the course of the years, resulting in a shifting coastline that constantly alters the local structure and the corresponding sea-land relations. The rapid expansion of the city in the last century has reached an unprecedented level of occupation with a corresponding impact on the coast and the natural systems. The analysis will try to highlight this fragile equilibrium that exists in the wider Thessaloniki bay ecosystem and the state that is found today. It will be demonstrated how the biophysical matrix around the Thessaloniki bay is an important conditioner in the development of the city and its social/economic activity.

One of the most important ecosystems along the bay is the Axios delta area on the east coast. An extended highly productive plain product of the lengthy delta formation activity of the regional rivers giving place today to a unique landscape and productive area. According to recent measurements, a reduction in the amount of debris deposited on the Thermaikos gulf has been observed, a material input which is vital to the ecosystem. After the arrangement of the rivers of Axios in the early 20th century, an increased sediment supply was observed due to the increased water velocity and the erosion of slopes. After the construction of the dams of Aliakmonas almost all the carried sediment was retained, resulting in a drastic reduction of the deltaic evolution, the salinization of the soils and groundwater, the infiltration of sea water (especially during the tide, astronomical and meteorological) and the overall degradation of the wetlands. The construction of dams along these major regional rivers has dramatically reduced the water and sediment quantity, resulting in the decline of delta formations of the rivers[26]. In the last 150 years it is estimated that the deltaic valley of Axios has ventured into the sea by about 175,000 acres, (while the Aliakmonas about 140,000 acres). The deltaic development is a result of the high carrying capacity of sediment of the rivers caused by the steep slopes and the elevations prevailing in the drainage basin, the geology of the area consisting of corrodible materials as well as the local climatic conditions[27].

Next to the east comes Gallikos river estuary and the Kalochori lagoon is an important element of the regional urban structure for diverse reasons. It was created as a result of human intervention and the related development in the nearby area and it has been transformed into an emerging and key natural area in close proximity to the city centre. Its careful management and future development are key for the course that the lagoon will take and the effects that it will have on the adjacent areas.

26. Poulos et al. (2000).
27. Kapsimalis et al. (2005)



Profiles / Sections

Map displaying the diverse elements of the biophysical matrix around the Thessaloniki Bay.

The case of the lagoon Kalohori is unique in Greece, as it concerns with the appearance of a *new* wetland gradually created from the mid-'50s, as a result of the subsidence caused by the pumping of water from underground aquifers in combination with the local loose soil composition. Today, the lagoon covers an area of 2,260 acres. The bottom of the lagoon is 0.5 to 1 meter below the sea[28]. Despite the general deterioration of the lagoon due to diverse reasons (drought, rubbish and waste) it remains one of the most important areas within the protected area because of the large number of migrating birds that can observed throughout the year.

The Kalochori village was established in 1922, by refugees from Asia Minor (Turkey), occupying the lowlands between the delta of the Gallikos river and the west side of Thessaloniki. In the 1960s the financial status of Kalochori village changed as its wider area became the main industrial centre of the region. This rapid development led to an increasing need for water, provided by the existing productive wells. Furthermore, overexploitation of the aquifers was enhanced by the excessive water pumping conducted by the Water Company of Thessaloniki. It should be noted that the aquifers of the riverside area of the lower sections of the Galikos river, including the Kalochori region, were the main providers of drinking water to meet the increasing needs of the city of Thessaloniki[29].

The first signs of subsidence in the Kalochori region were noticed in 1965 in the form of a progressive marine invasion. In 1969, during a period of intensive rainfall, the seawater reached the southern houses of the village, a situation that forced the construction of an embankment along the entire coastline, which was eventually destroyed in 1973 as a result of the continuous subsidence. In 1976 a new barrier was constructed in a forward position, reclaiming about 4 km^2 of lost land. Unfortunately, 3 years later in 1979, after a storm, the embankment failed, causing re-flooding of the village and the surrounding area. Finally, in 1980 a new larger dam was constructed, providing apparent security to Kalochori. Since then several events of damage and extensions of the embankment occurred, but the main construction managed to resist the deformation caused by the subsidence and the dynamic loading of the sea waves[30]. This barrier is combined with an extensive surface drainage network and several pumping stations to prevent the inland region from flooding. Taking into account the various studies conducted in the Kalochori region, the total amount of subsidence in the past 45 years must be reaching, in several areas, maximum values of 3–4m. Furthermore, based on the same studies, the subsidence continues to develop at a mean rate of 5cm year. At present, extensive areas along the coastline are encountered below sea level[31].

28. Anastasiadis et al (2004) in Poulos et al. (2000).
29, 30, 31. Kapsimalis et al. (2005)

Taking into consideration the geological, geotechnical and hydrogeological setting of the wider Kalochori region and the historical background of the subsidence, it is clear from the results of the simulations that the excessive deformations that occurred can be attributed mainly to the overexploitation of the confined aquifers. Besides the encouraging results of the simulation, there are many other indications that weaken the theories of some researchers, according to which nearsurface deformations are caused by the consolidation the sediments. The lack of differential settlements, even in the oldest and the heaviest residential and industrial buildings, the development of deformations in areas completely not loaded by man-made surface structures, and the unchanged hydrological conditions of the shallow unconfined aquifer with time are some of the most important factors weakening such theories. In conclusion, the only way to reduce the deformation rate of the subsidence and protect the Kalochori region from further deformation is to decrease and control the quantities of ground water extracted[31].

Along the part occupied by the urban settlement of Thessaloniki and subsequently Kalamaria and Nea Krini, the ecological connection has been lost to great extend due to the disappearance of the local streams that apart from ecological connection provided water and material deposits into the bay. The peri-urban canal takes the role of draining the runoff water for the Eastern Thessaloniki area and its streams, exiting in the Mikra area next to the sport complex. From that point to up to the airport three rivers connect with the bay, the Thermi Stream, the Anthemountas river and the Neo Rysio stream. Next the continuous front created by the settlements of Perea, Neoi Epivates and Agia Triada, have blocked to a great extend the exit of the local streams to the seafront. Nevertheless the vegetation matrix along the stremas has been preserved to different extends. The agricultural use is the prevailing activity in the available free land.

Next to the west lies the site of the Aggelochori lagoon (total area of 377.2 ha) that includes a coastal lagoon, a saltpan, salt marshes and a marine zone. A narrow sandy beach cuts off a saline lagoon and associated salt marshes from the sea except for a central connecting artificial ditch. At the north part of the lagoon there are salt works, which consist one of the main human activities developed in the area. The vegetation is low and mainly halophytic, while few reed beds appear around the dam. The area is important as a breeding, feeding and resting area for a large number of bird species. The landscape includes extents covered by water, salt marshes areas and sand dunes and offers a wide view to the sea. In Aggelochori lagoon site, the human impacts/activities that constitute conservation/biodiversity problems and threats for the species and habitat types, include cultivations (as well as modification of cultivation practices), grazing, aquaculture, professional

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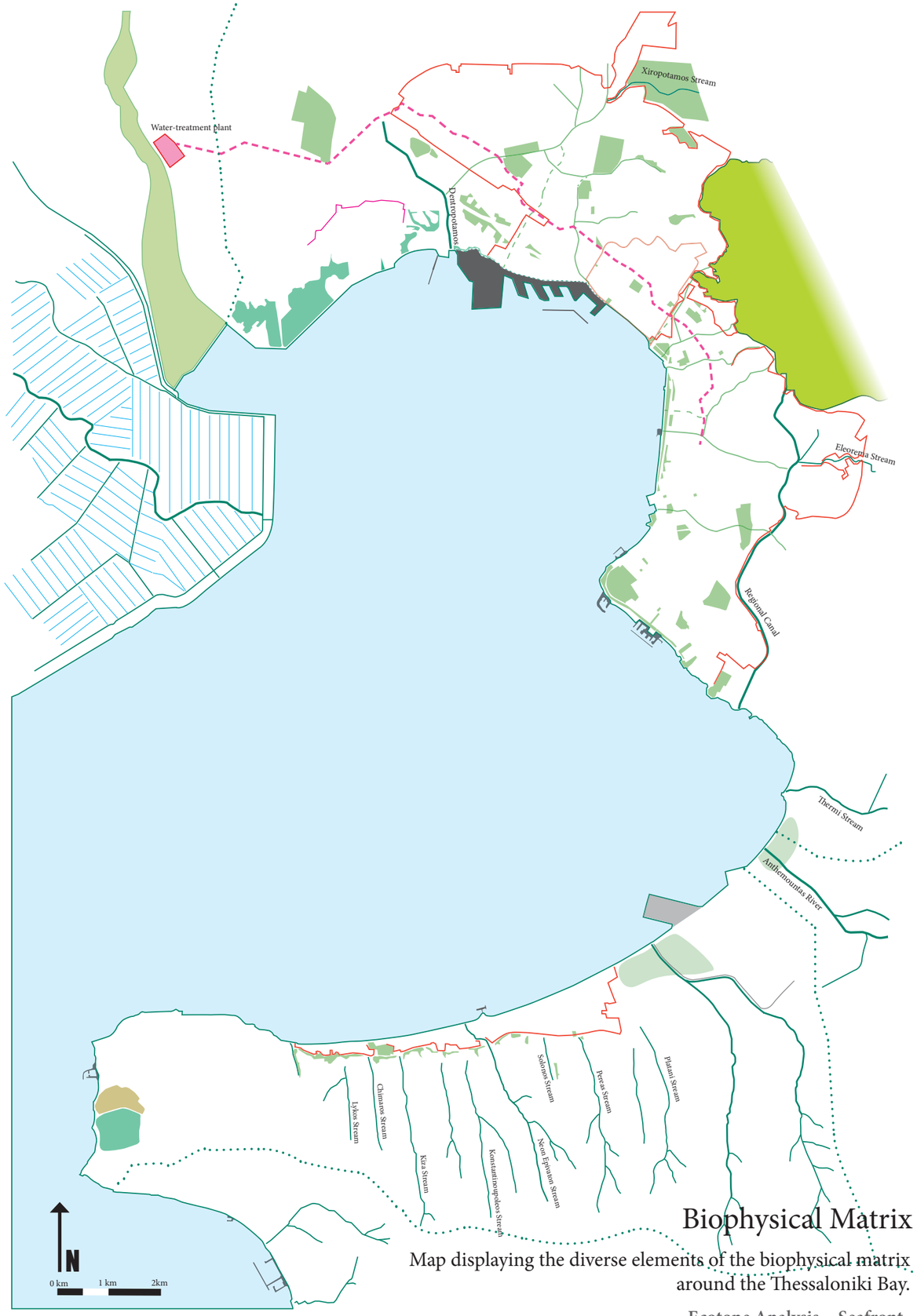
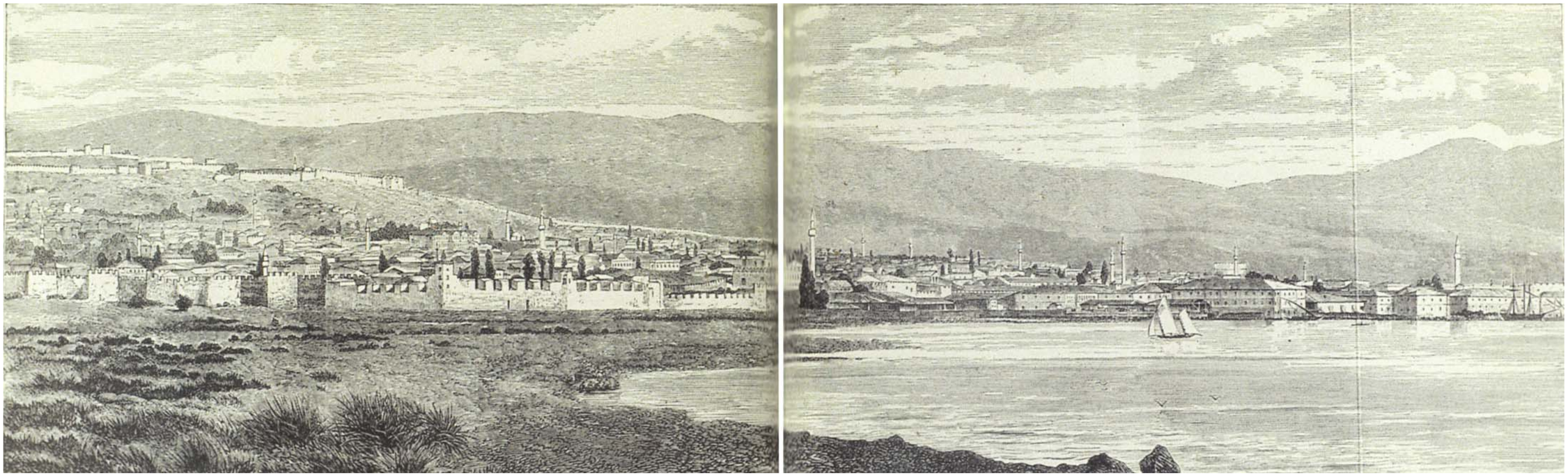
i. Aliakmonas delta **ii, iii.** Axios delta **iv.** Kalochori lagoons **v.** Gallikos delta **vi.** Anthemountas delta **vii, viii.** Aggelochori lagoons.

(source: airphotos.gr , panoramio.com)



Biophysical Matrix

Map displaying the diverse elements of the biophysical matrix around the Thessaloniki Bay.



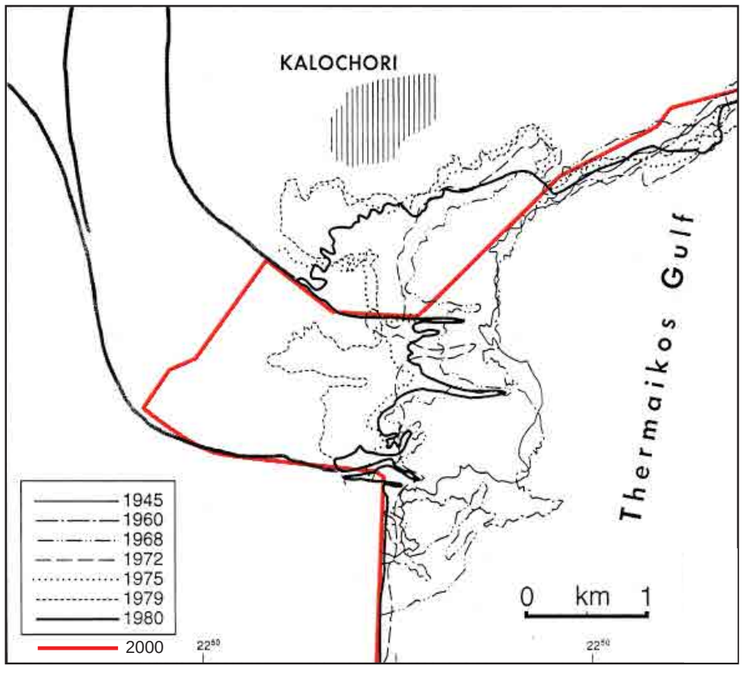
above: Salonica on the Aegean - West view of Thessaloniki, 1877 by G.MUIR MACKENZIE - A.P. IRBY. Copperplate engraving. (source: Center of History of Thessaloniki)

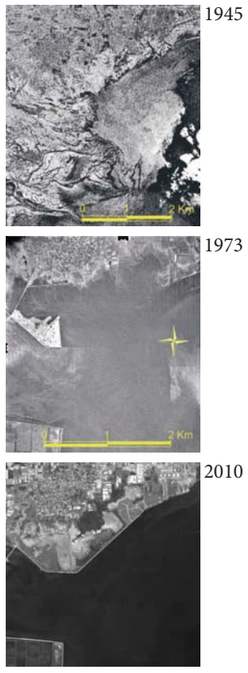
fishing (fixed location fishing), hunting, salt works, dispersed and other patterns of human habitation, discharges, communication networks, leisure and tourism, water pollution, etc. The greater impacts/activities influencing the project area is the plant species invasion and the noise contamination[32].

Looking at the 1850 and 1910 map (left page) some interesting points can be made about the preexisting biophysical matrix around the Thessaloniki bay. First, the Axios river can be seen following its original route and forming its delta inside the Thessaloniki bay along an extensive area that reaches up to the Gallikos river. The coastline at this part has not been altered, and can one can observe the typical coastal formations of wetlands and swamps that were predominant in the area. The Kalochori lagoon is not present at the time, along with the seafront protection /seawall and can the natural coastline can be observed. Passing the west area and along the part now occupied by the Nea Paralia, the local rivers/streams can be seen forming a sinuous coastline, radically different from the strict linear form that it took on. Further south and passing the Karampournaki, the height difference of the coast is marked on the map. In continuation, east of the present location of the airport, one can observe an extended wetland formed at the end of the Anthemountas river and the Thermi streams. A bit to the west another wetland can be found of even greater size, that as noted by the map, *it dries in the summer*. This is located approximately at the area of the present airport and extending to the west almost to the present day limits of the settlement of Perea. Continuing to the east, the local vegetation formed along the local streams and geomorphology can be seen, in similar patterns to the ones found up to this day, and continuing along the coast all the way to the Angelochori lagoon that pretty much occupies the same area.

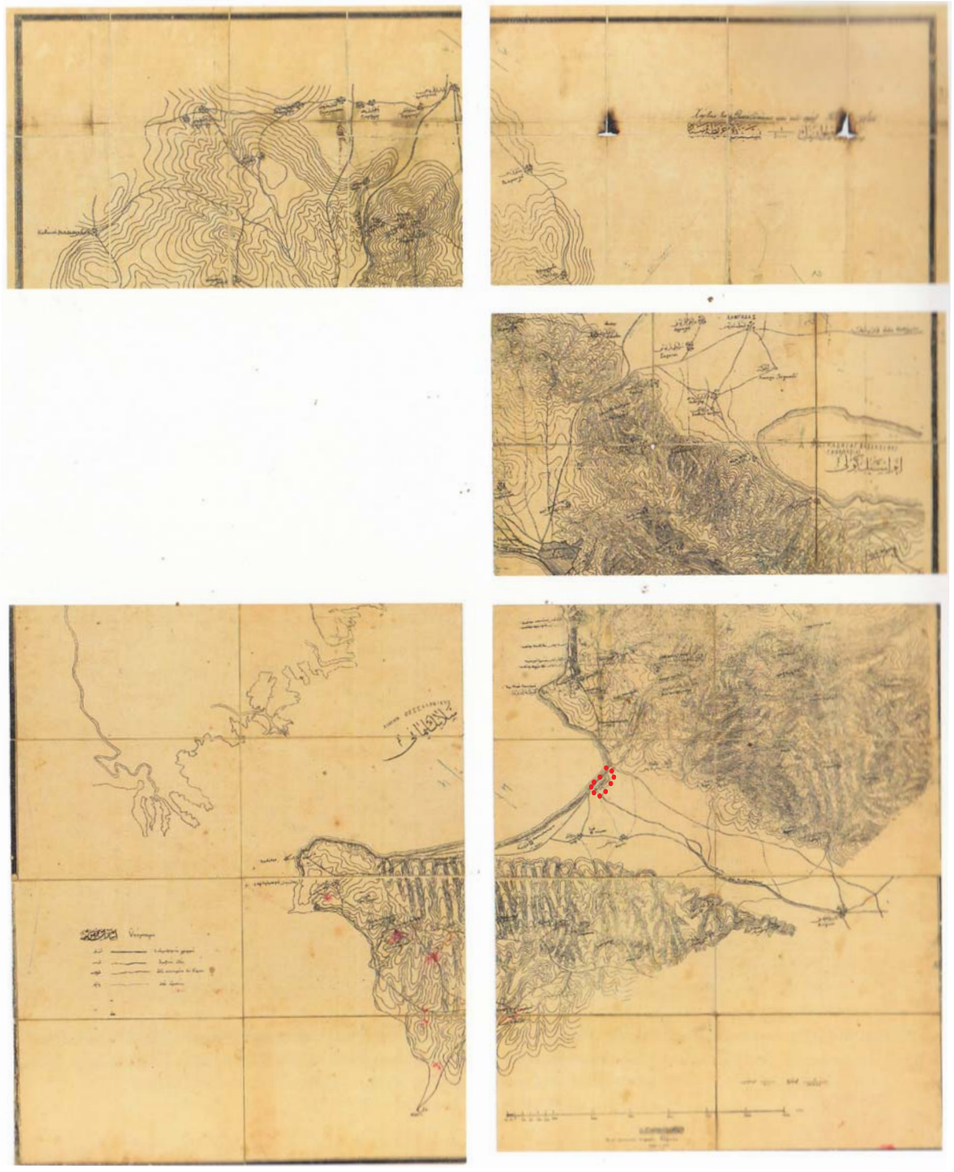
32. Poulos et al. (2000)

The Kalochori area lagoon



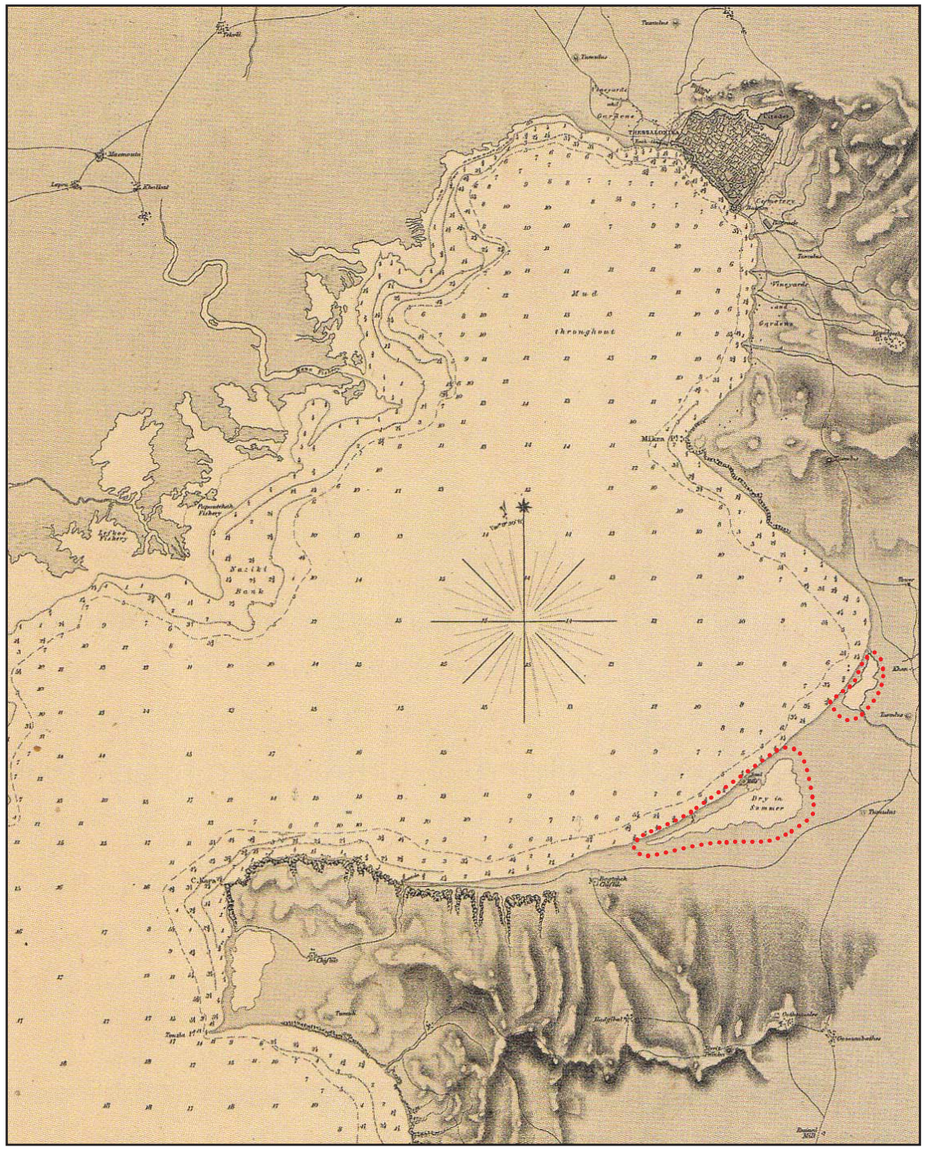


left: Coastline evolution in the Kalochori area (source: Stiros, 2001)
Right : Aero photos of the Kalochori Area for the 1945-2010 period. In 1945 The village is located at least 1.2 km from the sea, while the 1973 photo shows the flooded area reaching the first houses of the village after the collapse of the embankment. (source: Loupasakis & Rozos 2009)



"Χάρτης της Θεσσαλονίκης και των πέριξ" (Map of Thessaloniki and surroundings)
Issued by the 3rd Military Corp printoffice in 1910
(source: National Map Archives)

A military map of 1910 in 8 sheets (one missing), with local place names written in three different languages (arabic, turkish and greek).The map is displaying the local topography / geomorphology with great detail, indicating settlements and road connections as well as important details about the biophysical matrix: the local streams and coast conditions, in combination with the terrain altimetry, giving rich insight in preexisting conditions.



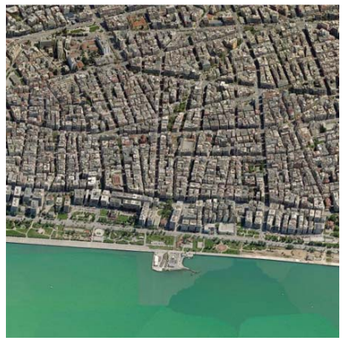
"Salonika bay - The ancient Thessalonica " published by J. & C. Walker
Captain Thomas Graves (British Admiralty) - initial 1850, reworked 1899
(source: National Map Archives)

The map of 1850 demonstrates a series of important features of the original biophysical matrix: **i)** the original coastlines both in the western part with the extended delta /wetland area as well as the currently urbanized front. **ii)** the original streams that ended in the Thermaikos bay **iii)** the presence of wetlands not that easily discernible today such as the one the delta of Anthemountas and adjacent to the Perea settlement. **iv)** coastal vegetation and geomorpohology.

a

b

c



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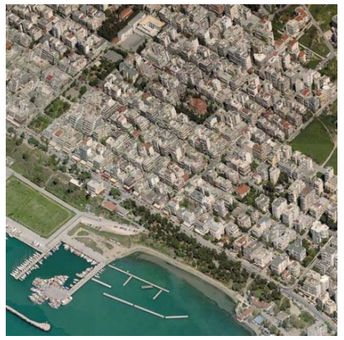

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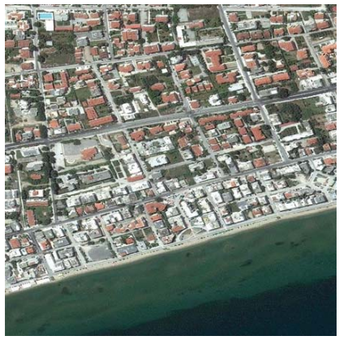


source: Bing Maps

iii. Habitability Assesement

The habitability / livability conditions along the Thermaikos coastline differ considerably from area to area, presenting different typologies, forms as well as city-sea relations in the diverse situations encountered. The great length of the gulf´s coastline and the richness of landscapes present provide the conditions for different situations to arise. These are always related to the socio-economic conditions during which each situation developed. All of them, independently have the Thermaikos Gulf as a uniting point, a common thread in the development of their relation with the seafront and the types of activities.

The non-residential typologies found along the coastline include:

Infrastructure areas, like the **seaport** west of the historic centre and extending to the west towards Kalochori. Although the port expansion to the west, liberated the historic nucleus from a future intervention, it created a barrier effect for the corresponding west areas of the city, that are now encountered with no direct access to the seafront. The eastern section of the port, what has come to be known as the historic port, has passed partially to civic use, incorporating various cultural and leisure activities.

The city´s **airport** (*Thessaloniki´s International International Airport Macedonia*) that is located 16km southeast of the centre in the municipality of Thermi on the coast of the valley of Anthemountas. The airport area due to its extensive size (540 hectares) and its adjacency to the seafront, affects significantly the local seafront functioning and the surrounding activity. Access to the seafront and circulation along the airport coast is prohibited to the general public, creating a critical discontinuity along the coastline. Naturally noise level and other active regulations, also dictate and condition residential activity on a defined radius.

A series of other buildings that host industrial/manufacturing , educational (Kalamari School, School of International and economic law), commercial (shopping malls)and recreational uses (marinas, Mikra Sport Area) are also found located along the coast, either blocked off or partially open to the public and seafront access.

Green areas & natural areas
As seen from the earlier analysis of the evolution of the Thermaikos gulf as well as the analysis of its contemporary biophysical matrix, the area is presented in a rich, diverse, dynamic and at the same time fragile ecological state. The expansion of the city has occupied a great part of the coastline, disturbing drastically the ecological functioning of the individual areas and the gulf in its entirety. The Kalochori lagoon, is such key area, where its proximity to the city (and more precisely the industrial facilities) and its key ecological function present a unresolved ecological issue, as well a major site of opportunity for the city´s seafront. Accordingly the Aggelochori lagoon on the southern end of the bay has experienced significant pressures and human intervention, is another example of a fragile natural area. Traces of past natual areas can be found today as converted urban green areas, residual green spaces or degraded natural areas. The lineal green park of the Nea Paralia is such, marked as a strong and pronounced element of the urbanized seafront. The Old military camp of Kodras in Kalamaria, or the White Tower park are examples of smaller size green areas.

Agricultural areas
The rice cultivation areas west of the Gallikos river and in proximity of the triple delta area form a characteristic landscape and an important productive area. At the same time it is a key ecological area hosting an important seasonal biodiversity, at a short distance from the city. The coastline has not been urbanized, due to the complicated natural conditions, and thus it has formed a natural barrier against city expansion westwards along the coastline. Other important agricultural areas, are the properties of the Aristotle University and the agricultural extensions of the Angelochori area that are found under constant pressure.

Accordingly, the residential typologies encounctered along the coast include the following typologies:

a. the Kalochori settlement. Although not a typical seafront settlement, Kalochori has developed a special relationship with the sea, and most important with the coastline.

b. The Historic centre / Hébrard fabric. The reconstruction of the fabric of the historic centre following the Hébrard plan created a dense urban fabric and a characteristic city front that got more pronounced with the passing of time. Today the seafront consists of a narrow stip between the built limit and the sea line. This limited width in combination with the adjacent urban fabric, has rendered this part of the seafront as an important public space crucial for the historic city.

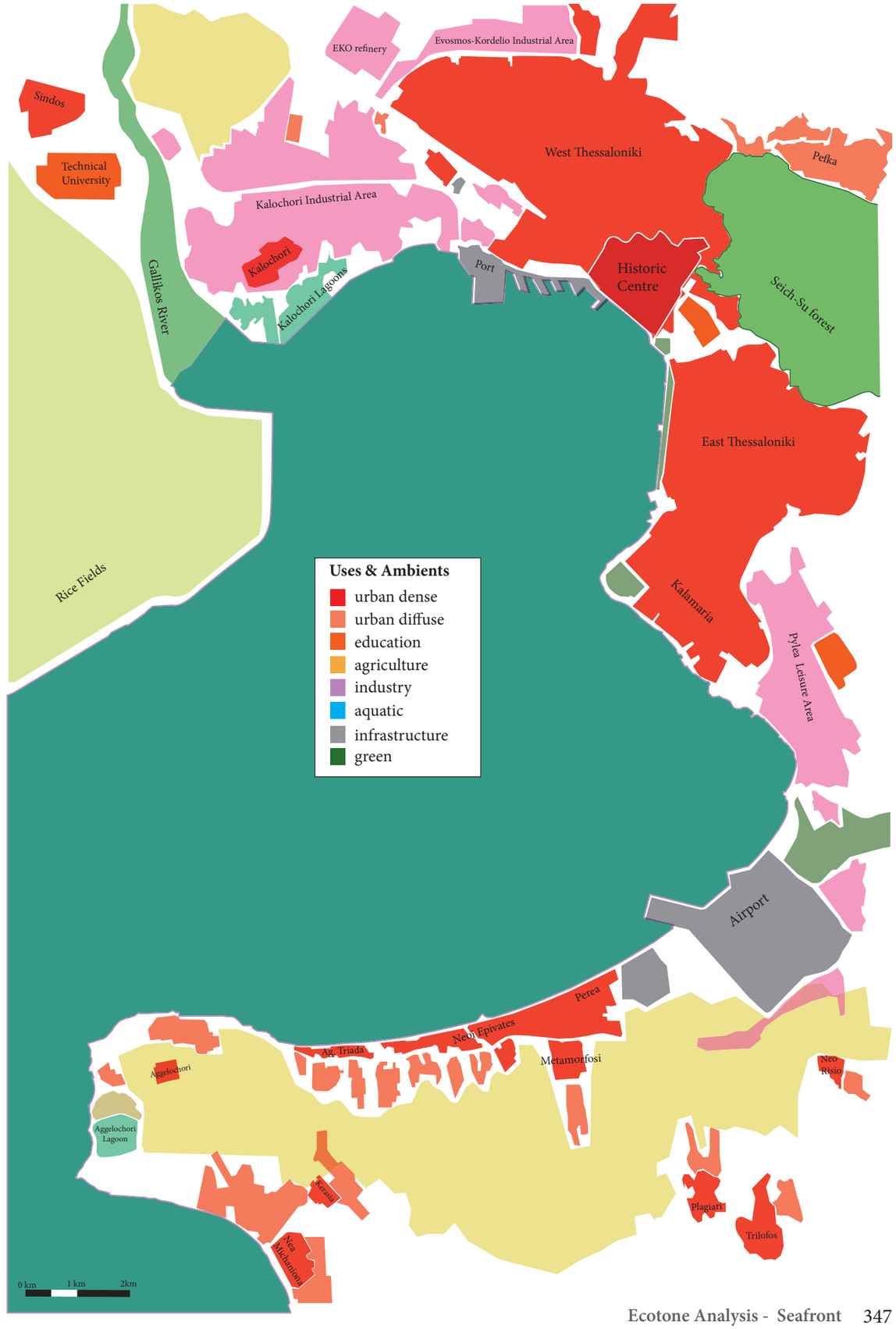
c. The extra-mural / Hébrard fabric. This primarily refers to the city expansions to the east, and along what is today know as Nea Paralia and extending all the way to the Poseidonio area. This part of the

seafront is characterized by the buffer zone that the lineal park constitutes, and provides a valuable open space for the citizens. This also affects the quality of life and the improves the habitability conditions in the local area. Nea Paralia has been converted into a favourite and highly frequented spot, accomodating a great amount of pedestrian traffic.

d. City expansions. This typology refers to the later southern extensions of Kalamaria (establ: 1926) and Nea Krini (establ: 1930) established initially as refugee settlements. The city-sea relation along this section has a more informal character and a considerably lower activity. The adjacent lower building densities and the spacious road grid has allowed a direct visual and functional relation with the sea element. Nevertheless the presence of various and uncoordinated activities (non-residential) create disruptancies along the seafront its functioning within the urban structure.

e. Seafront settlements. This typology refers to smaller seafront settlements that are found on the southern coast of the bay like Perea, Neoi Epivates, Agia Triada and further to the west Angelochori. This typology is characterized by the low height, detached buildings, low traffic streets, small squares and tranquile enviroment. The seafront is taken by sandy beaches that attract considerable seasonal activity. Although the area has a strong tourist/recreation character it nevertheless has a strong first residence character, with a lot of local citizens commuting to the city of Thessaloniki or its outskirts for their employment.

The Thessaloniki bay coastline marks an important ecotone, with a corresponding intense edge activity. The coastline is shared today among various municipalities, demonstrates an advanced state of urbanization with few natural areas conserved, as seen from the previous analysis. The diversity of situations and conditions along its length are testimonies of the different time periods / phases of development of the coast and the respective succession phases. This special role of the seafront as a natural edge area, in a constant dynamic state, has rendered the coastline as a basic conditioner of the urban morphology and respective growth patterns. The following sections of the analysis will investigate in more detail the activity and along the coast and its adjacent areas. The detection of key activity areas and local centralities will aid to formulate a more precise impression of the emerging mosaic of the area, and the possibilities for restructuring that exist within the contemporary seafront.



Settlement & Uses

Map displaying the various residential settlements and rest of principal uses along the Thessaloniki Bay.

iv. Activity Assesement

As seen earlier, in the mosaic evolution analysis and the habitability assessment, the area under investigation is a dynamic edge area, attracting diverse types of activity all along its length. Consequently this part will analyse the activity patterns to get a better understanding of the underlying and emerging trends and patterns.

Centralities (new & old) :
The coastline of the Thessaloniki bay, has historically attracted the creation of important settlements. Today, the historic centre of Thessaloniki, constitutes the principal centrality on the coast and the commercial centre, and it concentrates apart from the highest building density, a great diversity of uses and activities, of a supra-municipal character. The historic seafront has attracted a great number of bars and restaurants and is a characteristic public space for the city´s citizens. The immediate city expansions to the east parallel to the coast, carry this centrality and the corresponding flows. The Nea Paralia although quite frequented it lacks the centrality character of the historic seafront. Nevertheless it serves as an expansion valve for the adjacent densely built districts. Further to the south, the Aretsou Beach in Nea Krini is another local centrality of a leisure character that serves as the seafront for the whole area of Kalamaria. Further to the south Perea, Agia Triada and Neoi Epivates are smaller local centralities, with a strong seasonal character. Thus the local centers are very important in satisfying basic resident needs (commerce, administrative etc) and structuring the urban activity along the coast. The commercial centre of the urban district of Thessaloniki occupies an extensive area and a certain protagonism in the regional functional scheme.

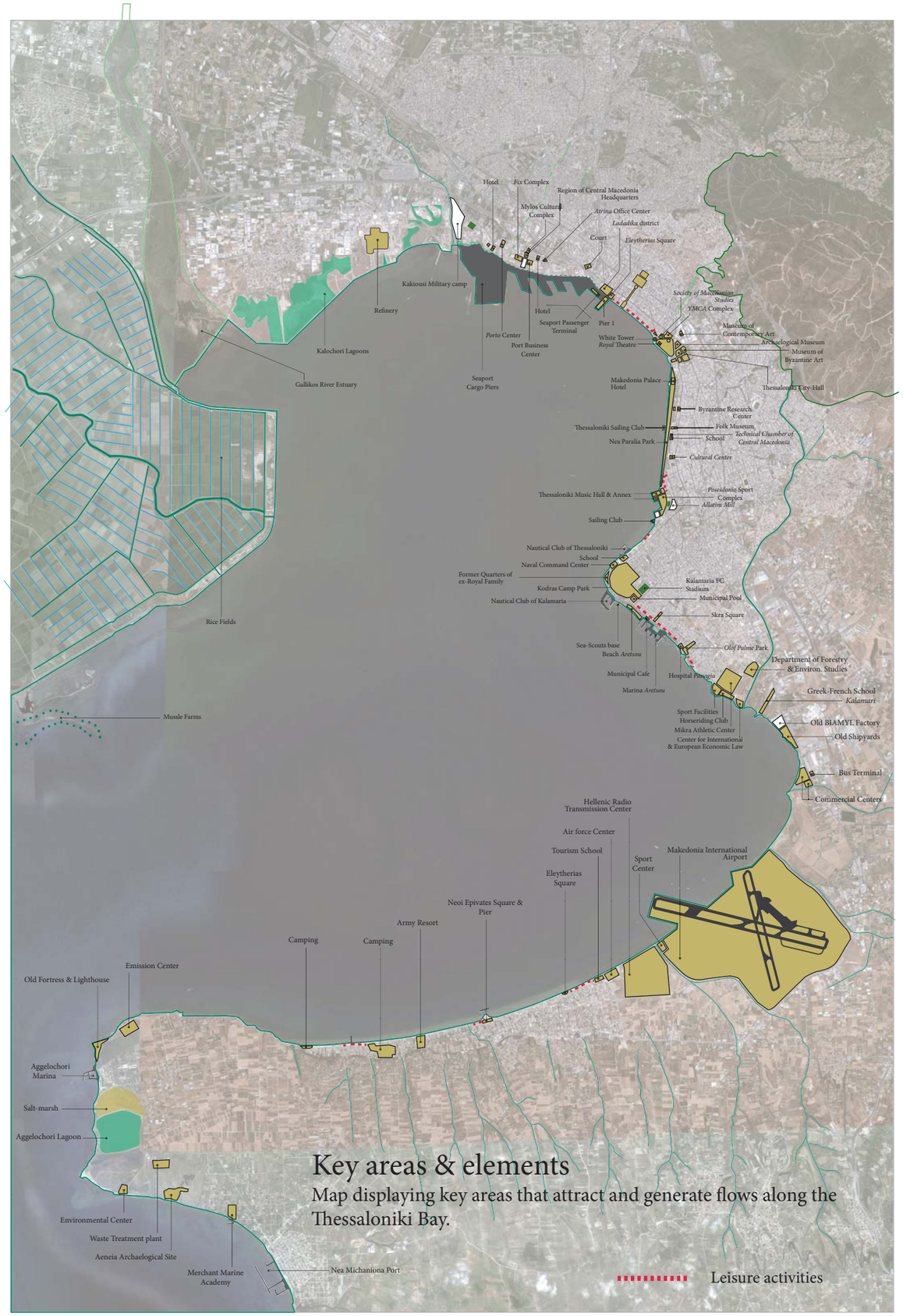
New Centralities are emerging at the south coast of the bay, in the Angelochori area. Today it is found as diffused growth around the Angelochori settlement and as intermediary sprawl in the triangle formed between the settlements of Angelochori, Agia Triada and Nea Michaniona. An important factor for this is the availability of space for growth, at the expense of important agricultural land and at relatively low prices. This centrality is still a long way from consolidation given that it lacks a great number of services and associated infrastructure. Nevertheless it constitutes the only area, (apart from the protected areas) that the seafront remains to a great extend undeveloped, and thus special attention is needed in preserving certain desired features of the landscape.

Cultural
The Historic Port during the year hosts various cultural events and is the principal site for the Thessaloniki Film Festival. The White Tower cultural complex, that hosts the museum of the White Tower, The Basiliko Theatre, the Garden Theatre, the Archeological museum and the facilities of X.A.N.Th (YMCA). In the middle of the Nea Paralia, a pole is emerging around the Folkore Museum and the Goethe Institute and the nearby nautical club. More to the south, at the end of the Nea Paralia, follow the two buildings of the Music Hall (next to Poseidonio) with their characteristic proximity to the sea.

Educational/ Research
The educational poles along the coast are of smaller sizes and are found throughout the coast of the bay, princincipally the east and southern coasts. Apart from the various primary and secondary schools that are found scattered along the urbanized parts of the coast and have primarily a local effect, there is also a number of other areas of educational character: the Center for International and European Economic Legislation at the end of the Peri-urban canal; the Agricultural farm of the Aristotelean University, the school of Tourist Studies west of the airport; the Environmental Center south of the Angelochori Lagoons and to the east the Merchant Marine Academy.

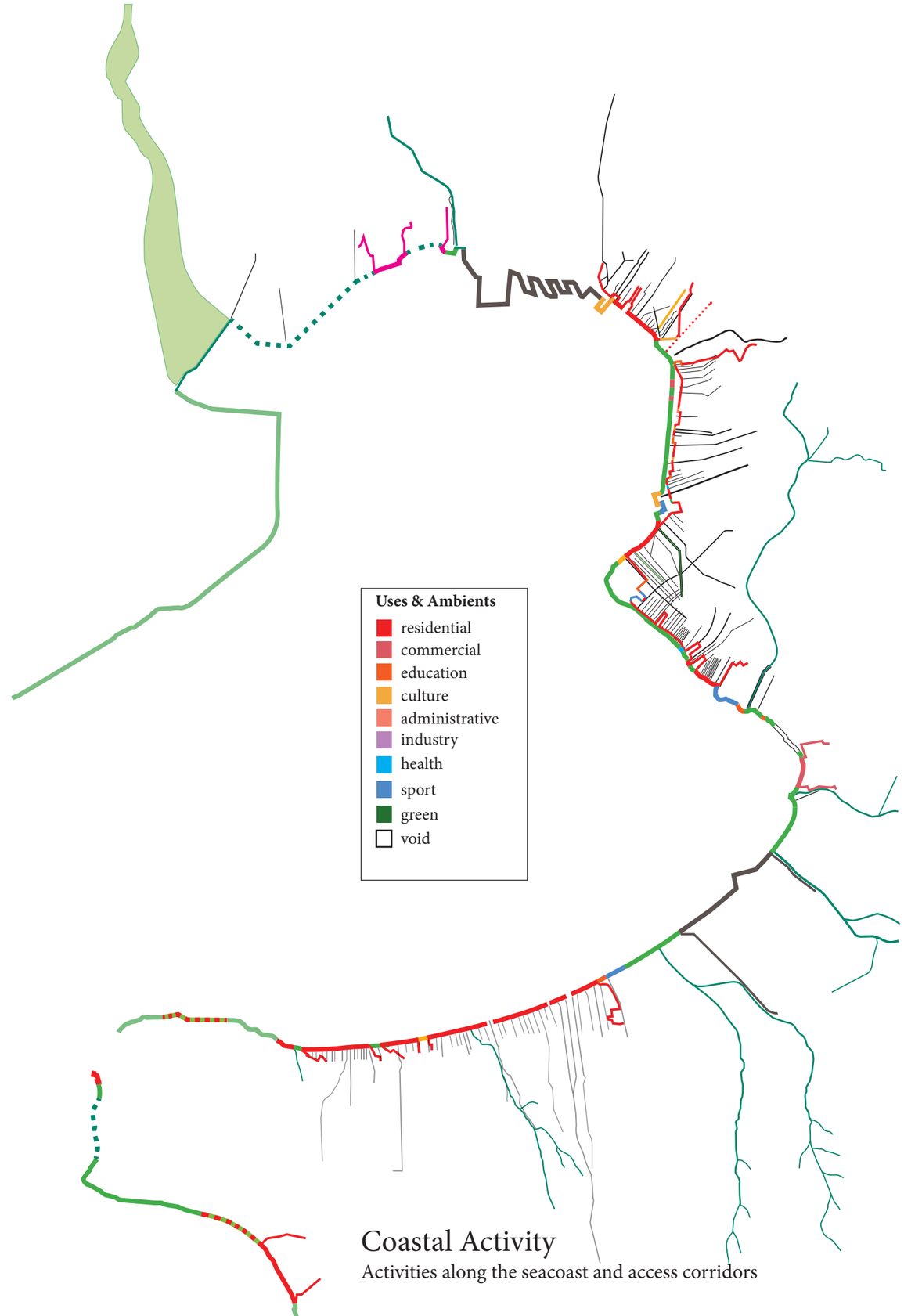
Sport
As far as poles related to sports, there is a number of significant areas, that hold an important amount of related facilities. The Poseidonio Sport Complex at the south end of Nea Paralia, the sport complex of Nea Mikra, the Development centre for Culture and adopted Sports (ΚΑΠ-ΠΑ). Along Nea Paralia and its lineal park, there are also numerous scattered facilities of local character. Referring to water related sports, there are various small marinas (9) along the coast, there are : the Thessaloniki Sailing Club, the Sailing club in Karampournaki, the Nautical club of Thessaloniki, the Nautical club of Kalamaria, the Marina of Aretsou, the Neoi Epivates marina, the Angelochori marina, the Merchant Marine marina, and further to the south the Nea Michaniona Port.

Recreational
The popularity that the seafront has with local population as public space of preference, has attracted a wide range of recreational activities along its length. The activity related with cafe/bar/restaurant recreational options is concentrated along the historic city´s seafront, scattered along the Nea Paralia, along the Nea Krini seafront and finally along the Perea-Neoi Epivates-Agia Triada seafront. This last area due to its sandy seafront and the tourist facilities developed over the years also attracts moderate amounts of summer tourism, principally of a regional character. Accordingly to the north of the Bay, the natural areas of Kalochori and the tri-delta area provide unique opportunities for naturalist escapades for the city and regional users.



Key areas & elements

Map displaying key areas that attract and generate flows along the Thessaloniki Bay.



Coastal Activity

Activities along the seacoast and access corridors

As far as city parks along the coast is concerned, there is **i)** the White Tower Park between the Historic Center and Nea Paralia that is located at the base of the Central Axis. The activity along the seafront part is quite high, but the activity of the adjacent park, presents various problems as far as occupancy and usage is concerned, **ii**) the lineal park of the **Nea Paralia** with almost 3km of length. The park constitutes the principal pedestrian axis of the eastern part of the city, and an important public and green space area. **iii**) The ex-military camp of **Kodras** in Karampournaki that holds a key and strategic position in the bay. The park is open to the public but there has been no comprehensive plan for its rehabilitation and passing to public use.

Transportation
The transportation related infrastructures are distributed along the coast. First the city´s **port**, with the Passenger Terminal in the historic part of the Port, which serves principally national destinations and attracts a small number of cruiseships, and the Cargo Terminal in the elongated extension to the west. The city´s **airport** (*Thessaloniki´s International International Airport Macedonia*) that is located 16km southeast of the centre in the municipality of Thermi on the coast of the valley of Anthemountas. It has been functioning as a civic airport since 1938, though it had been used earlier as a secondary military airport as early as 1917. Since then the airport has experienced small and gradual expansions. In 2004 the extension of the second runway began. Today it covers a total surface of 540 hectares, and apart from the passenger terminal it also hosts a firefighting response unit of the National Airforce. Apart from these two major areas, there are also the numerous marinas listed earlier, as well as the City Bus Terminal Station on the west, and the respective Chalkidiki hub station on the east.

Industrial/Manufacturing
The industrial activity is principally concentrated on the north coast of the bay in the Kalochori Industrial Area and the adjacent section of the coast of Menemeni. This industrial area has developed parallel to and as an extension of the neighbouring sea port. Former areas like the Sfagia or Lachanokipoi have gradually passed to commercial / services uses and abandonded previous more conflicting uses. Similarly with the shipyard area of Thermi, that functioned until recently, and its area was recently cleared and freed up.

Commerce
As seen in previous chapter, the peri-urban area of the city has attracted diverse leisure and commerce activities. In the case of the coastline of the Thessaloniki bay, these are concentrated in the Pylea-Thermi part of the coast (Pylea Leisure Area, Thermi development area, The Makedonia Airport development area, etc.). Big sized urban pieces, go occupying more and more space of this peri-urban area and accordingly the corresponding seafront. These include shopping malls, multi-cinema complexes, showhouses for auto companies and different retail companies.

Agriculture
Low-lying land areas including the Thessaloniki deltaic plain are some of the most productive agricultural lands in Greece. The agricultural production in the coastal plain area, is quite widespread and presents signs of monocultures such as rice, sugar beet, cotton, cereals among others. Hence, the agricultural activities of this region represent one-third of the annual national agricultural production. In addition, aquaculture especially that related to mollusc production flourishes along the Thermaikos Bay, producing, annually, some 1000–2000 tonnes of oysters and molluscs. It has to be emphasised that this region produces about 80% of the total mussel production of Greece, accounting for some 27,000 tonnes in 1996; the latter corresponding to a 3.5% of the total annual production of the European union at the time[33].

33 . (Poulos et.al. 2000).

v. Molibility Assesement

The infrastructure that supports the various socio-economic activities involves a relatively extensive and developed transportation network that includes railways and motorways, that provide connection on different directions and scales. As seen air transport is served by the Mikra Airport, while all maritime flows, cargo or passenger, are accordingly served by the city´s port.

An analysis of the flows along and to/from the coast can help understand better the mobility factor and investigate problems and prospects that could emerge under a future restructuring. As mentioned earlier the area, given the coastal character is a key edge area by default, and a key urban ecotone between either built areas and the sea or natural areas and the sea. Historically it has also served as a corridor, an area of easy access along the coast and thus today it is crossed by important arteries and mobility flows that have influenced the form and growth of the city and have shaped this particular relationship between the city and the sea element.

Scale of Flows

The map on the right shows these various flows that are present in the area as well as the various physical barriers that obstruct access and increase fragmentation of the urban fabric. Analysing the various flows in more detail we can first differentiate them according to the scale of the flows that they attract and accordingly create:

International / National : The Mikra Airport is the principal pole of international flows, mainly of European /Eurasian destinations along with the regular national flights . The seaport also receives international flows, principally cargo, a grand part of which are destined for the Balkan hinterland, and the cruiseships that arrive in increasing numbers over the years during the tourist season. There are also various ferries that connect with the islands of the Northern Aegean as well as Crete. As far as road flows is concerned these are limited to the Thessaloniki city, through traffic to Chalikidiki or visitors to retail shopping malls such as the Thermi area. The industrial / manufacturing areas on the west of the city also create a significant quantity of flows of different scales

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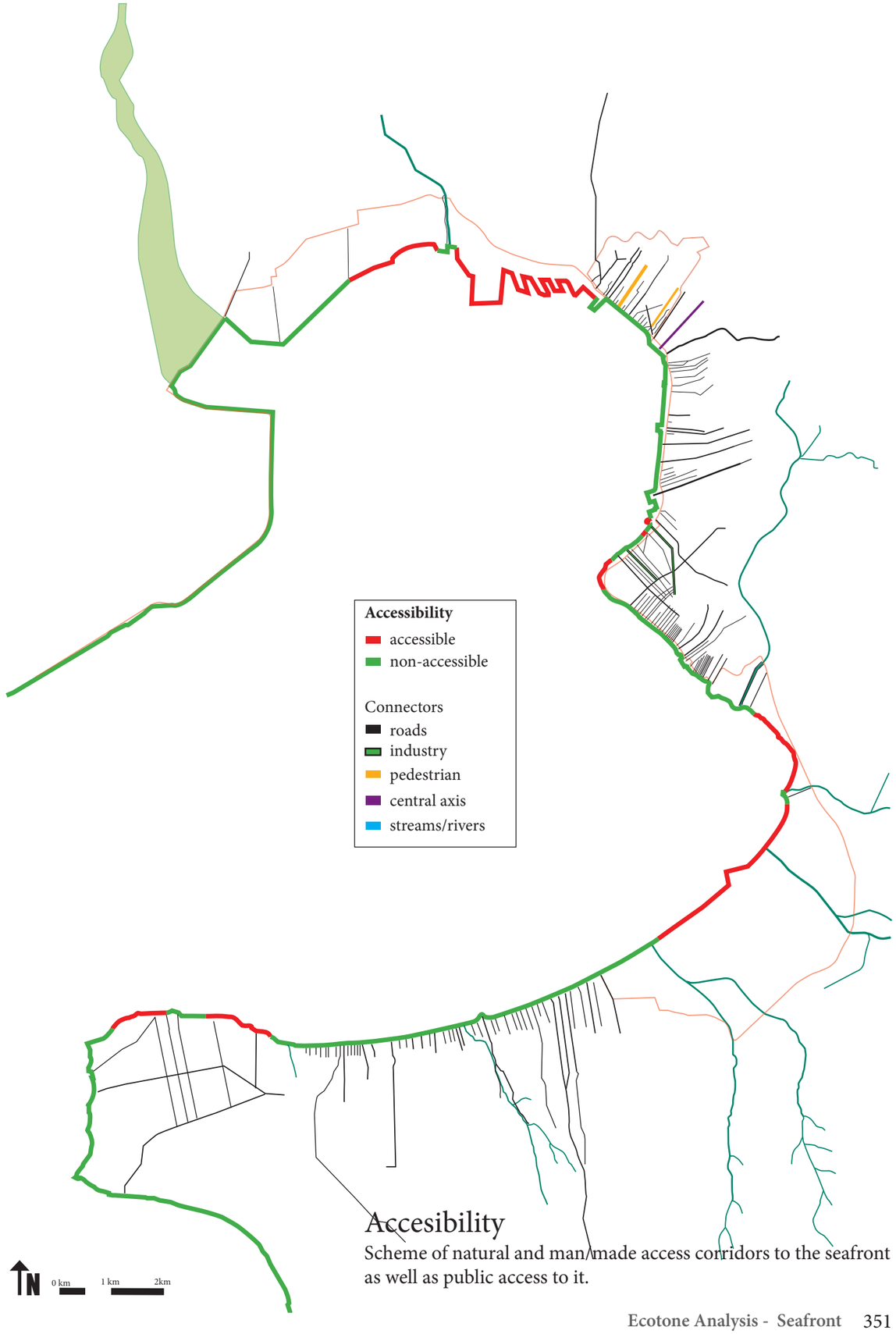


Accesibility

Scheme of natural and man/made access corridors to the seafront as well as public access to it.

Regional / Metropolitan : The Kalochori / Menemeni Industrial Area as well as the seaport and the adjacent areas attract a significant amount of commuter flows from the region. Similarly the historic centre maintains its position as a major workplace as well as a commercial area, although progressively losing this position to peri-urban activities and respective poles. The Pylea and Thermi leisure and development areas on the eastern peri-urban area attract and produce significant flows. This part of the seacoast is characterized by lack connection with the sea element. This refers both in visual/landscape terms, as well as formal connections to the seafront, and development of seafront activities. The shipyard area of Thermi that functioned for over a centrury was closed and recently eradicated giving space for the development of future uses. Finally the beach area of Perea, Agia Triada & Neoi Epivates is a popular destination during the summer months for swimming and beach activities, while the rest of the year it maintains a constant activity of taverns/cafeterias although of a more limited intensity. As far as cultural poles is concerned there are two: the White Tower area, and the Music Hall area. The Mikra Sport Center on the eastern end of Kalamaria is a major pole of diverse athletic activities. As far as natural areas that serve as agro-touristic destinations the principal one is the Tri-delta area, with its characteristic landscape and the existing although limited network of naturalist routes. The Angelochori lagoon is another area of especial beauty that at has not been taken advantage as a possible attraction so far, with it principal function being the sea salt marshes / salinas. Next and last there are smaller educational poles such as the Center of International and European Economic Law between the Mikra Sport Center and the Peri-urban canal, or the Kalamari French School a little bit to the east. These attract student flows that surpass the local scale.

Urban/Local : Next in scale are the various poles that have a local effect. These present a variety of uses such as sport facilities (Poseidonio Sport Center, or the various small marinas), educational (local school centers), Health (Panagia Hotel in Nea Krini), Public space (small parks and squares), Recreational (taverns and bars)

Types of flows

Next the analysis will look at the different types of flows and their relation with the seacoast. The seafront has the double function of both a corridor and an attractor of flows and thus it serves as a key element of the regional mobility structure. The flows present along the coast can be divided in the following categories:

A. Vehicular traffic:

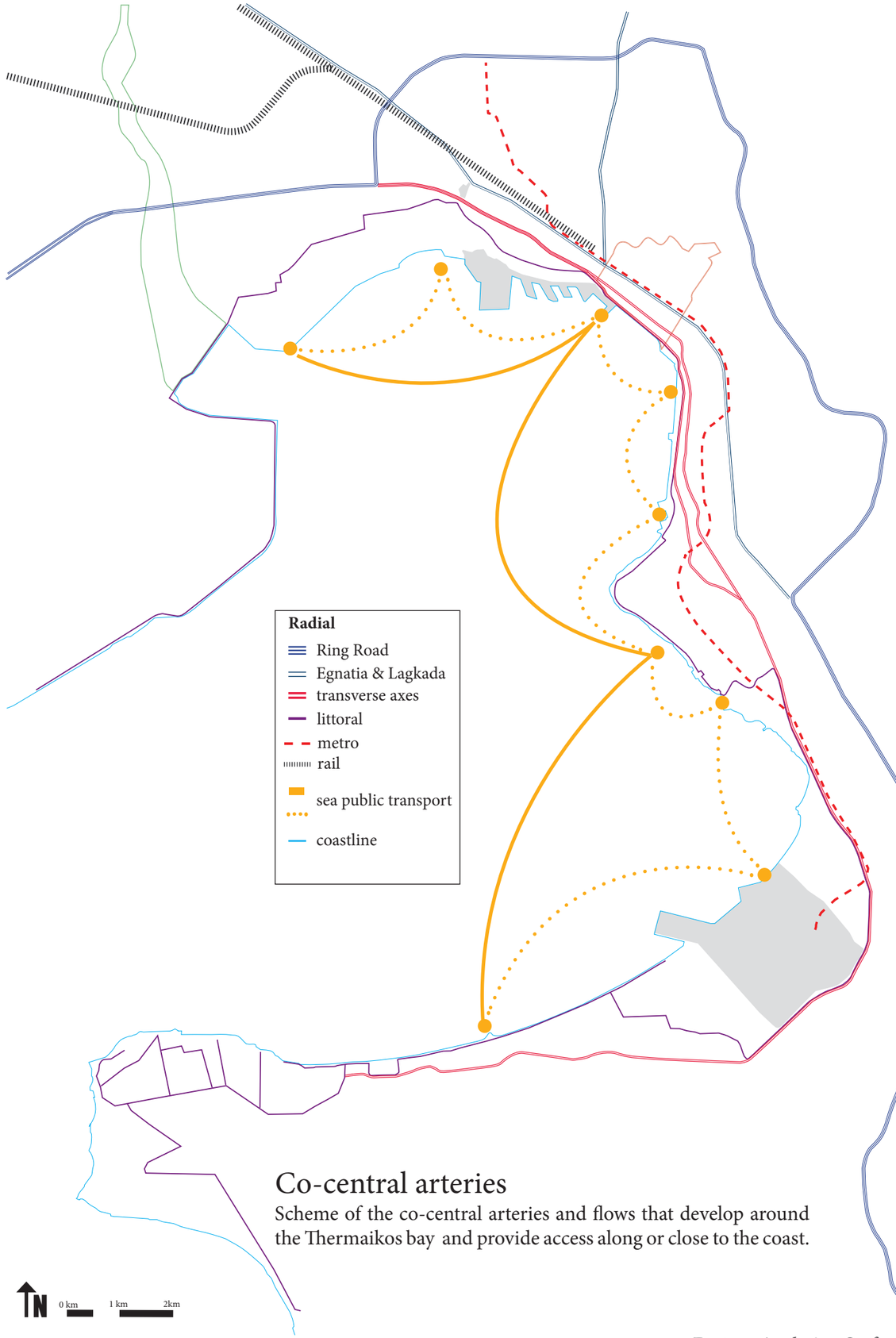
The seafront as mentioned serves as major mobility corridor, and roads arteries in many sections develop in direct contact with the water or along the low slopes of the adjacent gentle slopes encountered along the Thermaikos bay. Starting from the west and the tri-delta area, there is a seafront road, of low traffic that mainly serves for tourist access as well as local farmers and muscle farmers. The road continues across the Gallikos estuary and then continues more inland through Kalochori and the local industrial areas, and parallel to the port facilities. The road retakes its seafront protagonism after the end of the Historic Port and along the Historic centre of the city (Palia Paralia). In continuation it crosses the White Tower Park, shifted slightly to the interior, reaches the City Hall area and enter the Nea Paralia. Along this part it runs parallel to the coast all the way to the bifurcation before the Music Hall, separated from the sea by the lineal park . At this point the combined area of the Music Hall and Poseidonio Sport Complex pushes the road a bit to the inside, and then returns to the seafront at the beginning of the Karampournaki district. From there it runs along the coast and follows the curve of the cape around the Old Kodras military camp. Then as it enters it runs again parallel to the sea, with a slight height difference from the sea level and as it reaches Nea Krini it turns inland to meet with the Farm School Avenue. This avenue heads south, and is divided from the sea by various commercial centres and installations and only at the height of the node/exit of the Retail Park it reaches a very close distance to the sea, and after passing it, it heads inwards once again in order to by-pass the Aiport. Once past the airport there seafront reappears (Aktis road) with a local traffic character. It runs parrallel to the sea crossing Perea, Neoi Epivates towns and before it reaches Agia Triada at the camping site it turns inwards bypassing the site and returning to the sea afterwards all the way to the end of the Agia Triada beach. After this point there is no seafront road artery present along the coast.

One can observe co-central arteries developing parallel to the seafront. The arteries adapt to a great degree to the local geomorphology, with a critical point being that east of the historic centre (at the height of the central axis), where the narrow passage between mountain and sea forces the arteries to converge and fit within this limited space. Apart from the various co-central avenues the next element in the hierarchical structure is the ring-road structure (analysed in the next chapter), the interior and exterior. On the lower level there are the smaller local, or access roads that provide point accessibility to the coastal front.

B. Public & light traffic:
As far as public transportation is concerned, the only available option is that of the bus transportation that covers the greatest length of the Thermaikos coast. Nevertheless it is subject to the local traffic and road conditions which hinders the optimum performance of the regional bus system. The metro line once in function and completed all the way to the airport will provide a valuable, reliable and fast access on this co-centric direction and aid in revitalizing selected areas along the coast. As far as bike lines and access is concerned the only section of the coast that has a designated bike lane is along the Nea Paralia and the Historic Centre and all the way to the port.

C. Sea Transport:
The public sea transport inside the Thessaloniki Bay is currently non-existent. The idea of restoring the sea transport has been brought up various times (1997 international competition, municipal studies), but had not been implemented due to different reasons and difficulties until the summer of 2014 that the service was reenacted. The map on the right shows the spots that have been chosen in the various studies for hosting sea transport stations/stops. Sea transport on the other hand is available for national destinations, depending on the season of the year.

D. Pedestrian flows:
Seafront corridors are created along various sections of the seafront and almost exclusively in front of urbanized areas. The historic centre (1.6km - from the seaport to the Central Axis), and the Nea Paralia (3km from the Central Axis to the Thessaloniki Music Hall) are the principal corridors demonstrating elevated activity and urban value. The Karampournaki seafront (3km from the Thessaloniki Music Hall



Co-central arteries

Scheme of the co-central arteries and flows that develop around the Thermaikos bay and provide access along or close to the coast.

to the Palace by the cape) and the Nea Krini (3.2 km from the Palace to the Mikra Athletic center) are found in a less developed and accessible state, and a less vibrant pedestrian corridor, with corresponding poorer / less diverse activity. The Perea-Neoi Epivates-Agia Triada seafront (6.2km) presents a totally different character in terms of landscape and activity.

New centralities / old peripheries / Voids:
Following the analysis a series of emerging centralities and latent areas appear, some at first sight, others after more careful consideration. Starting from the west and the tri-delta area: **i)** The estuary area formed by the three river hold a great potential for converting into a highly attractive natural destination. Given its close distance from the city centre, easy and fast access can be guaranteed for local and regional users. **ii)** Next to the east, the wetlands formed in the area of Kalochori with its characteristic landscape, are another spot that could serve as a major natural pole. Both the contamination (physical and visual) present in the area, along with its fragile ecological state, deter the development of its latent potential. **iii)** In continuation the White Tower Park, that is located at the cross of the Central Axis with the seafront is a latent centrality of great potential. The functional and logical re-establishment of the Central Axis is necessary for creating the conditions that can lead to the upgrade of the area. **iv)** Continuing south at the end of the Nea Paralia, another emerging pole can be found by the Poseidonio Sport Complex, where in combination with the two buildings of the Music Hall, the schools, the latent developments (Allatini) and the availability of open spaces, it can play a very important role in revitalizing and dynamizing the local and regional urban structure. **v)** Further south to the tip of the Karampournaki, lies the ex-military camp of Kodras. Its reintegration into the urban fabric is vital and it can host various local and regional uses as well as providing important green areas, in an iconic and key area for the city. **vi)** The old shipyard area of Pylaia that has been cleaned up and the adjacent seafront is a critical seafront area. The development pressures from the surrounding areas are a major threat for its future. A future design should guarantee the seafront accessibility and activities and incorporate diverse uses that can secure its seamless integration with the rest of the seafront and the wider urban structure from Nea Mikra all the way to the airport. **vi)** North of the Angelochori, at the so call Megalon Embolon lies the property of the Navy, that hosts a Second World War fortress as well as a national emission centre. The area is located in a strategic position at the southwestern tip of the Thessaloniki bay, and has available space for the creation of important and key regional uses. **vii)** Last the lagoon of Angelochori, is another natural area that has not been taken advantage and lacks proper promotion and connection. At the geographical and ecological tip of the Megalon Emvolon and at the western entrance of the Thessaloniki bay it holds a position with a multiple significance and importance.

vi. Edge / Ecotonal areas

The question of limits is naturally a everpresent question in the analysis of the Thessaloniki´s bay seafront, given that the coast is by default a key edge area of regional importance that goes configuring a series of sequencial ecotones along its course and a series of key nodes for the regional and local structure connecting with the interior. Given the extended length / circumference of the bay and the varied conditions and uses of the adjacent areas, different and diverse types of ecotones can be found, each with specific characteristics. The ecotones encountered can be categorized in the following broad categories :

Natural ecotones
This category refers to ecotones formed naturally over the progression of the years and that its functioning relies principally on natural processes that occur between the corresponding limit areas. The natural areas around the bay as seen have been reduced significantly and thus exist few pure natural ecotones. The Axios river delta area takes a significant ecological weight in the regional ecological functioning as well as occupying an extended surface. The Gallikos river forms an ecotone along its course, separating the estuary lands from the adjacent urban areas and agricultural areas. The next natural ecotone can be found at the other extreme end of the bay, in the area of the Angelochori lagoons. The Angelochori lagoon have a long presence in the area, and a key function given the strategic position that is located. The lagoons and the adjacent coastal area, form a relatively short but intense ecotone, between the sea and the inland of the Megalon Emvolon.

Natural - urban ecotones
This next category makes reference to edge areas developed along limits between natural and urban areas. This relationship configures a spatial type of ecotones, where the focus centered upon the interaction between the two distinct fabrics. This type is the prevailing one along the bay, forming on the contact line of the urban fabrics with the natural and semi-natural areas. The Kalochori lagoons, with their particular process of formation, is such an ecotone, which is characterized by its fragile state and equilibrium. These wetland have formed a characteristic ecotone between the urbanized areas of Kalochori and the adjacent industrial/manufacturing areas and the sea. Alterations or impacts on either side affect significantly its state, ecological and physical, and thus render it of prime importance for the regional structuring. This ecotone continues to the east, towards the historic centre of the city, changing gradually its character. Next, the historic waterfront, is a short and narrow ecotone, but with an intense edge activity, leading all the way to the node of the Central Axis. At this point the key urban ecotone of the Central Axis meets the waterfront creating

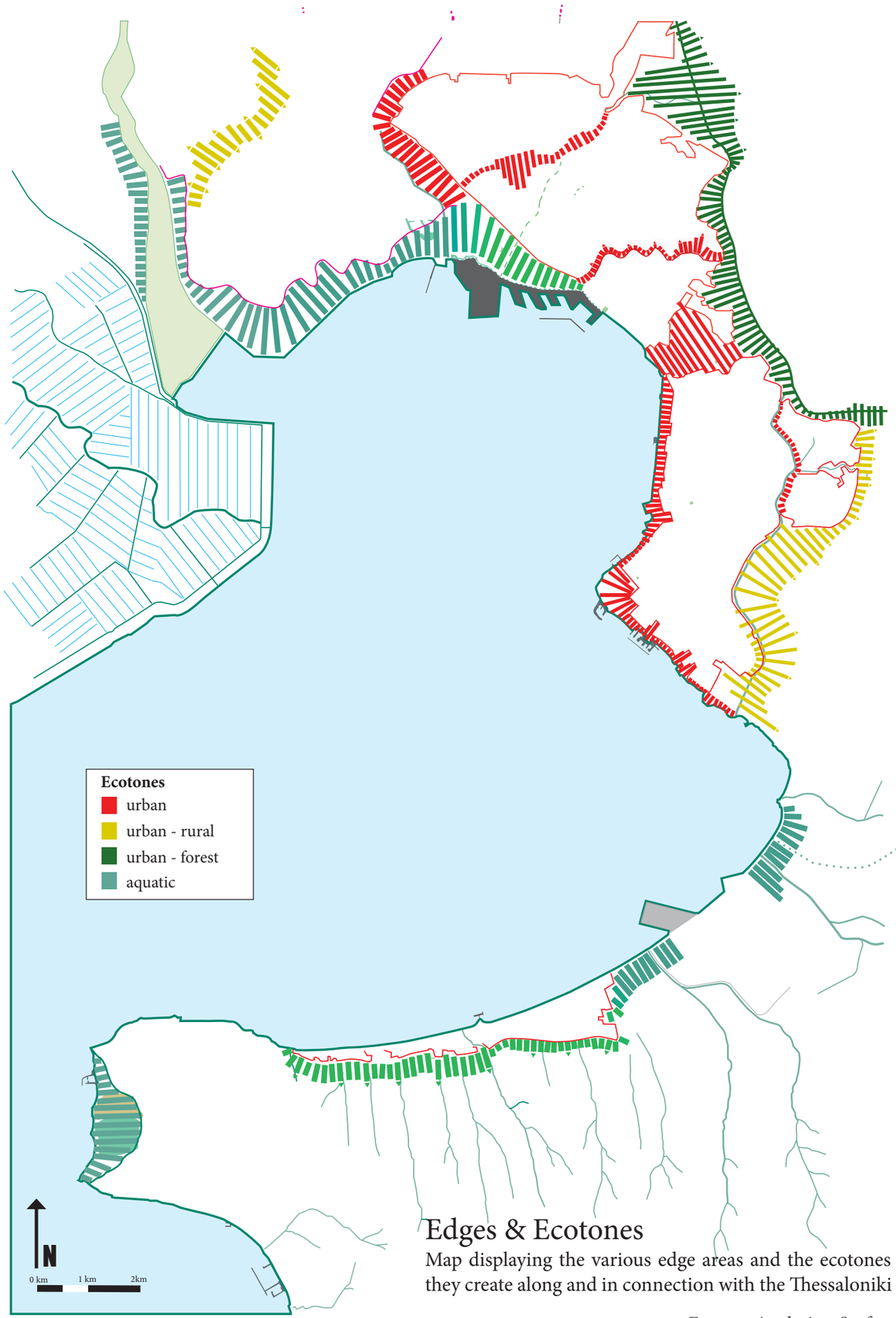
a centrality / node of unique significance of regional importance. In continuation the Nea Paralia / Kalamaria and Nea Krini front create a lengthy variable in width ecotone between the urban fabric and the sea element. This ecotone in the Nea Paralia part presents a rigid strict limit line, set by the promenade, while in continuation the seafront is presented in a more natural state. At the end of this ecotone, connects perpendicular another ecotone, the one developed along the peri-urban canal and the eastern Thessaloniki fabric. Next ecotone of this type can be found further to the south at the beginning of the Perea settlement. The continuous but permeable urban front created by the Perea, Neoi Epivates and Agia Triada settlements and developed parallel to the local vegetation, creates a hybrid ecotone, between the sea and the inland part, with its local streams and adapted vegetation.

Urban - urban ecotones

This third type of ecotones develops between already developed urban areas, and thus the questions posed focus less on natural / ecological processes and more on activity and socio economic interactions. Starting from the east the first important ecotone of such nature is the one developed along the outer Ring-road which joins the Kalochori ecotone towards the historic centre. This ecotone lies in the interface zone between the residential urban zones inside the ring and the exterior agricultural areas. At the junction point with the historic centre connects another important ecotone, the one of the western walls. This last ecotone as seen in the respective chapter, divides two areas of the city of distinct socio-economic conditions. The wall fortification serves both as a physical and mental division between the respective urban fabrics, but at the same time serves as an key sea-mountain corridor of unexploited potential. Another such corridor is the ecotone that comes next, the Central Axis ecotone. It develops along the interface zone created between the historic centre and the eastern expansions. After the growth of the city in the second half of the century, this ecotone is encountered in the contemporary epicentre of expansion, and accordingly sets the point zero for the seafront expansion along the coast of the city.

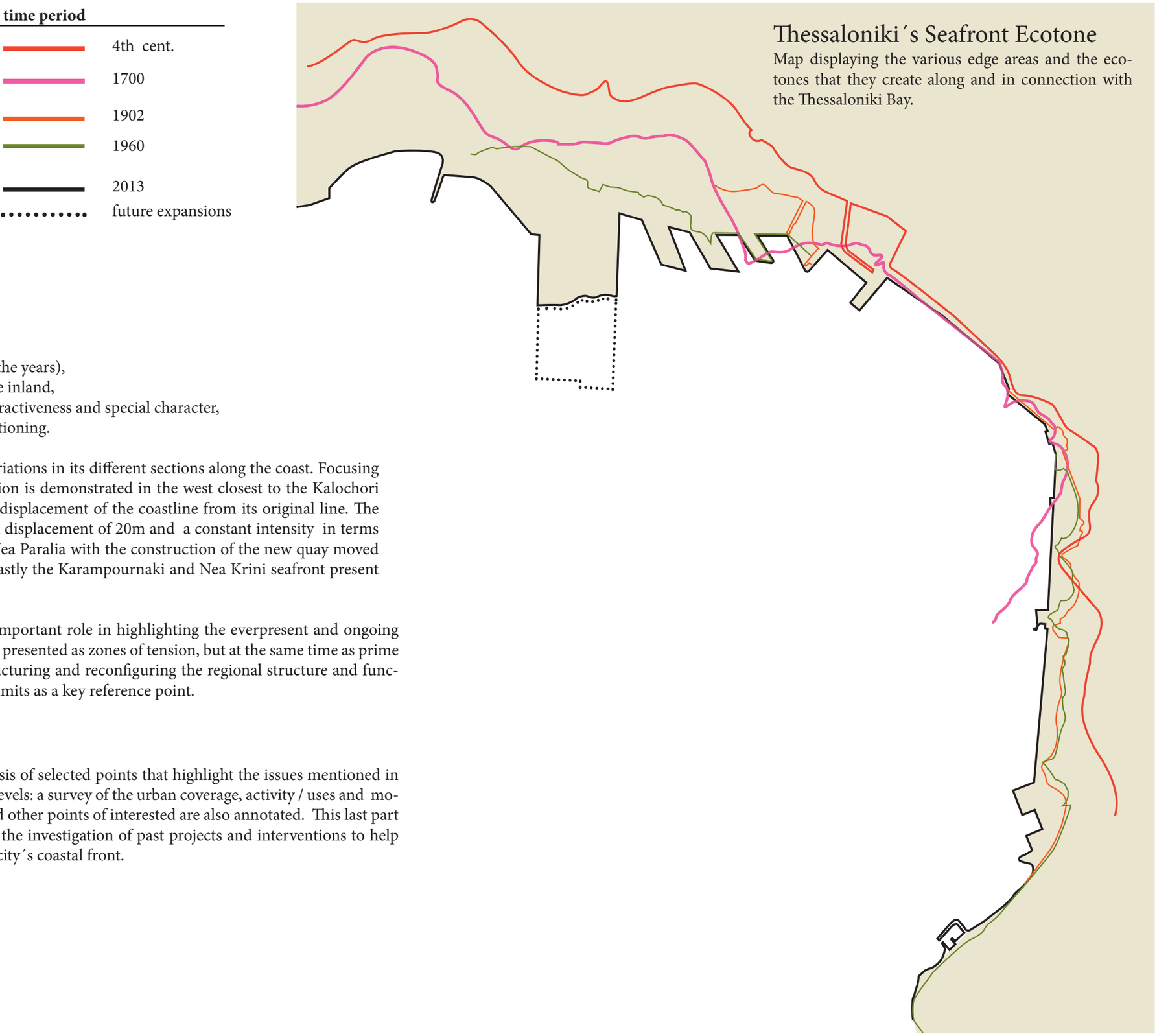
Seafront ecotone

The seafront ecotone is by default the key regional ecotone. It has historically attracted human activity, the latter adapting to its changing landscape and coastal morphology and demonstrating a continuous historical activity. The principal characteristics of the ecotone summarized are the following:



Edges & Ecotones

Map displaying the various edge areas and the ecotones that they create along and in connection with the Thessaloniki Bay.



i. its constant state of flux (varied over the years),
ii. its ecological / social relation with the inland,
iii. its intense edge activity due to its attractiveness and special character,
iv. its fragile and special ecological functioning.

The variation of the seafront presents variations in its different sections along the coast. Focusing on the city´s seafront the greatest variation is demonstrated in the west closest to the Kalochori area, with variations of almost 900m of displacement of the coastline from its original line. The Historic Center seafront presents a small displacement of 20m and a constant intensity in terms of activity. The eastern seafront of the Nea Paralia with the construction of the new quay moved the seafront 90-100m towards the sea. Lastly the Karampournaki and Nea Krini seafront present the smaller variation and flux.

These ecotones mentioned above, play an important role in highlighting the everpresent and ongoing dynamics of the regional structure. They are presented as zones of tension, but at the same time as prime examples of zones of opportunity for restructuring and reconfiguring the regional structure and function, with the Thessaloniki bay ecosystem limits as a key reference point.

Selected Zooms / Analysis Areas

The next pages present an individual analysis of selected points that highlight the issues mentioned in the earlier text. This analysis is done in two levels: a survey of the urban coverage, activity / uses and mobility / networks. Landmarks, keypoints and other points of interested are also annotated. This last part will conclude with the analysis and pass to the investigation of past projects and interventions to help comprehend the planned dimension of the city´s coastal front.

Sample Analysis Areas

1. Kalochori

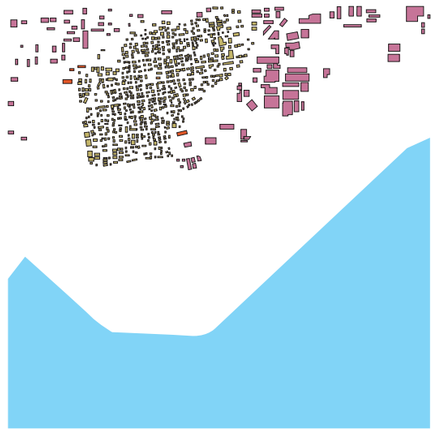
2. Historic Centre / Seaport

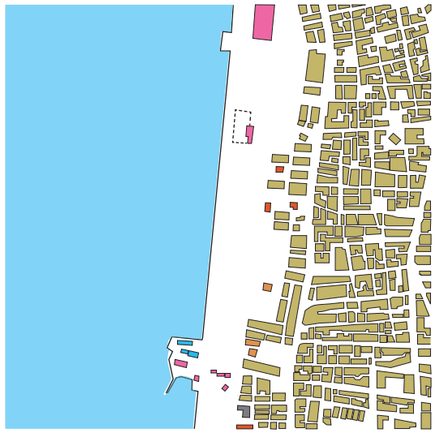
3. Historic Centre / White Tower

4. Nea Paralia

Urban Cover

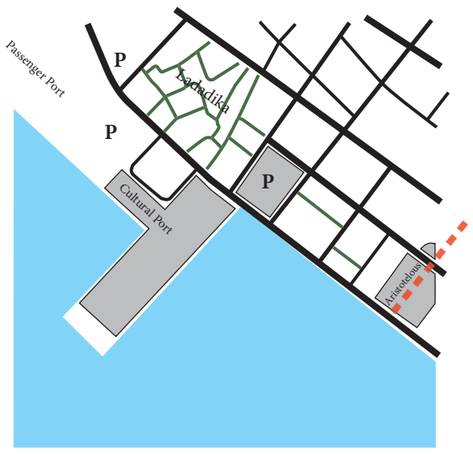
- residential
- culture
- educational
- leisure / commercial
- military
- administrative
- industry & manufacturing
- sport
- health

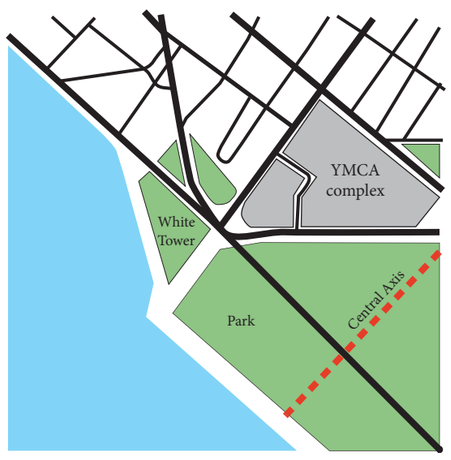


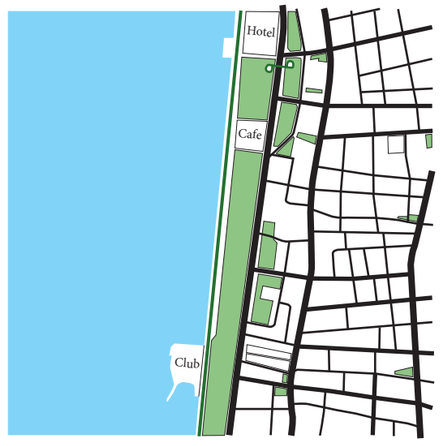


Mobility

- road arteries
- pedestrian
- watercourse
- wetland
- park / square
- Green areas

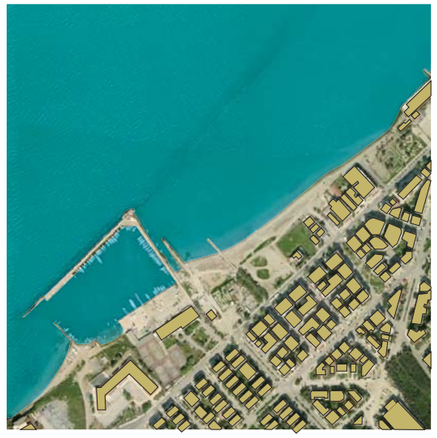






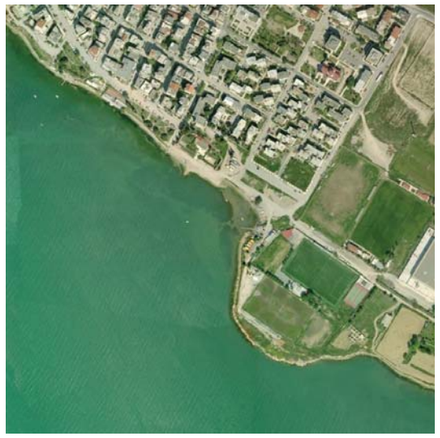
5. Posidonio

6. Karampournaki



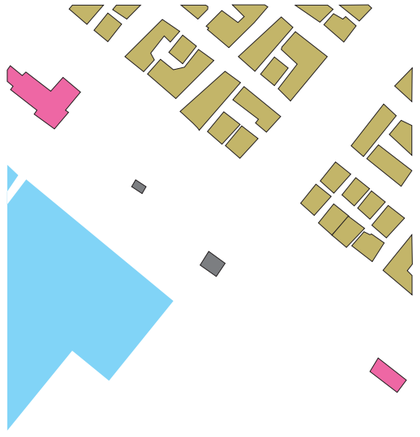
7. Nea Krini

8. Agios Pavlos & Mikra



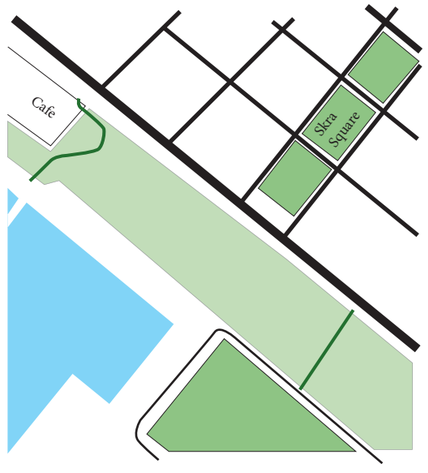
Urban Cover

- residential
- culture
- educational
- leisure / commercial
- military
- administrative
- industry & manufacturing
- sport
- health



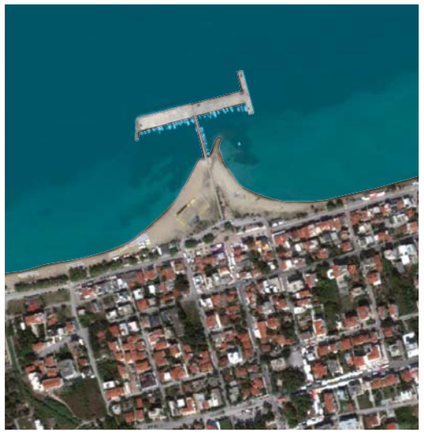
Mobility

- road arteries
- pedestrian
- watercourse
- wetland
- park / square
- Green areas



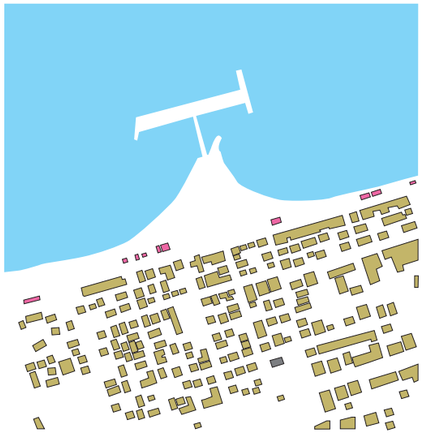
9. Thermi

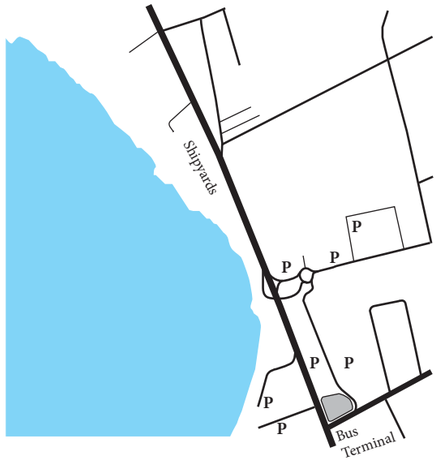
10. Neoi Epivates

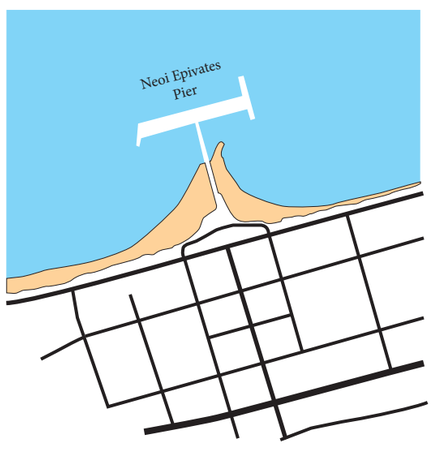


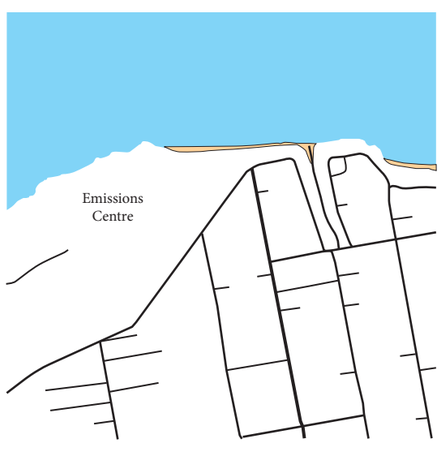
11. Megalon Emvolon

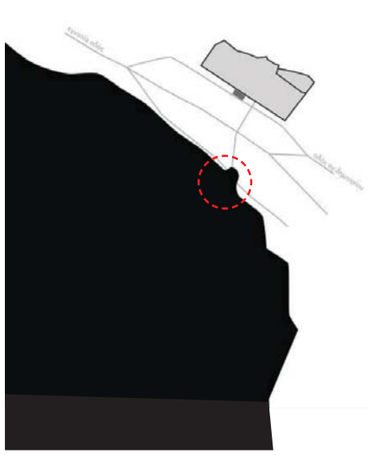
12. Angelochori



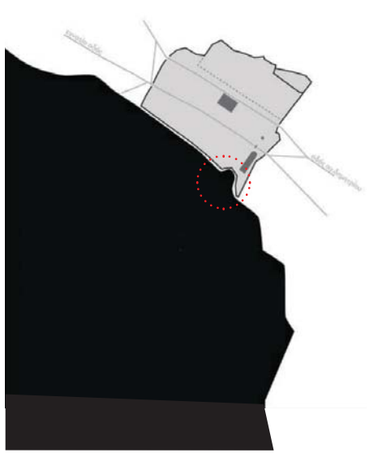




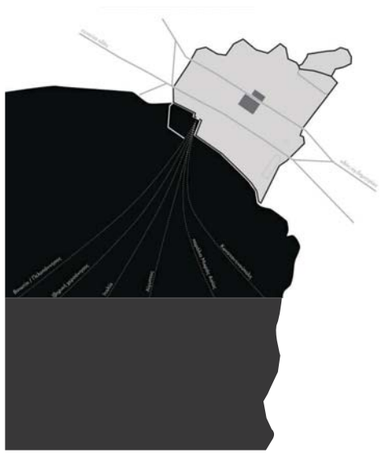




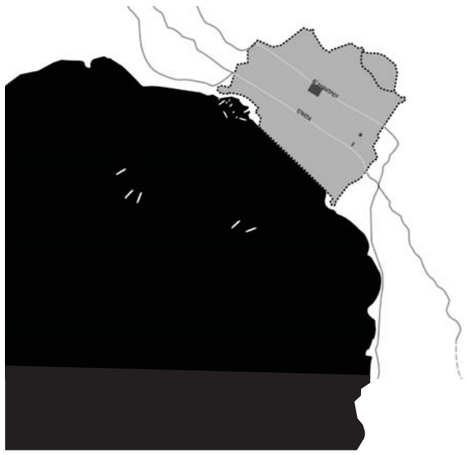
315 - 31 bC



31 bC - 4th century aC

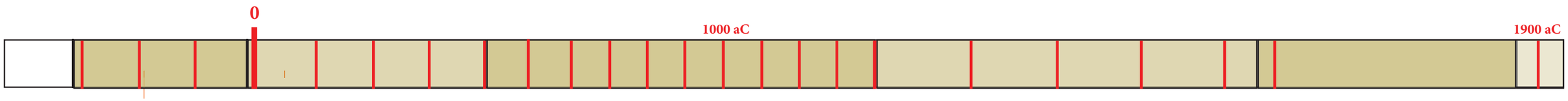


4th - 15th century aC



1430 - 1867

1867 - 1882

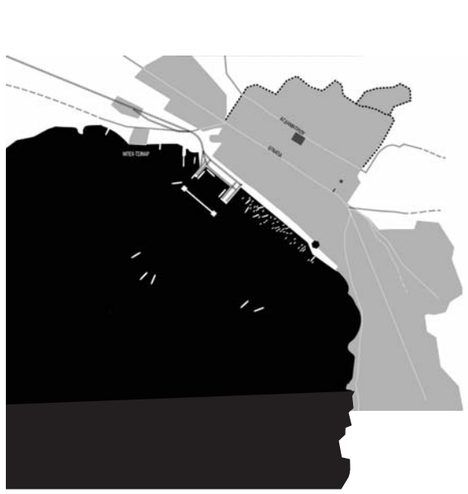


vii. The Transformation of the seafront
Projects & Processes

The previous analysis has produced a systematic and comprehensive analysis of the seafront edge, a detailed lecture that permits understand sufficiently the ongoing conditions and dynamics. Comparing that with the initial lecture of the preexisting and existing biophysical and antrhopogenic matrix, we can discern better the continuing or ceased dynamics that have served as the driving forces behind the morphogenetic process.

Observing the evolution of the city from its foundation (315 bC) till today, one constant factor is the sea-city relation both in terms of proper functioning as well as the evolution of the urban form. The strategic location of the city and the successful, if not at least adaptive, relation it developed with its natural surroundings. Today, one could assert that the seafront landscape is presented with a lowered social value, with relation to use the residents give and receive from the sea. The visual value of the seafront landscape on the other hand remain in high consideration, often limiting interventions to mere aesthetic ones, and driving real estate values accordingly. Objective of this analysis is to compose these historic layers with current potential presented along the seafront mosaic area, and initiate a discovering of hidden and latent layers. A crucial element / factor for all port-cities is its port and its evolution that goes linked with the city´s development. In the case of Thessaloniki, as seen previously, the decision to expand the city towards the west, has been a crucial turnpoint for the city. From one side, it left the port with more than sufficient space to develop with time, and on the other, and most importantly it left the historic center´s seafront

(Source: Adamapoulos G, Papadopoulou D. & Pappas F., 2012)

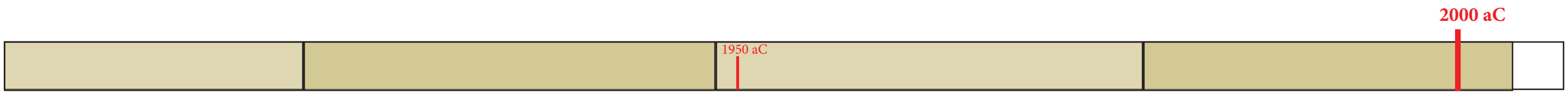


1882 - 1917

1917 - 1940

1940 - 1970

1940 - 2013

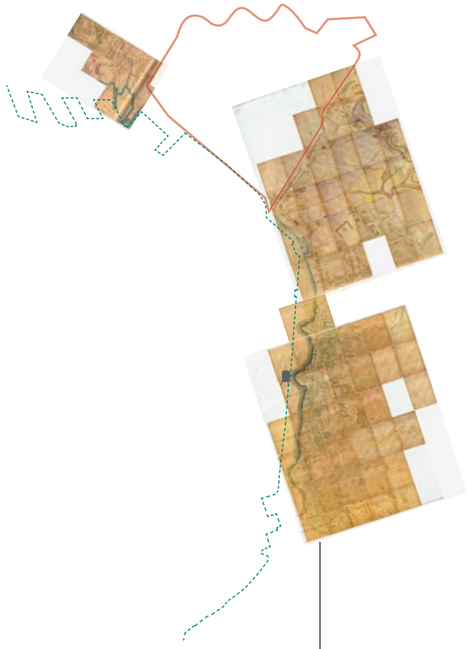


free for civic use,. Consequently two distinct fronts were created . The port, expanding to the west towards a industrial gradient all the way to the Gallikos river, and the urban/civic front expanding extensively with time past the Karampournaki and the Nea Krini seafront. This qualitative differentiation of the city´s seafront is crucial in understanding the evolution of the city in relation with the parallel co-centric scheme.

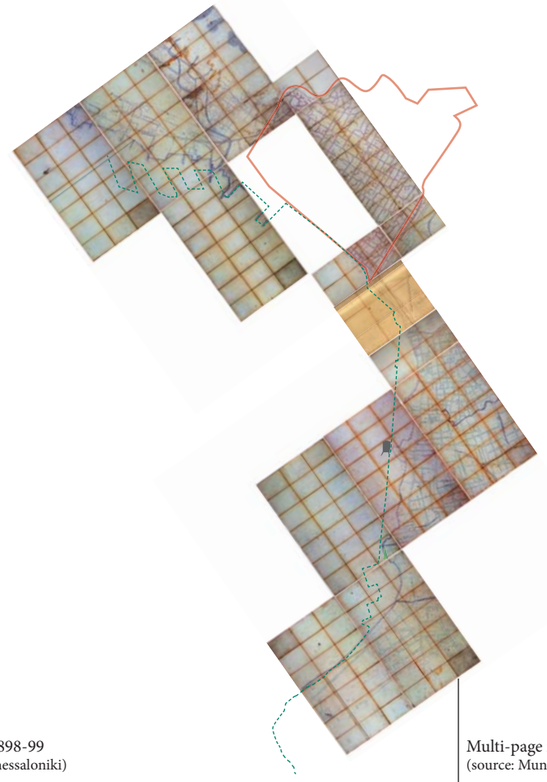
The following section will intend to present these formentioned processes for the distinct sections of the seafront. This will be accomplished through **i)** the presentation of the different plans developed in the recent history of the city, **ii)** cartography demonstrating the transformations experienced and **iii)** historic photographs along the coastline. This study will significanltly enhance the knowledge and comprehension of the seafront edge function and dynamic as the by default regional ecotone.

Thus the primary objective of this section is to establish a link between the past and the present, as a multilayered lineal reality and discern conditions and conditioners and ultimately understanding the processes that have taken place and form in the past and to the present day. The analysis structure performs an individual study of the different sections of the seafront, as well as plans of different scales:

Contents

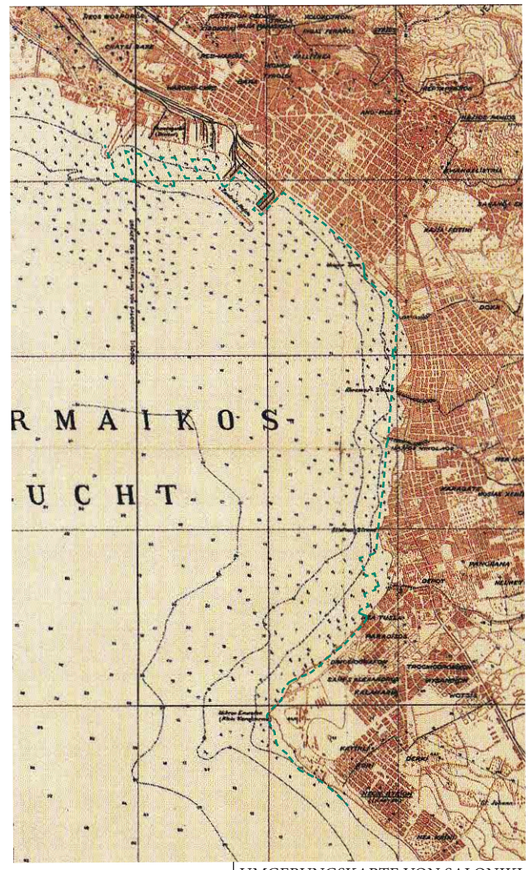


Multi-page maps of 1898-99
(source: Municality of Thessaloniki)



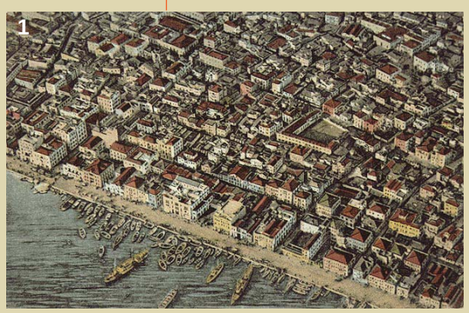
Multi-page maps of 1819
(source: Municality of Thessaloniki)

The revised H'ebrard Plan of 1929
(source: National Map library

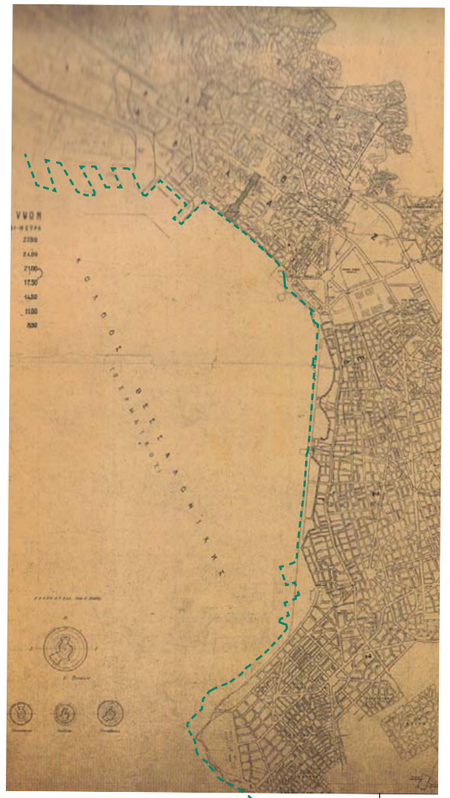


UMGEBUNGSKARTE VON SALONIKI
(source: National Map library)

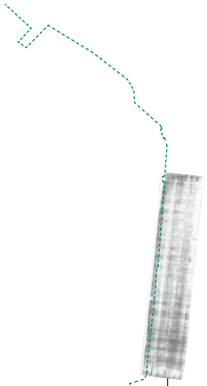
1900
1898
late 19th century
1910
1916
1919
1925
1929
1940
1950



1. Aerial View of the Historic Centre of Thessaloniki in the end of the 19th century. The old city grid before the city fire and the Hebrard plan is visible. The tight urban grid, with the low height, roof -tiled buildings that extended and run along the urban seafront. The port activity, especially small fish boats and smaller ships, used to extend in front of this part of the city, creating a characteristic waterscape **2.** View of of the east seafront of the historic centre. The White Tower can be seen, still surrounded by its fortification, and neighboured by low height buildings. **3.** View of the historic centre seafront, after the creation of the promenade **4.** Render of the seafront part of the Aristotelous Square as envisioned by Hebrard **5.** Aerial view of the area of the White Tower looking up towards Ethnikis Aminis Avenue. A traffic roundbout can be seen, and right behind it the buildings of the Company of Macedonian Studies and the Officers´ Club under construction.
(sources: **1.** Wikipedia.com **2,3,5.** FlickR **4.**Karadimuou Gerolimpou)



Ministry of Social Welfare,
General Direction of Settlements
(source: National Map library

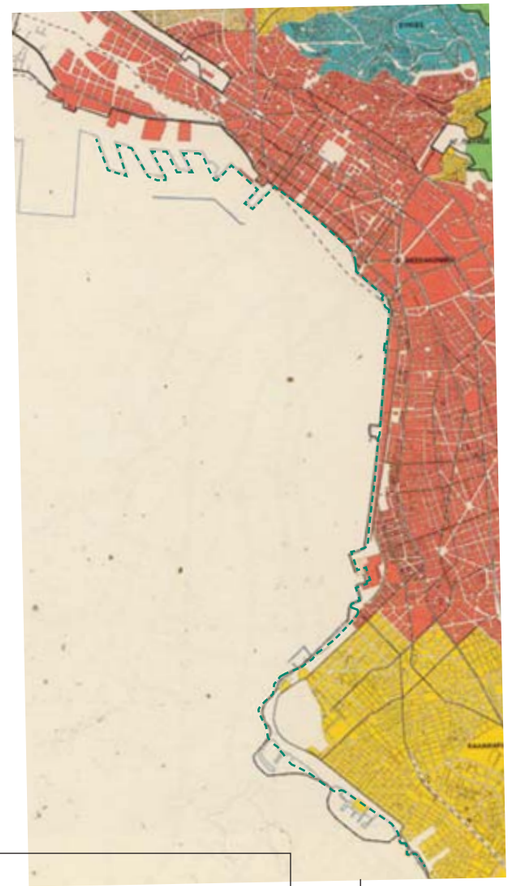


1958
(source: Municality of Thessaloniki)

Geographic Military Service
Thessaloniki City Diagrams
(source: National Map Library)

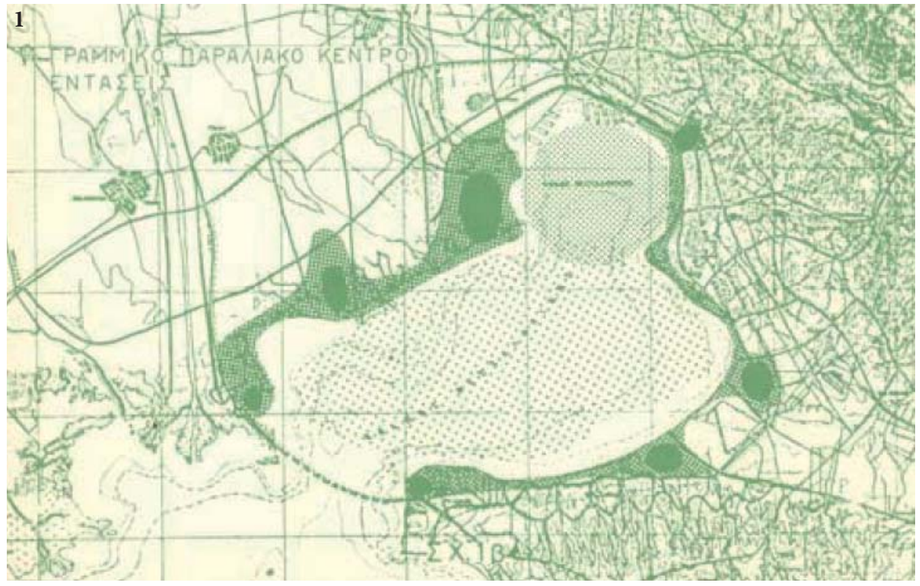
2001
(source: Municality of Thessaloniki)

Map of the Urban Unit of
Thessaloniki
(source: National Map Library)



1956 1958 1960 1975 1980 2000 2001 2005

6. View from Kalamaria looking towards the historic Centre. The new embankment and construction of the New seafront is under construction, with the first part (up to ....) seen terminated. The photo provides testimony to the rich and diverse original coastline. **7.** Another photo of the new Seafront, around the area of the Makedonia Palace Hotel. The designated areas can be seen still unformulated, while a part of ships can also be seen docked on in the back. **8.** View of the Aristotelous square from the sea with the surrounding buildings still under construction **9.** Aerial View of Aristotelous Square and Axis **10.** The Makedonia Palace Hotel as and where it still stands today, bordering the seafront and the urban fabric. 11. Aerial view of the Seafront around the area of the Central Axis.
(source: **6, 9.** Kadimou Gerolimpou **7.** Likidis G. **8.** FlickR. **10, 11.** Oikonomou A.)



Plans: 1. Lineal seafront centre - tensions, 2. Distribution of portuary functions, 3. Coastal zone division, 4. Network of sea transportation, 5. Poles of Activity, 6-9. Details of coast pole development.

The Spatial Study of Thessaloniki of 1968

An attempt for a complete and integrated vision

The seafront was a central issue in the Spatial study of 1968 and for this reason three issues of the study were dedicated to it. The study chose to study the seafront on a double level, both a territorial covering the extended area of Thessaloniki, as well as an urban level, searching for interventions on a local scale. The role of the seafront is recognized as a continuous element and as a key instrument for the organization on a regional / metropolitan scale[34]:

> "We have accepted the gulf of Thessaloniki as the principal pole of attraction, around which the three main functions: Leisure, Housing and Work are developed, in a ring-like fashion. The leisure zone, that consists of a sequence of public spaces, surrounding the sea and creating a network, we call the **Linear Seafront Centre** of the city (plan 1)."

The seafront is apart from the distinction in perimetric rings of different functions is also divided into three distinct zones, and each one divided into smaller areas accordingly, creating an impressively long and extended projected seafront for the city of Thessaloniki. These areas are (plan 3)[35]:

Zone A (15km/ 10 year horizon)
Extending from the port area to the Mikra Airport , with a stretch of almost 15km, it served the needs of the city for the imminent time, a 10 year horizon, integrating existing recreation / leisure facilities and creating an *organized continuity of interesting poles and stations, connecting the centre of the city with the newly created centre of Mikra*.

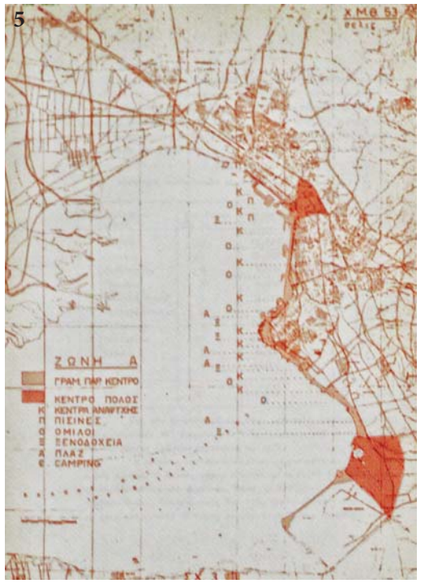
In the section of the Old Seafront, the study proposes to maintain to a great extend its existing character, but at the same time converting to pedestrian the seafront road, and creating an island extending into the sea, hosting a wide range of recreating facilities (hotels, swimming pools, parks) and connected with a network of pedestrian streets with the historic centre. A similar intervention is planned for the newly built at the time Makedonia Palace, where a new centre of high level tourism is proposed, along with the erection of another big hotel, a complex of swimming pools and recreation centres.

As far as the New Seafront is concerned, the recently constructed seafront part is considered by the study as being characterized by a vast linearity and a disconnection from the city fabric. The areas of intervention are marked, where leisure activities will be developed, *on various levels, connected with ramps and with the possibility to bear strongly pronounced vertical elements*. The vast linearity is combated with extensions inside the sea and the intrusion of the sea inside the land (artificial lake by the Allatini Mills). The rest of the seafront is developed under the same logic up to Mikra, where a new commercial-administrative centre is proposed.

Zone B (13km/25 year horizon)
The second zone has a stretch of 1km and includes the area from the airport of Mikra all the way to the *Megalon Embolon*, where a connection with the opposite coast was proposed. Its character is principally touristic with a development of extended facilities of hotels and campings, beaches and recreation centers that were to serve not only local users but the whole city as well. Compared to the first zone, the development in this zone was thought out as more mild, with less intense edification and the predominance of open and green spaces that along or connecting with the seafront.

Zone Γ (50 year horizon)
The third zone that has the longest development horizon, is the development of the city front to the west, from the city port to the delta of the Axios river, intending to reconnect the entire western area of the city with its corresponding waterfront. This connection had been lost with the extension of the seaport to the west, the accompanying development of industrial facilities and the corresponding transport infrastructure. A first period of natural restoration of the area would be needed, aiding in the ecological upgrading of the area. After the 50 year horizon that the linear

34, 35, 36. Samarinis, P. (2006)



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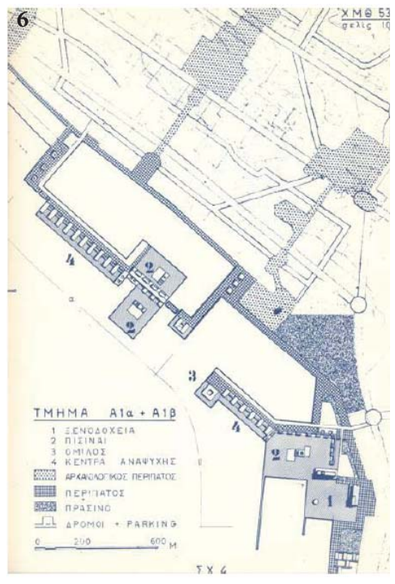

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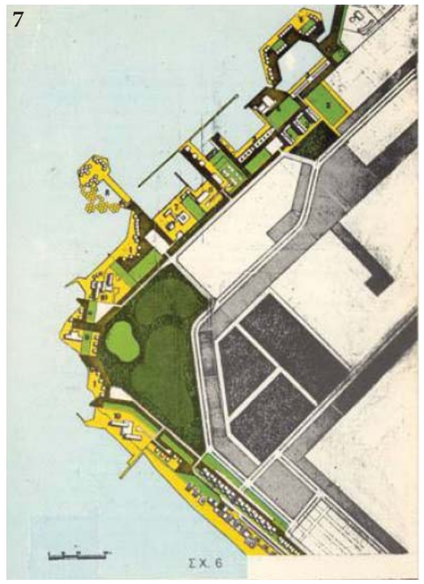

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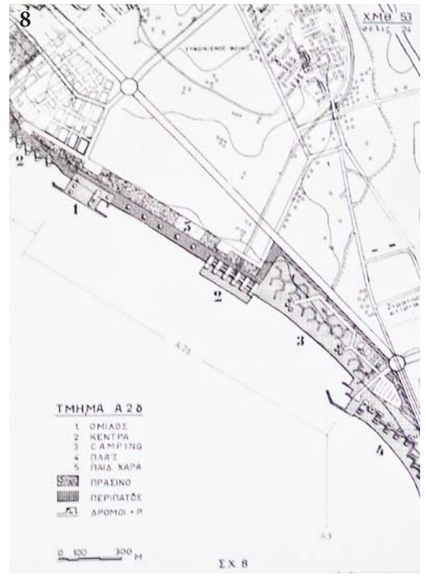

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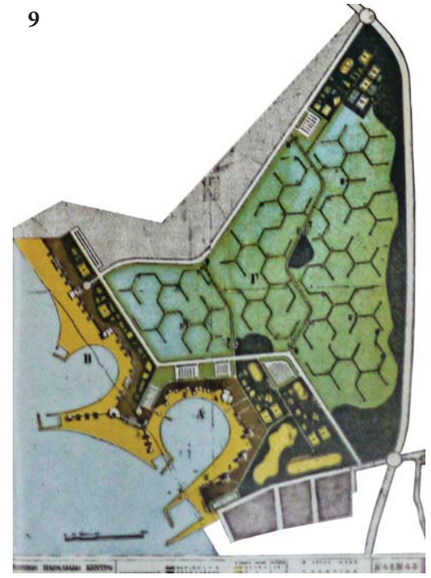


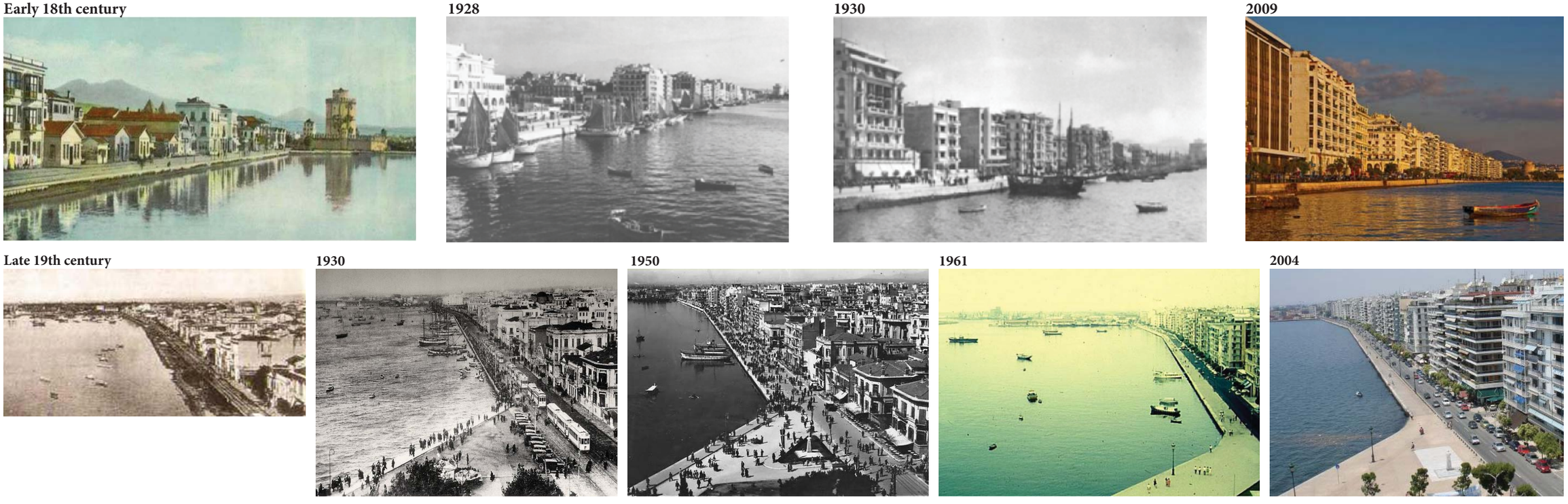
9

seafront centre will take its final form, it will close the network ring around the gulf of Thessaloniki. The gulf is then converted to an inner sea for the urban metropolitan space, a characteristic that is further emphasized by the undersea road connection in the area of the *Megalon Emvolon* with the opposite coast, as well as with the transfer of the seaport and the airport outside the bay[x].

The proposal for creation of the new seaport (plan 2), comes as a result of the observation that the existing seaport despite the projected extensions was considered impossible to serve the increasing needs of the city and the modern technical requirement set for seaports. The proposal is backed by a perspective and a potential upgrading of the role of the city of Thessaloniki in the Balkans and the extended european hinterland. The study predicts that the new seaport can be one of the important station along the shortest routes that connects Central Europe with Africa and the Indian Ocean. For this reason the new seaport location is proposed on the Delta -Loudias-Aliakmonas delta area , providing it with a direct connection to the hinterland through the Axios corridor and the river transportation system of Central Europe. Along with the creation of the new Airport, in the north, the new seaport would be connected by all means of transportation. At the same time, unobstructed by urban or civic uses, the new seaport would be free to develop an extended area of nautical and industrial character of international range. The existing port at the same time would pass solely to passenger-touristic character.

The emphasis that the study gives to the seafront is related to the importance that it gave to the geographical and geomorphical characteristics of Thessaloniki, and its projected growth and expansions. At the same time the study set a series of questions that are still relevant in the contemporary context. One issue raised, is the question of the urban limits, and the extension of the urban activities, and a question that remains present throughout the study. The idea of the Lineal Seafront Centre, is evidence of this preocupation to deal with the urban limits/borders. The study proposed a way to manage the waterfront with a deep time horizon, creating a vision of what the seafront should look like. Its proposals although at its time might have seemed unattainable, today although not necessarily correct, still seem relevant and necessary, given the dynamic expansion of the city and the emerging centralities that have appeared along the waterfront. The continuity and the extension of the seafront, converting it to a lineal centrality, gives indications of the proposed scale of application for the waterfront. The study runs and changes between different scales: from the regional urban scale to the district level and all the way to concrete point architectural interventions. Nevertheless, while all proposed interventions are characterised by an ambitious tone, their radical and breakthrough nature have rendered them utopic. This is due to the form of the proposal that did not seek a political & administrative and social consensus for their implementation and instead opts for a strict top-down application that did not necessarily express or fulfil the city´s will and capacities, and thus failed to reach an acceptable definition.

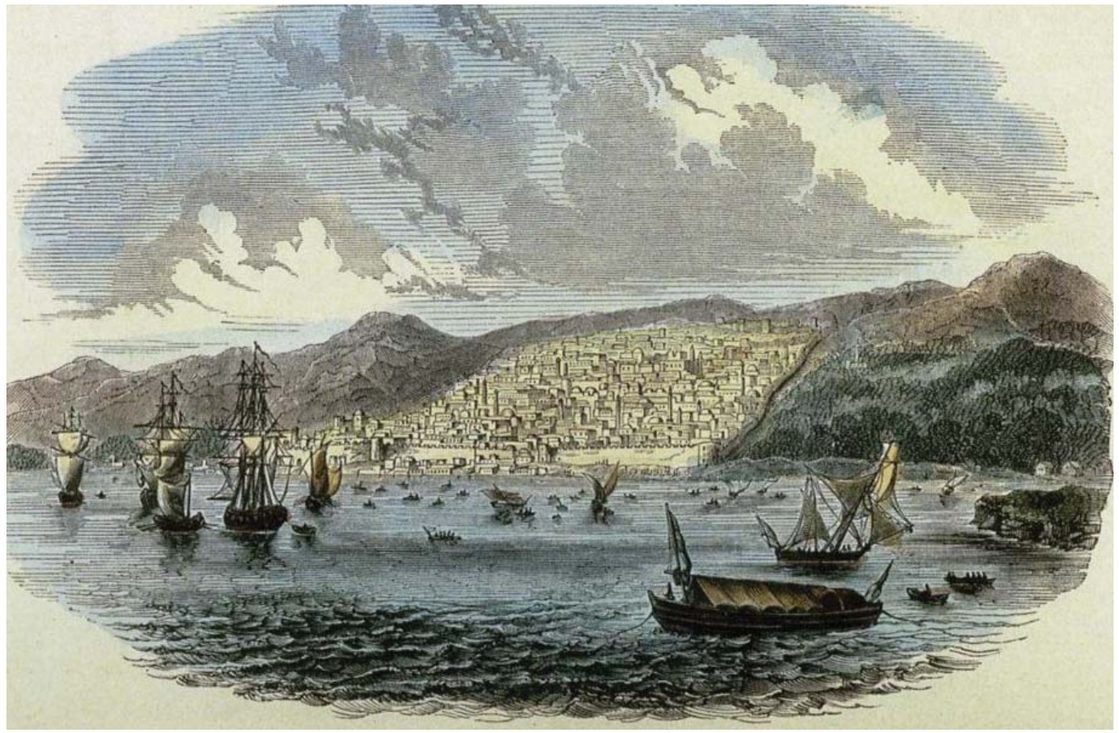
This omission is related with the lack of an integral historic contemplation on the city´s relation with its seafront. Instead it opts for a functionalist scheme, the prevailing urban practice of the time, that solely depends on technical means to fulfil its mission. On the other side a complete vision of a regional scale would permit a coordinated and directional plan on which to base intervention all along the urban fabric. The study received a posteriori sufficient criticism for the empirical nature of its arguments and the proposed planification. The incapacity to implement it combined with the reoccurring themes that appeared in posterior proposals raised further questions regarding the actual capacity to implement proposals of such scale and character. Thus this incapacity is related to a corresponding absence of a territorial policy and will to provide for a corresponding vision and function. This influenced the effectiveness of implementation of programmes and cancelled a series of studies of a development, regulatory, territorial and urban level. Thus the 1968 study presents a strong territorial contrast in comparison with more recent interventions that opted for the logic of puntual and fragmented interventions[36].

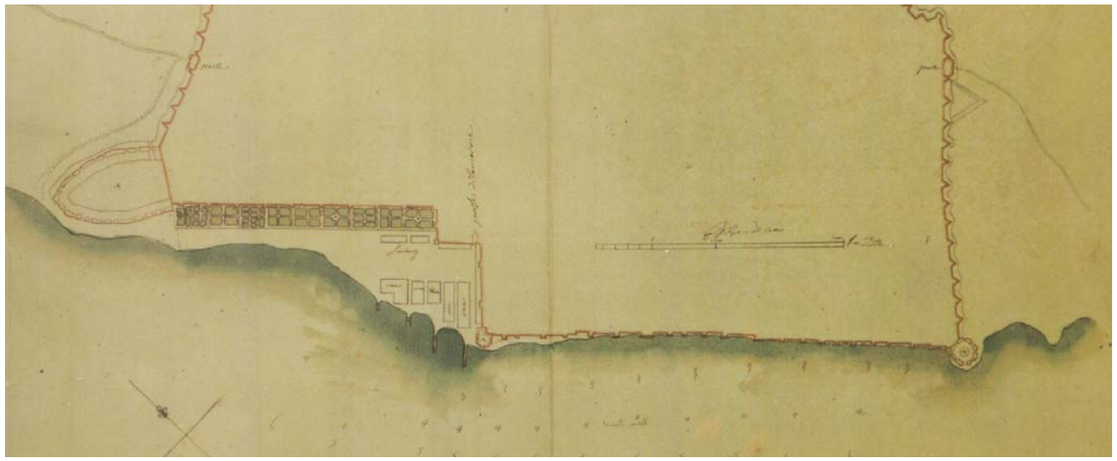


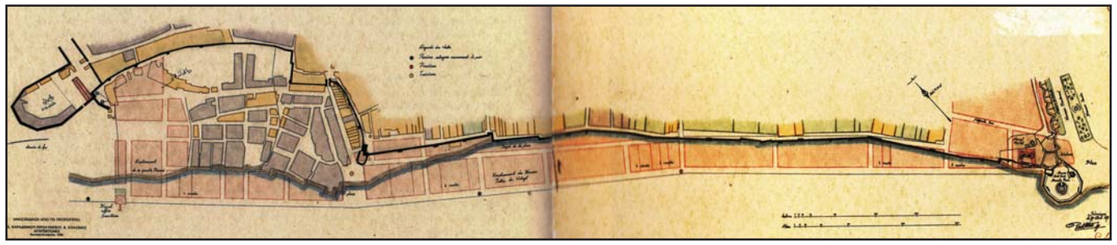
The evolution of seafront of the historic centre as seen from **(Top)** the port and **(Bottom)** the White Tower respectively.

The Seafront of the Historic Centre

The traditional urban/coastal interface







left: Rev, W.J. CONYBEARE, & Rev. J.S. Housen, *The Life and Epistles of St. Paul - Thessalonica from the Sea,* (London 1852, coloured woodcut) (History Center of Thessaloniki, 1998)
top-right: map of 1685 of the seafront fortifications of the city before their destruction. **bottom - right** : map showing the evolution of the city´s seafront quay before and after the demolition of the seafront walls (Kardimou-Yerolympou A. & Kolonas B.)
(source: National Map Arhives)

The demolition of the seafront walls 1869 and the creation of the waterfront

The redifinition of the city's relation with the sea

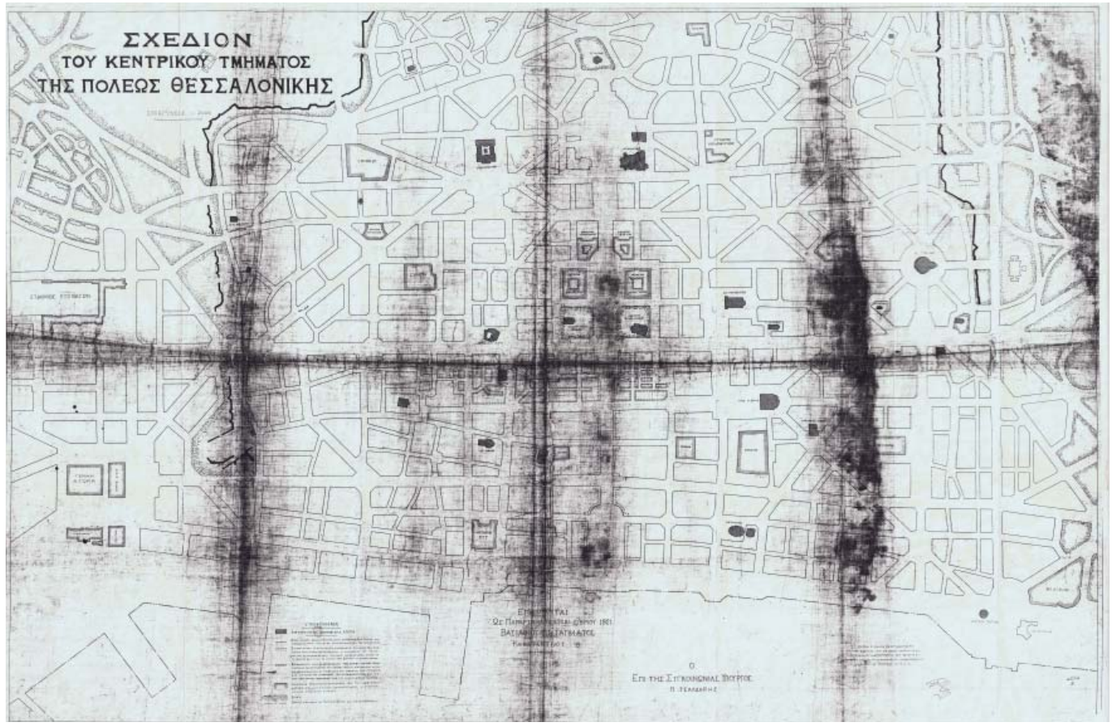
The city of Thessaloniki being an important urban centre of the Ottoman empire, and even more the principal centre/port on the european ground, was prone to experience a series of urban interventions aiming at the modernization and upgrading of the image of the city. Already in 1863 the Ottoman Empire had shown an increased interest in port interventions and for this reason it published a decree that gave priority to such interventions. Similar to Thessaloniki, a series of other Ottoman ports were reformed taking advantage of the decree like Smirni (Izmir) and Constantinople (Istanbul)[37].

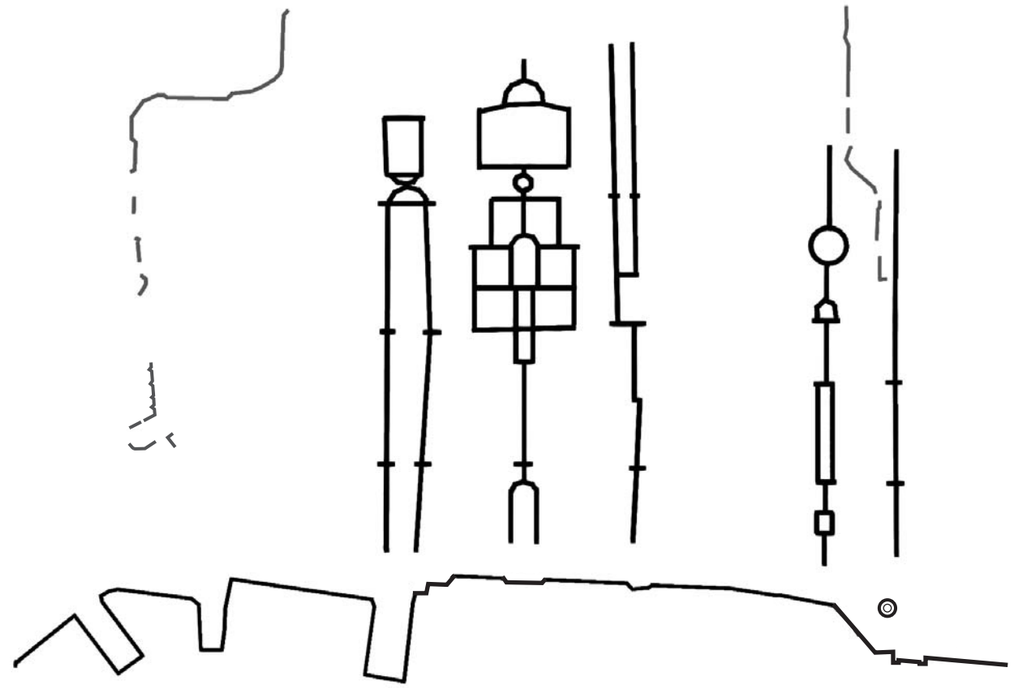
One of these interventions was the demolition of the seafront wall fortification in 1869 that coincided with placement of Sambri Pasah as governor of the city. The same person supervised the demolition of the Smirni seafront walls, under the same charge of city governor. The plan was quite simple and consisted of the demolition of the seafront wall fortification, that was already found in a poor state, from the White tower to *Top Hane*, and the utilization of the rumble material as infill for the subsequent embankment that was to create a stripe of land of 1650m length. The gained space was to be allocated to waterfront uses, the Customs buildings, a traffic artery of 11m width and the creation of new allotments of a total surface of 61.875m^2. All construction costs were expected to be cover from the sale of new privileged lands[38].

The demolition marked for the city the initiation of a series of urban interventions, that centered around the historic nucleus of the city. This reform was also followed by the creation of a basic legal framework that dictated how these interventions were to produced. These were grouped in three basic categories: **i)** the restructuring of the road network **ii)** the reorganization of the port areas and **iii)** the expansion of the city outside its traditional nucleus. The realization of the project followed quite a turmulous course[39]: the initial excitement for the intervention was worn off by a series of economic scandals that Sambri Pasah was involved, which forced him to resign and pass the project to private management. The project was realised partially in different paces for the following decade. In 1879 Valis Halif Rifat, secured the further financing of the works and formed special interests group supervising its construction. This aided significantly in speeding up the process and construction pace and eventually in 1882 the construction of the waterfront was completed.

The resulting opening of the city to the sea was destined to change radically the daily life of the city and the perception of public space and thus it marked a key point in the development of the city and the role that the seafront was prone to play in the future. The demolition intervention (in combination with concurrent interventions) had an imminent effect of the spatial structure and arrangement of the city´s seafront[40]. The city port and related spaces extended to the west, the old seafront was reformed and a new seafront was created to the southeast with the expansion of the city outside the walls and the settlement of well-off residents on the new grounds.

37, 38, 39. Yerolympou, A. (1985)
40. Samarinis, P (2006)





left: Plan of the central section of the city of Thessaloniki, 1921 (source: National Map Archives) **right :** Diagram showing the principal axes of the historic center that connect with the seafront

The Hebrard Plan and the Historic center´s seafront.

The redifinition of the city's relation with the sea

The Hebrard plan put a priotiry into the reconstruction of the historic central district of the city, given the urgency created by the 1917 fire and the key function the centre served for the whole plan and its implementation. Thus indeed greater attention is given in defining in more detail the city plan, uses, regulations, architecture etc. The old city grid transforms to incorporate big avenues and civic axes that modernize and at the same sanitize the urban fabric opening it up to the sea and its breeze. One key decision of the plan and critical for the city´s seafront is the decision to transfer portuary activity towards the west, and giving the city´s seafront to civic use.

Thus the sea and the seafront become key elements of the planning objectives that propose the opening / creation of the following five parallel axes for the historic centre, each with its distinct character[41]:

i. The I.Dragoumi / Venizelou axis, starting from Eleftheria square and going up all the way to the the Dioikitirio, a key axis with notable building and monuments along its course

ii. The Aristotelous axis, or the new avenue, a monumental with a well defined architecture, starting at the newly created square by the sea and extending all the way to the church of St. Dimitrios, and with key city buildings (city-hall, city-court etc.) planned along its course.

iii. The Agia Sofia axis, another monumental axis, starting at the seafront and connecting key religious buildings and extending all the way to Filippou street.

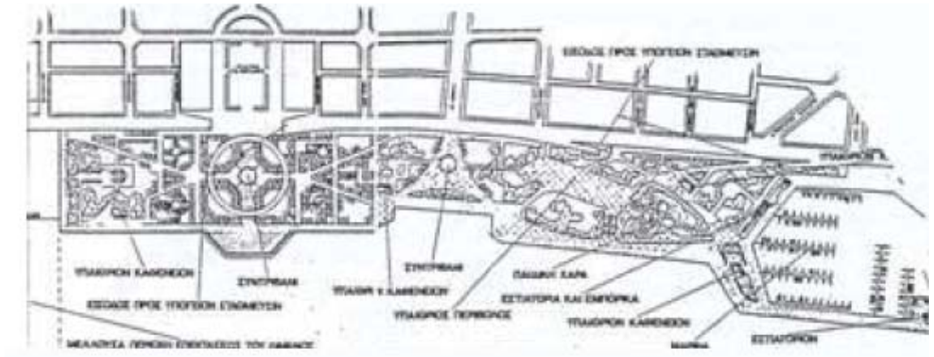
iv. the Dimitriou Gounari axis, an archeological - monumental axis running along the ancient Galerious Palace complex, highlighting and connecting archeological sites with existing monuments.

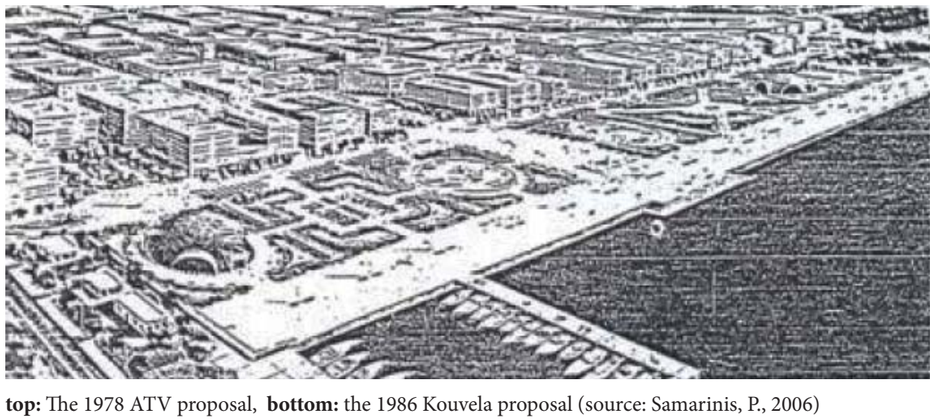
v. Ethnikis Aminis axis, the last axis running along the old eastern wall fortifications, connecting the White Tower with the university and the hospital.

The seafront thus becomes the primary stage for urban activity, with an increased connectivity and a dedicated civic use, with the removal of portuary activity. The theatricality of the ambience envisioned by Hébrard for the Seafront, is further accentuated by the creation of a two level seafront, and sea podiums at the base of each axis (or key public spaces respectively) to mark their importance.

Apart from that the plan also proposes key buildings along the seafront. From the Central Post office planned to occupy the space of Eleytherias square, with the principle public space now being Aristotelous square that boasts high class hotels, restaurants and shops. The plan goes into the detail of architectonically defining a series of these buildings along the seafront. On the east the White Tower serves as a permanent marker of the eastern limits of the seafront section.

41. Yerolympou, A. (1985)





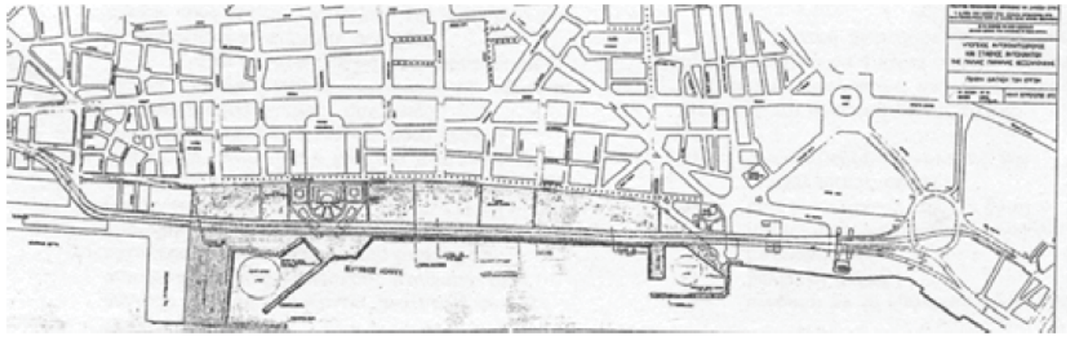
top: The 1978 ATV proposal, **bottom:** the 1986 Kouvela proposal (source: Samarinis, P., 2006)

Plans and attempts to re-organize the seafront and city-sea relation

In 1976, following the competition, the city administration decided to take advantage of the results and conclusions produced by the process. Finally in 1978 an international competition is declared for the study-construction of the project. The city administrations set a series of points to be followed by the participants, the most important being the preservation of the traffic along Niki avenue, and the embankment of the city front in a 150m depth, and the creation of an underground parking of 3000 places[42]. The only offer presented came from the American multinational company VTN and due to the low participation the competition is eventually cancelled. Nevertheless the whole process had as a result the inclusion of the underground avenue, running parallel to the seafront, in the Regulatory Plan of 1985.

The issue of the embankment was present again as a preelection proposal for the candidate S. Kouvelas in 1986 presenting it as a vital work for the development of the city. The election of S.Kouvelas as mayor allowed the declaration of a competition in 1988, for the embankment of the city front and the creation of an underground parking with a capacity of 6000. This also included the construction of the undersea highway that was presented as vital for the whole intervention. The competition soon encountered fierce reactions from local actors, that were worried about the preservation of the historic physiognomy of the city and the potential feasibility of the intervention[43]. This reaction had as a result the cancellation of the competition and the temporary abandonment of the idea of the embankment of the seafront.

42, 43, 44. Samarinis, P. (2006)



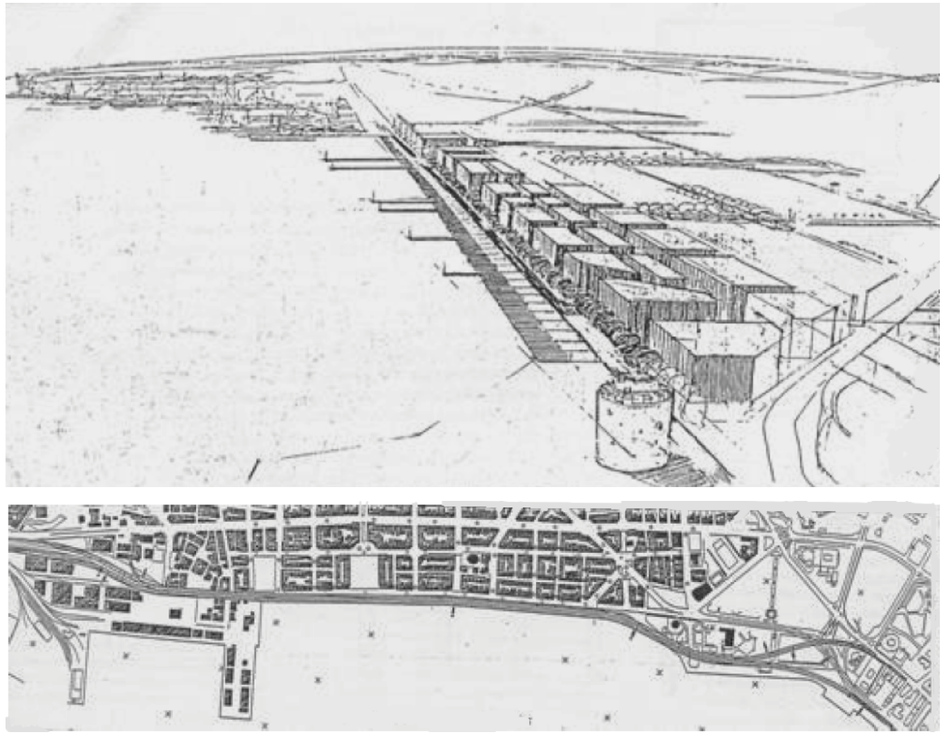
top: Detail and plan of the proposal

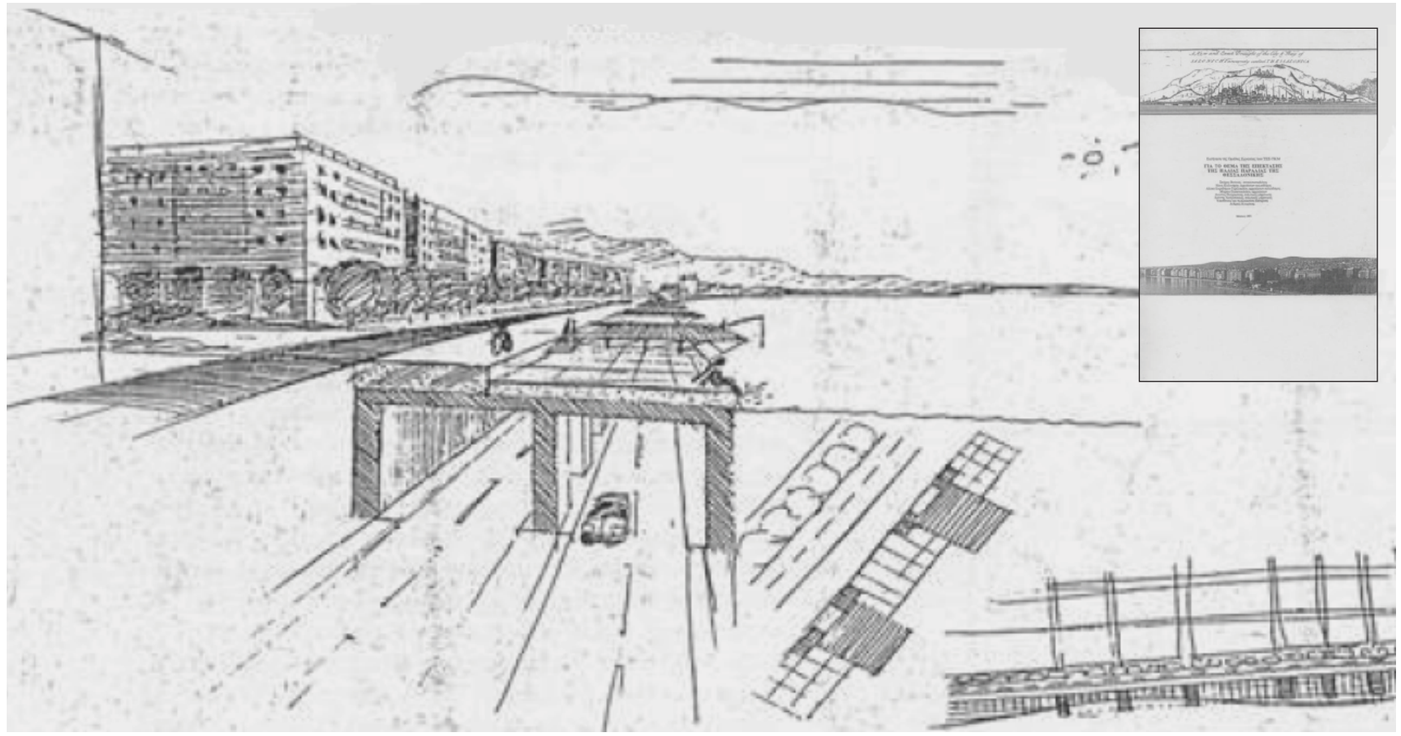
The proposal of the ministry of Environment, Planning and Public Works of 1992

The discussion of the embankment of the old seafront continued with the proposal presented jointly by the Ministry of Environment, Planning and Public Works (Υ.ΠΕ.ΧΩ.ΔΕ) and the city administration.

The proposal followed the indications of the Regulatory Plan of 1985 in proposing a subterranean highway running parallel to the seafront and connecting with the Alexander the Great avenue to the east. Apart from this, it also proposed a major embankment with the sealine moving down to meet with the corresponding of the eastern seafront. A high capacity underground parking was to be placed in the gained space, while on its surface a series of large scale recreation facilities and parks were proposed. These facilities included a theater in front of Aristotelous square, two marinas for small boats and corresponding infrastructure in front of the white tower and Eleytherias square, and a series of cafes/restaurants.

The proposal in order to justify an intervention of such magnitude presented a series of arguments. The two principal ones are[44]: **i)** the observation that the team makes that a certain disharmony exists in the existing relation between building heights and the seafront width, and **ii)** that the increase of available surface on the seafront would reinforce the existing relation of the city-sea relation. These arguments failed to convince the local actors, and gave raise to a certain discussion and controversy over the issue.





(top): perspective and plan of the proposal **(right):** perspective section of the proposal (source: Samarinis, P, 2006)

Debate and Alternative Design solutions proposed by the Technical Chamber of Greece 1993 (TEE-TKM)

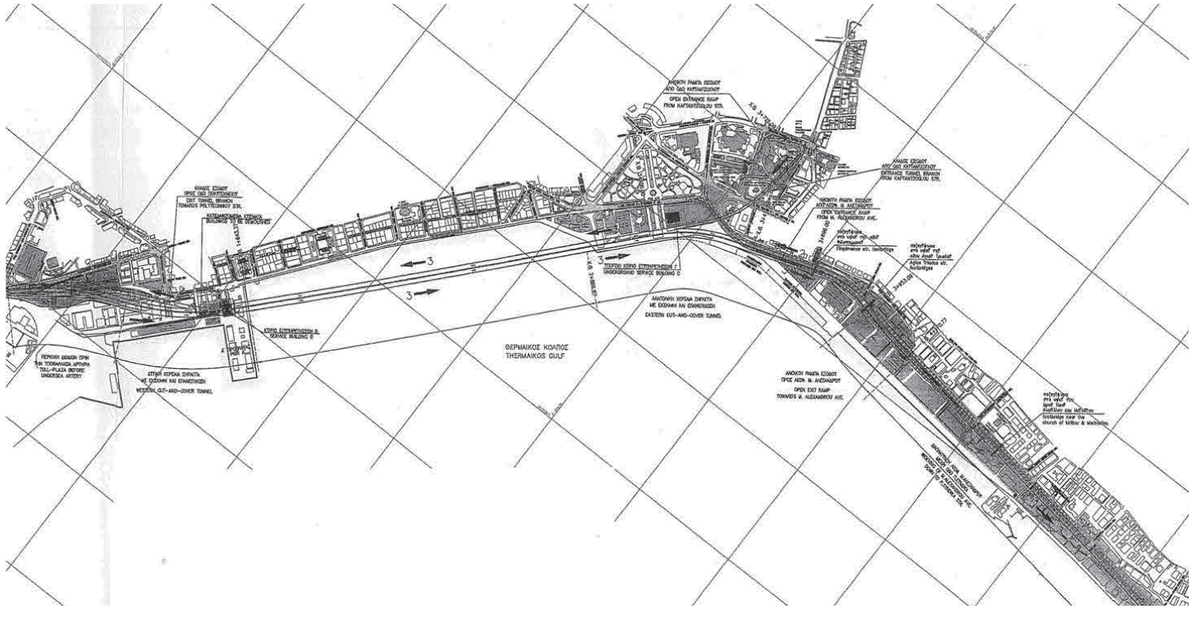
The controversy over the embankment of the old Seafront proposed by the ministry in 1992 brought to the surface the discussion about the alteration of the traditional physiognomy of the city-sea relation. The Technical Chamber of Northern Greece was one of the first and most prominent to come forward with a critical view against the proposed interaction, putting in question the real motives, the ideological background and the objectives of such intervention. One of the main concerns of the study of the TEE/TKM was the preocupation of the future character of the city´s seafront and the absence of a correct scale of intervention, considering a great part of the proposal as too generic and without specific proposals to preserve the essence of scale and ambience of this important urban element.

The TEE /TKM study came out as a contraweight against prevailing contemporary practices at the time even in other european port cities. This alternative perspective does not only oppose the strict financial return and private-economic criteria considerations set forward by the proposal but also the radical transformation of the concept of the public space. The study found that these considerations "*have to do with a planning of doubtful utility and aesthetics, that clearly show an influence by american standards*[45]".

In the case of Thessaloniki, as in the case of most Greek cities, this particular model encountered a series of difficulties that mostly had to do with the lack of available vital space to grow. The 1992 proposal, according the study, did not achieve a recovering of seafront space as much as a violent transformation , through the construction of a technical work whose nature and increased costs rendered it quite doubtful since the beginning. On a second level the mechanisms that comprised the system of production of urban space (private initiatives and capital, public financing and administrations etc.) were possibly a second element of the local particularities. Most of these proposals insinuated a new way of producing urban space, different from the prevailing practices that most Greek cities had experienced till that time, and had influenced their development in the post-war era[46]. The process of modernization that they propose on different levels, economic, political, spatial, seems like it could not gain the necessary momentum to achieve a general consensus and support, and estimate the true capacity of the private sector and the central and local administration to support such actions.

As stated earlier, one of the most important products of this proposal phase had been the enaction of a dialogue and the opening a new vital space for proposals and discussion concerning the whole issue. This space could include professional of all different sectors (social, scientific and civic) each claiming their right in the decision-making process. And this dialogue highlighted the special complexity of a potential intervention on the seafront and the presence of alternative proposals. The question of the embankment of the old seafront passed from that point to obsolete and new and alternative proposal were to appear starting from the TEE and continuing with upcoming competition for the Cultural Capital of 1997.

45, 46. Samarinis, P (2006)



(top): plan of the proposed undersea artery **(right):** detail plans of the entrances /exits (source: Municpality of Thessaloniki)

Proposal for the *Undersea Artery* and discussion (1996)

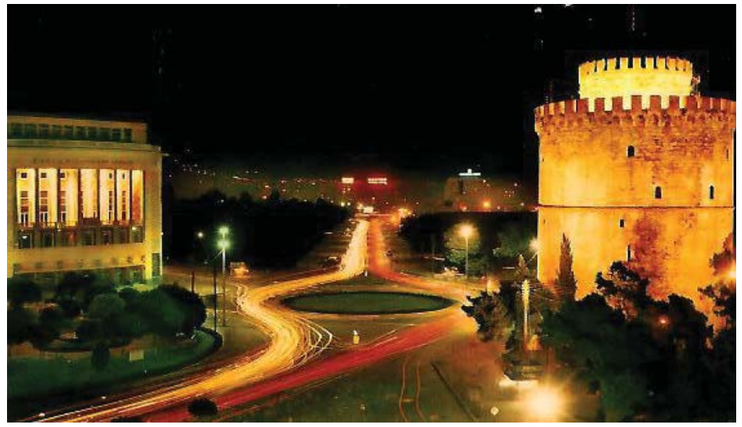
The idea of the undersea artery remained alive, since its inclusion in the 1985 Regulatory plan kept the issue alive in the general question of the restructuring of the mobility scheme of the city. According to this scheme the construction of the undersea artery would complete the ring road structure of the metropolitan region and thus in this way the two part of the city would be connected bypassing the historic centre at a distance of about 120m from the coast[47].

According to the study the complete artery would have a total length of approximately 4000m, 1240m of which would be undersea, 2140m underground and 400m destined for the entrance/exits of the artery. These exits according to the study would be situated in the area of the port on the west and on the M. Alexandrou avenue on the east. The latter avenue would have to change to bidirectional and widened by 3 lanes to accommodate the increased traffic loads[48]. Other interventions were also planned on the adjacent areas, given that the study projected various potential improvements in the area arising from a possible intervention. Thus the seafront Nikis Avenue of the historic centre is converted to pedestrian, along with the some vertical roads that lead to it. Additionally, the widening of the pavements and creation of public spaces were proposed.

The undersea artery and the construction of the metro, were the principal claims of the local administration and the central government, plans that were to face serious resistance from the part of the local actors citizens and create a lengthy controversy given the way that the issue was treated by the administrations, with a complete lack of information and will to perform an open and participative debate. This official secrecy in combination with information that went leaking into the press, gave rise to reasonable doubts for the correctness and feasibility of the proposed intervention[49]. A critical turn if the public opinion, occurred when the question of installing tolls in the respective exits and entrances of the artery was raised, giving the various citizens and technical groups ground to critique the various mobility and accessibility issues that come up. Posterior objections were also raised on the proposed model of financing by the government, that involved a combination of private and public funds and management. Thus although the initial study was presented in 1999 by the prime minister, the critiques had already multiplied and developed a coherent discourse on the possible effectiveness and real benefits of the project. The project was soon halted and was a undeclared victory of the local citizenship against centralist planning practices and private interests.

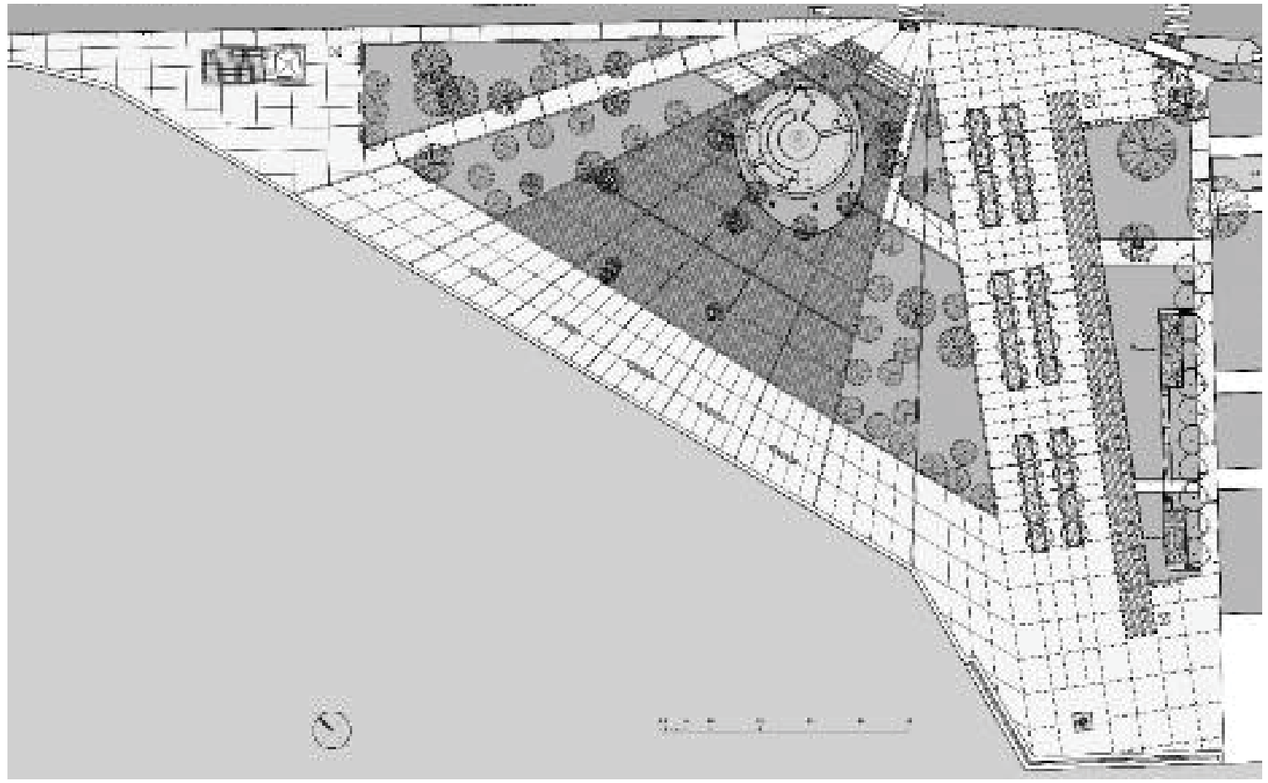
The critique on the project can be summarized in two groups: *first*, the urban/metropolitan level, where the study ignored the propositions of the Strategic Mobility Study altering the course, length and proposed exits/entrances of the artery ignoring all relevant considerations and studies performed. It overlooked the real integration of the proposed intervention in the urban fabric and existing planning. On the part of the administration it presented another example of its incapacity to implement a coherent policy concerning mobility and accessibility in the city and face the real and urgent questions/problems of its citizens. On the *second* level, the local/specific, serious objections were raised concerning a series of issues[50]: **i)** the destruction of a series of protected building in the area of the historic port **ii)** the erection of two 25m ventilation towers for the artery, were expected to alter drastically and irreversibly the seascape of the city. **iii)** The M. Alexandrou avenue was also expected to change drastically, given the widening of the avenue, on the expense of the green areas, endangering further the city-sea connection and the overall city structure. Furthermore, the project did not take under considerations the results/conclusion of the 1997 seafront competition that produced a fruitful outcome and pool of ideas. Lastly, it sparked a citizen reaction and conscience that would mark a turnpoint in the way citizens saw their role and position in the wide decision making scheme of the city.

47, 48, 50. Chatzopoulos Y. 2003
49. Samarinis, P (2006)



Landscapes of monumentality - *The White Tower as a permanent reference landmark*

The White Tower Square (2008)
source: KATERINA TSIGARIDA ARCHITECTS (2003-2008)



The White Tower

The White Tower is one of the most recognizable landmarks both for the city and the seafront of Thessaloniki and one closely linked with the historic evolution of the city. It has historically marked the eastern end of the Historic centre, and due to its location, offset slightly towards to the sea compared to the seafront quay, it is made visible both from the historic as well as the eastern seafront.

The White Tower that came to serve as the symbol for the city of Thessaloniki was built in the 15th century on the site of an older Byzantine tower where the eastern and the sea walls met. A tower of 33.9m of six storeys with a turret at the top. Up until the early 20th century the tower was surrounded by a perimetrical octagonal wall (probably built in 1935-36), three of the corner of which were reinforced with small towers. The tower has come to boast different names throughout its lengthy history; the *Lion's Tower*, *the fortress of Kalamaria* in the 18th century, *Janissary Tower* and *Blood Tower* in the 19th century (since it served as a prison and place of execution for long term prisoners convicts. Its current name was given in 1890 when the Tower was white washed by a convict in exchange for his freedom[51].

After the liberation of the city in 1912, the White Tower ceased to serve as a prison, and hosted various uses (the meteorological laboratory of the Aristotle University, part of the city´s air defence, local sea scout groups among others) to be ceded eventually in 1983 to the Ministry of Culture. From that point on it has served as an exhibition venue / space. In 2008 an intervention in the surrounding space of the Tower was completed[52].

The project's main objective was the reconstitution of public space around the White Tower and its re-link with the historic centre and the Central Axis. The new square created required the partial deviation of the waterfront avenue in order to provide adequate space in front of the monument. The restoration of the surrounding space on its initial foundations' level was additionally proposed and during the works the foundations of the octagonal wall resurfaced, forming part of this emblematic urban landscape.

The synthetic design procedure of the proposal "*...explores the principles of centrality, monumentality, strict plan geometry, axis continuity, while refraining to a minimal intervention. The architectural discipline and the design austerity focus more on their long-lasting effect in the city, rather than on the implementation of ephemeral design styles. Special care was taken so as to provide a realistic and viable result...*"[53] .A trapezoid square is ultimately generated, perspectively opening towards the sea, materializing a system of multiple geometries originating/radiating from the monument itself, the waterfront pedestrian zone or the tangential Central Axis. Level height difference creates coherent sub-areas / sections at selected locations and of clear and legible shapes.

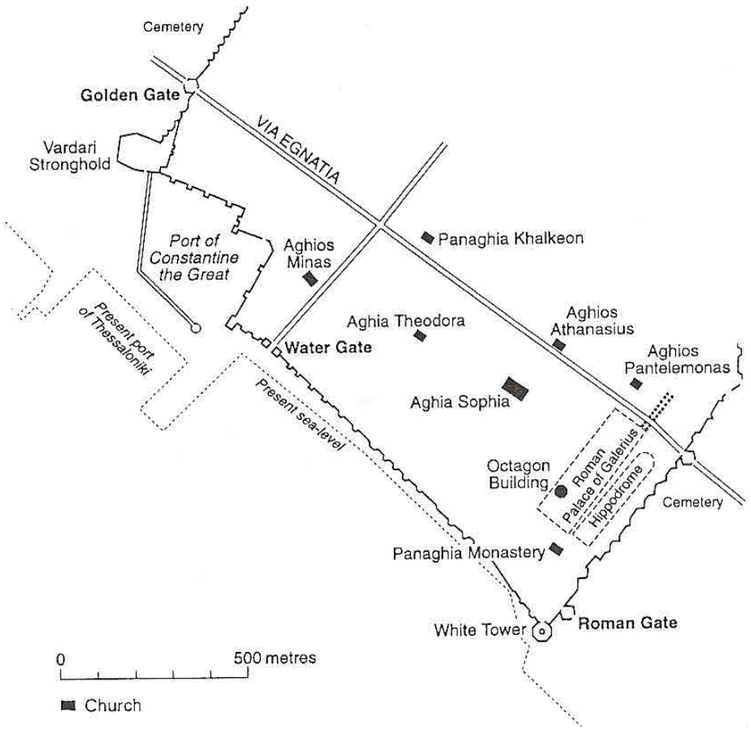
The White Tower, today, still holds a key position as an element in the urban landscape, a recognizable and familiar form, as well as in terms of historic-cultural associations and public space of preference for city residents.

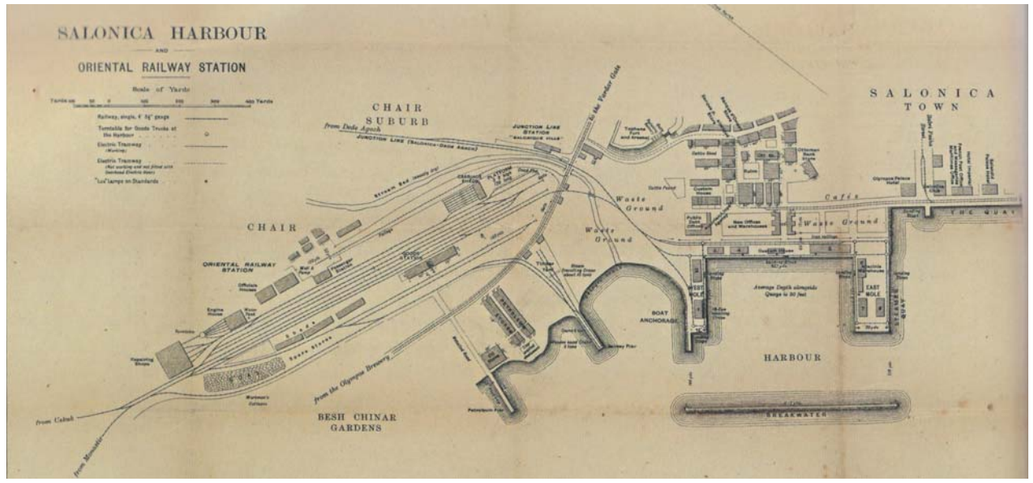
51, 52. www.lpth.gr
53. Hellenic Institute of Architecture, 2008

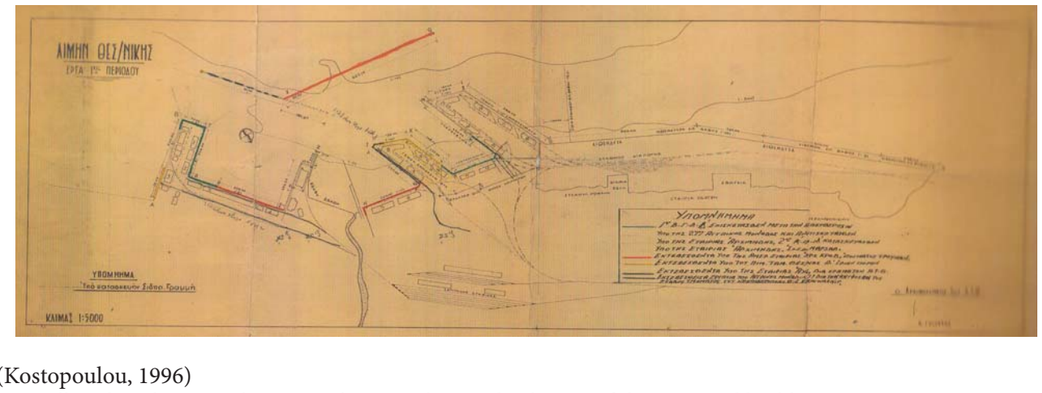
The Port area

historic continuity

(map source: NTUA - Architecture School)







left: Diagram showing the relation of the modern and ancient port in relation with the city walls and principal city monuments. (Kostopoulou, 1996)
right top: War Office, *Thessaloniki Harbour and Oriental Railway Station*, 1909. The map shows in great detail the port of the city as well as the adjacent urban area.The map also marks the use of the principal buildings.
right-bottom: K. Gkoutas, Port of Thessaloniki, First Phase Works, 1:5000, circa 1950. The map shows the different phases of reparation and extension of the port of the city with Greek (Port Fund) Englih (unit 277) and U.S (Marshall Plan). The map has an inverse orientation with the north facing down. (source: National Map Library)

The Port in the recent history

Historic and urban characteristics of the area

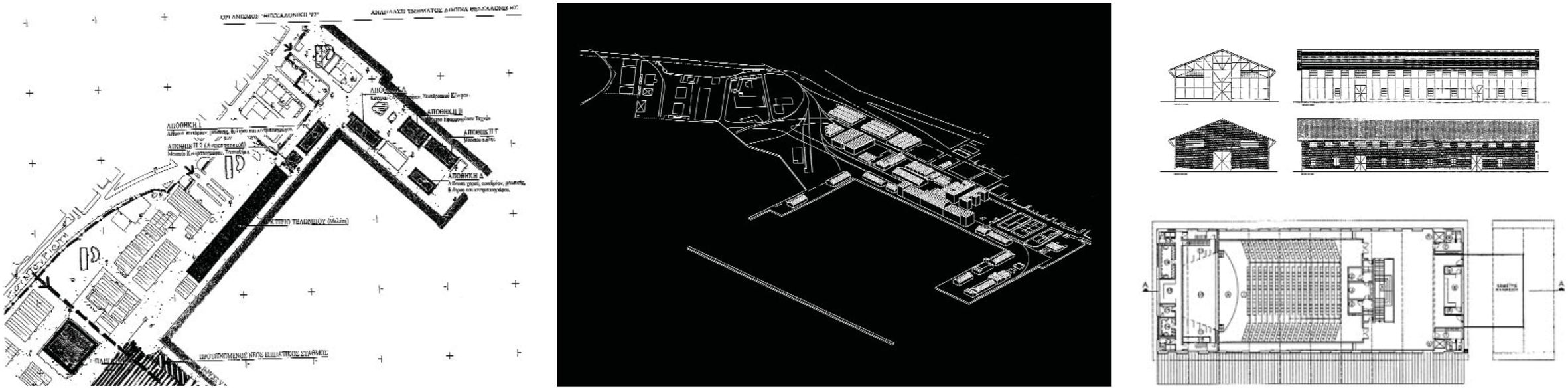
The initial phase of the construction of the first big artificial piers was realized during the years of 1897-1904. The construction of the artificial port of the city was assigned the French contractor Edmond Bartissol, who formed the Ottoman Company for the Construction of the Port (with management rights until 1944) and began the works in 1897. The project included the embankment of the earlier dock by 130m inside the sea, the construction of two piers of 200m length, the construction of a sea wall, the infrastructure and corresponding railway lines, cranes, warehouses of 8.000m^2 total surface as well as the new Customs house, and the embankment of the city´s waterfront by 8m up to the White Tower[54].

By 1910, the new warehouses were constructed, the company's offices and the foundation of the Customs House were established on top of the 100.000m^2 gained surface, and by 1917 the rest of the buildings were constructed (silos, stables etc.) and a great part of the railway lines that would connect the port with the Central Rail station[55]. The arrangement of the new port buildings on the new platforms was made in a regular and symmetric fashion, creating a unique front towards the sea.

After the 1912 liberation of the city the area was passed under the state's jurisdiction, and the immediate need for the expansion of the port and the recovery of the traditional trade routes with the city's hinterland led, in 1914, in the creation of the Free Trade Zone of Thessaloniki, that in reality began to function some years after the First World War (1923). In 1930 the newly founded Port Fund passed the management of the port to the french company for the remaining time up to 1944 that its privileges expired[56].

The 1918 study for the expansion of the port by Prof. A. Gini, that was incorporated in the new plan of the city after the 1917 Great Fire, did not change the existing are of the port. At the same time, the plan changed drastically the relation of the area with the city given that the new business centre of the city was planned to be included in the expansion area. The plan for the business centre was never implemented when the area was designated to the Free Trade Zone. In the 30s several administrative buildings of the Port Authority were added to the building stock along with the gate at the entrance. The docks sustained serious damage in equipment and buildings during the bombardment of the port in 1944 by the Germans in the WWII. The reconstruction was undertaken after the liberation in 1944 from the Port Fund and a bit later by funds from the Recovery fund of the Marshall Plan[57].

54, 55, 57. *Papakosta G., et al (1999)*
56. *Thessaloniki Port Authority website*



(top-left): The five warehouses of the pier A and their proposed uses top: Warehouse 1 (Section, facade) and proposal for its conversion to a theatrical space.
source: Papakosta G, Papamichos N, Chastaoglou V (1999)

The Rehabilitation of the A Pier of the port of Thessaloniki

The programe of the 1997 Cultural Capital asserted that: "The initiative of the rehabilitation of the pier A off the port of Thessaloniki, was along the lines of similar interventions in other european and mediterranean cities, that due to recent urban development the port activities have undergone similar and analogous transformations[58]". Indeed the first two piers of the city port due to the gradual lifting of the custom duties with the entrance in the European Union, and the generalization of new technologies of sea transportation and the use of containers, were eventually liberated starting in the 80s from prior uses, and were immediately rendered as a key free and space for the city.

The objective of the intervention was the rehabilitation of the historic port complex (with a total surface of intervention of 55.000m^2 of which 13.500m^2 taken by buildings) and its conversion to a cultural pole of metropolitan range and its integration of in the urban fabric. The port functions were extended to the west in six new warehouses, around which the necessary infrastructures was developed. The program included[59]:

1. the rehabilitation and reformation of the five main warehouses that will be given new uses of a cultural character, that will be utilized for the purposes of the celebration of the festivities of the 1997 Cultural Capital year.
2. The configuration of the entirety of the surrounding space of Pier A, as well as the platform of the central dock and the square behind the Central Custom´s office building

The importance of the intervention surpassed the direct effect of the creation of new spaces that could host diverse cultural events of temporary or permanent character. Evenmore the study recognized the importance of the location and role of the area under study, recognizing its critical urban position and the existing building stock of high historic and aesthetic value, given the fact that it constituted the greater in size preserved part of the historic centre before the fire of 1917[60]. The two greater objectives set by the project were:

- The promotion of the complex as a monument of industrial archeology and the urbanistic and architectural heritage of the city.
- The recovery of a vital free space and building stock that would answer to the needs of the residents.

The intervention constitutes the largest in surface project intervention in the framework of the Cultural Capital in the historic centre of the city. The creation of this urban and architectural pole of metropolitan range, would have a positive effect both on city centre and the city as a whole. The project was covered by the Framework of cooperation between the Authority Regulatory Plan (coordination of the project), the Thessaloniki Port Authority (ownership and responsibility of the project) and the Organization "Thessaloniki´97" (supervision and management of the works during the year of 1997). The responsibility of the municipality of Thessaloniki was focused principally in the connection and integration of the area of intervention with the urban fabric, a process that up to this day has not yet been completed.

Today the Museum of Photography as well as a space of the Macedoniam Museum of Contemporary Art is hosted in the premises, while once a year the Thessaloniki Music Festival, one of the most important cultural activities of the city and the country, also takes place in the facilities of the port.

58, 59. Papakosta G, Papamichos N, Chastaoglou V (1999)
60. Samarinis, P (2006)

left: *Aerial photo of the port area and the adjacent urban fabric,* **right:** *the proect of the extension of the port and the construction of the 6th pier with the corresponding infrastructure works.*
(source: Thessaloniki Port Authority, www.thpa.gr)

The 6th Pier and the Port´s Strategic Plan

The plan includes the expansion of the western part of the pier by 550m in length, 365m in width and 16m in depth. The completion of the project will increase the existing capacity by three times. This is because the main strategic problem of the port of Thessaloniki today are the increasing traffic loads and the strengthening of the position of the port given its the lack of capacity, which combined with some quality features such as the absence of underlying platform of sufficient length for large ships, (particularly the respective storage container stacking and modern high performance machinery) renders it less competitive compared to nearby ports. All these obstacles will need to be overcome in order to complete the extension of the sixth pier, which has a budget of around 249 million euros, of which 84.8 million will be allocated to enhance the mechanical equipment[61].

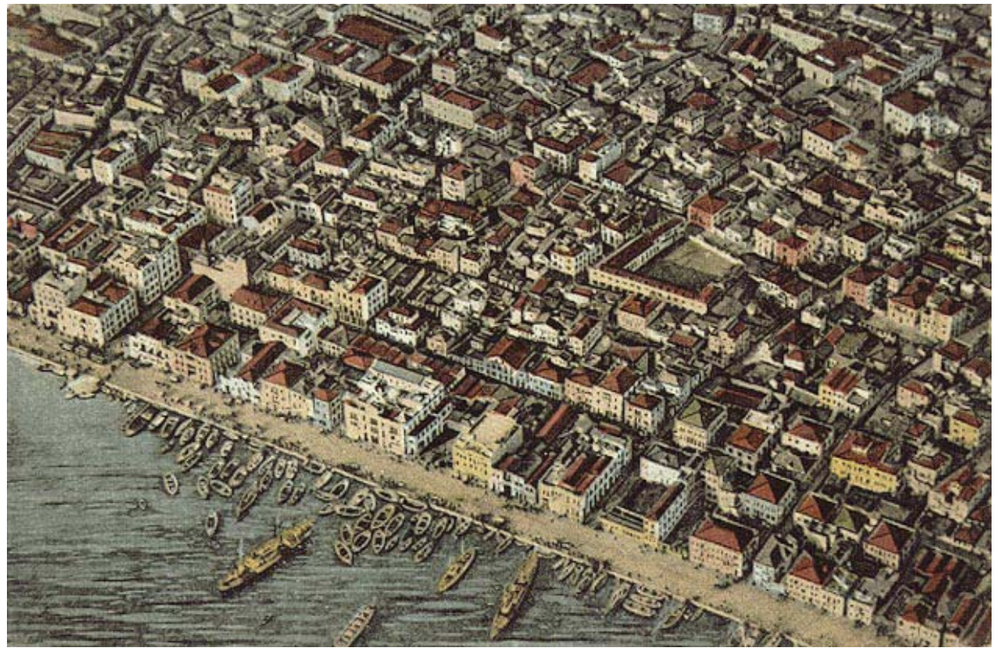
The extension of 6th pier project is seen as a project strategic in nature, that will upgrade the port´s position and function. Parallel to the construction of the 6th pier, there is also the construction of a large and modern Logistics Centre close to the container site, an increasing road and rail connection of the area with the respective major axes of country (Egnatia, Central railway line, etc.)[62]. The city will be upgraded by an infrastructure that can contribute positively to the economic development of the region and make the city a real reference point for transportation in the Balkan peninsula and the extended Southeastern Europe area. The work is expected to begin in 2011 and be completed in 2015. The financing is secured by funds of the Port Authority and funds of the European Investment Bank. In the next phase, and provided that there is need for a capacity-expansion it can be done to extend the sixth pier from the east (600 meters long, 250 feet wide, 16 meters deep).

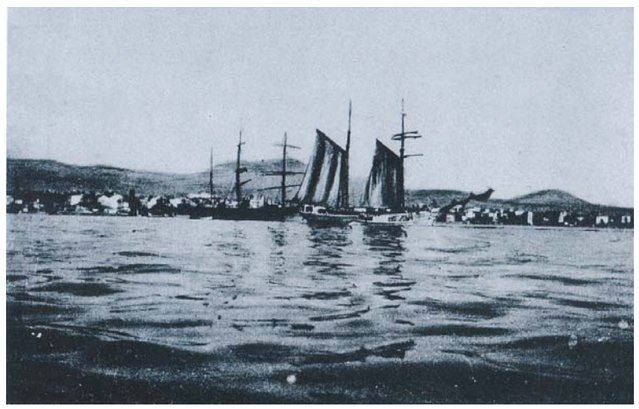
Parallel to the extension of the 6th Pier the Port Authority promoted a series of measures for the environmental improvement of the functions of the port The following initiatives have been taken[63]:

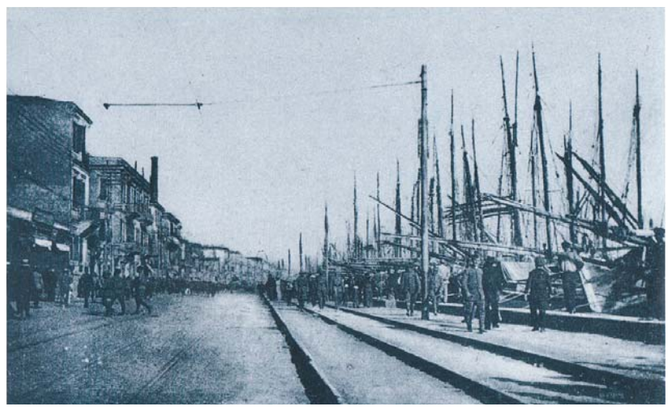
1. Tree planting areas within the port area, which is established on an annual basis.
2. Retention of existing and acquisition of new environmental management certificates. The Thessaloniki Port Authority SA already has a certificate ECOPORTS.
3. Recycling. The Thessaloniki Port Authority SA implements a comprehensive recycling policy for many types of recyclable materials, issuing an annual statement on the progress of the recycling program.
4. Compensation for the pollution produced.
5. Fleet renewal with hybrid vehicles.
6. Convertion of buildings into “green buildings”.
7. Create monitoring stations for atmospheric and marine pollution.
8. Providing discounts for to ships that implement good environmental practices.
9. Invest in renewable energy. Photovoltaic systems will be developed within the port area.
10. Staff training in environmental regulations and the creation of good environmental practices.

Indeed the completion of the extension of the port will contribute significantly to the upgrading of the port and its functional capacity. This project is considered as a long waited intervention that will render the city port capable to compete on a regional and supra-regional level with other ports. Its timely execution will also help with the current course of economic and functional improvement of the course and the increasing loads and ship arrivals that is experiencing in the last years.

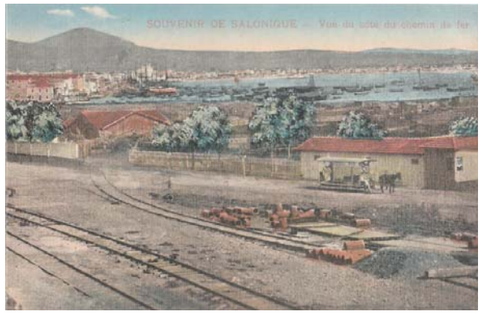
61, 62, 63. *Thessaloniki Port Authority, www.thpa.gr*

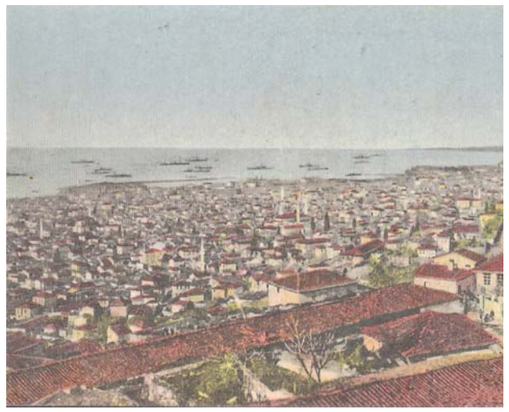




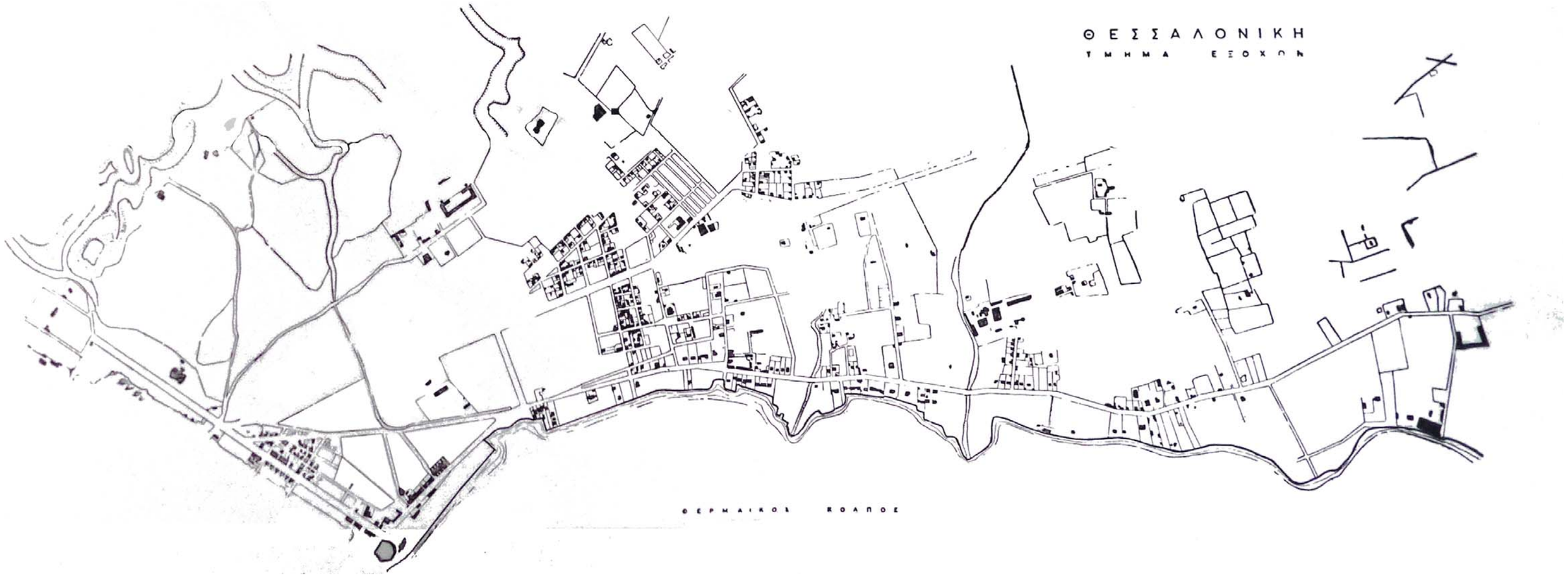


Portuary landscapes - *the city and the sea*



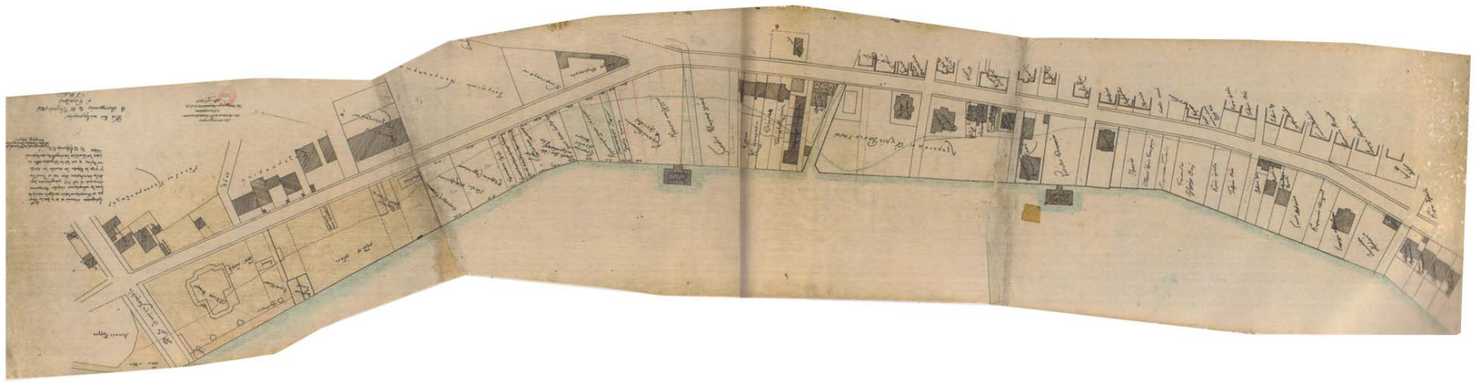


(image sources: Thessaloniki Port Authority, Municipality of Thessaloniki, Municipality of Sykies, google images)



The creation of a new seafront

The Nea Paralia and the expansion to the east



left: *A quite interesting map of 1916 of te topographic diagram of the seafron of Thessaloniki from, starting from the White Tower and showing the eastern expansions, as it was embanked and then alloted to residencial uses. The old coastline can be seen, as well as newly erected buildings in the area. Details are given on the different activities that these building hold as well as their owners when refering to residential uses. (source: Ministry of Macedonia & Thrace, 2008)* **right:** *Photo of the area in 1920 (source: google images)*

The expansion of the city to the East (1889-1902)

The demolition of the south-eastern wall fortification in 1889 marked the elimination of the barriers for the expansion of the city towards that direction and the implementation of respective plans for doing so. That was the beginning of the urban seafront formulation, as the urban activity extended from the traditional limits of the historic centre to the new grounds of the eastern seafront. This expansion followed a linear nature, parallel to the sealine,and the northern mountainline, both elements marking a conditioning geomorphology for urban expansion. This form of expansion was further impulsed by the economic advantages that the seafront lots were offering, as well the corresponding developed infrastructure, such as the creation of the seafront avenue (Yalilar) with the tramline, as well as the sea transport.

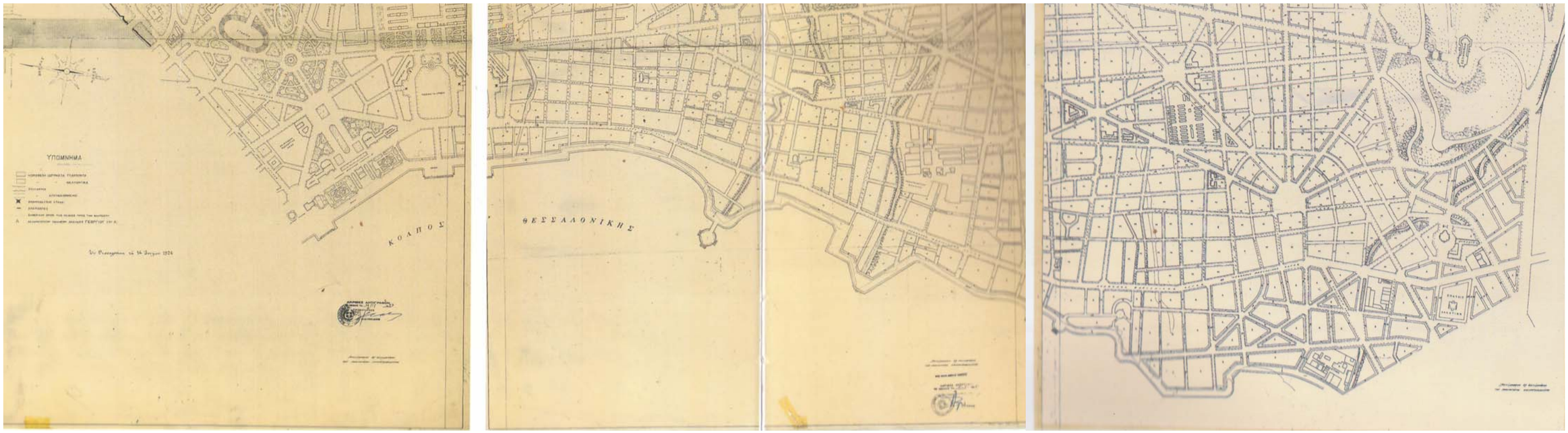
At the same time that the city walls demolition started in 1889, the works for the first embankment of the seafront begin, starting from the White Tower and extending to the east all the way to the Paraskeopoulou street. The works began in 1890 and were finalized 12 years later, giving to the seafront the form that it would maintain until the consequent 1960 intervention. The works were undertaken by the imperial fund that set the allotments and ensured its financial exploitation, selling it to private individuals that had the financial capacity to afford its high prices[64].

The urban expansion also gave the opportunity to the ottoman authorities to implement updated policies for modernization of the urban fabric and organization. This included openings of avenues, creation of public spaces, the planting of street vegetation, illumination etc. The area will experience a change of character from a vacational to permanent residence use, being the first official residential area outside the city walls. This area will become known with the name of Eksoches (Εξοχές) or Nea polis and will attract a large number of new residents, reaching in less that 30 years a size comparable to that of the old city. Concerning the organization of the urban fabric, the modernization of the planning techniques, produced also a discernible shift from the traditional through centuries basic urban unit of the neighbourhood district to that of the urban block defined by the overlayed road grid. Indeed the new area, was characterized by its ample and spacious avenues that were dotted on both sides with exceptional architectural examples of cosmopolitan eclecticism in the numerous mansions that were constructed. As Yerolympou notes this shift produced the following phenomenas[65]:

- A transformation of the social organization and the simultaneous weakening of the social fabric
- The emergence of the economic position as a basic criteria for the selection process
- The first appearance of a social stratification in the new expansion areas, where all new residents followed the traditional ethno-religious composition of the population, but at the same time influenced less the spatial settlement, that was now based more on economic and social criterias. This mixed populational composition and its gradual evolution into a less compact social or class stratification, prevented the fomation of a new city of a colonial character, or of strictly high incomes.
- A principally private use of the new seafront by the seafront property owners. Exceptions are the public male baths located at the present location of the Pedio toy Areos.

64, 65. Yerolympou, A. (1985)

Detail sheets for the eastern seafront from the maps of 1998-99. The sufficient detail in the map permits create an impression of the conditions along the coast and the uses and activities present. Low density housing in large lots with gardens and surrounding farmland, direct access to the sea for seafront properties and an overall intimate relation with the seafront as demonstrated by the allotment arrangement.
(source: National Map Archives)



Above: ***New Urban Plan of Thessaloniki*** ***(Section of Exoches - from the White Tower to the Allatini Mansion) - 3 sheets - 1925 (source: National Map Archives)***

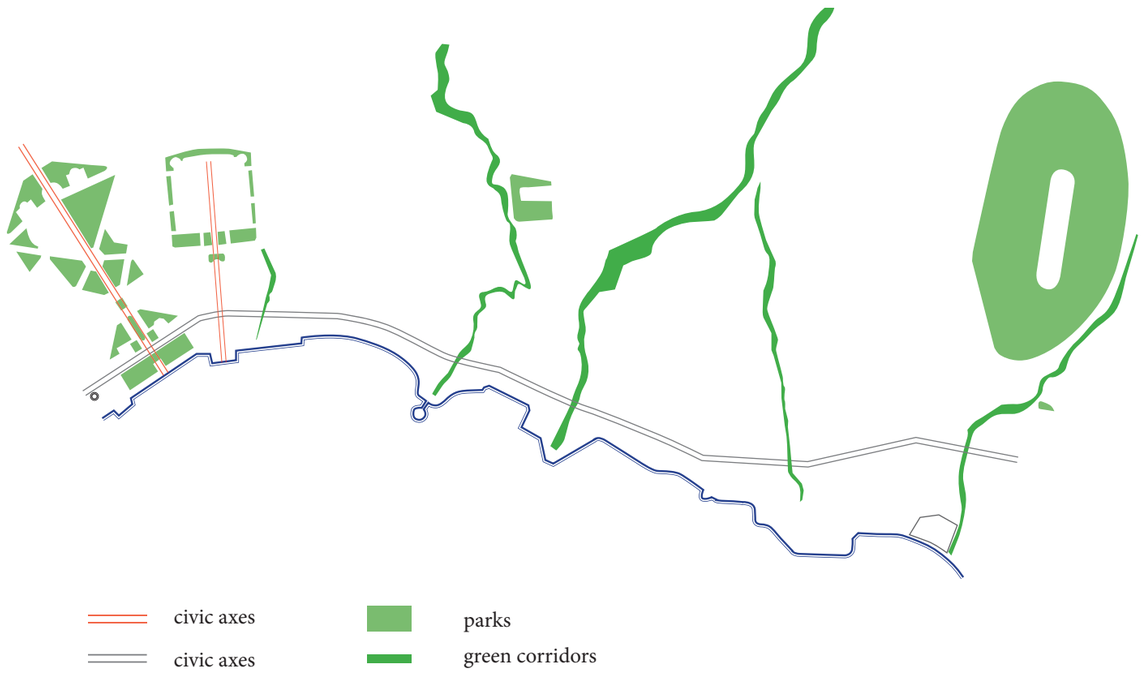
The Hebrard Plan and the east seafront

The Hebrard plan contrary to the central district, provisioned a different character for the eastern seafront. The proposal demonstrates lesser detail than the section for the historic centre, which was the first and urgent priority for the plan. The proposal for the eastern part and its seafront proposed a road grid (with the characteristic diagonal axis or the perpendicular to the seafront streets) and the location of key buildings, facilities and green areas. Hébrard was probably planning with lower residential densities in mind than the ones the current reality reveals. After all the eastern part of the city was destined for medium and high class residents and for that reason he went into sufficient detail in defining prestigious leisure and amenities for future residents. The seafront and proposed activities are not defined with detail, and are expected to be done so in consequent plans.

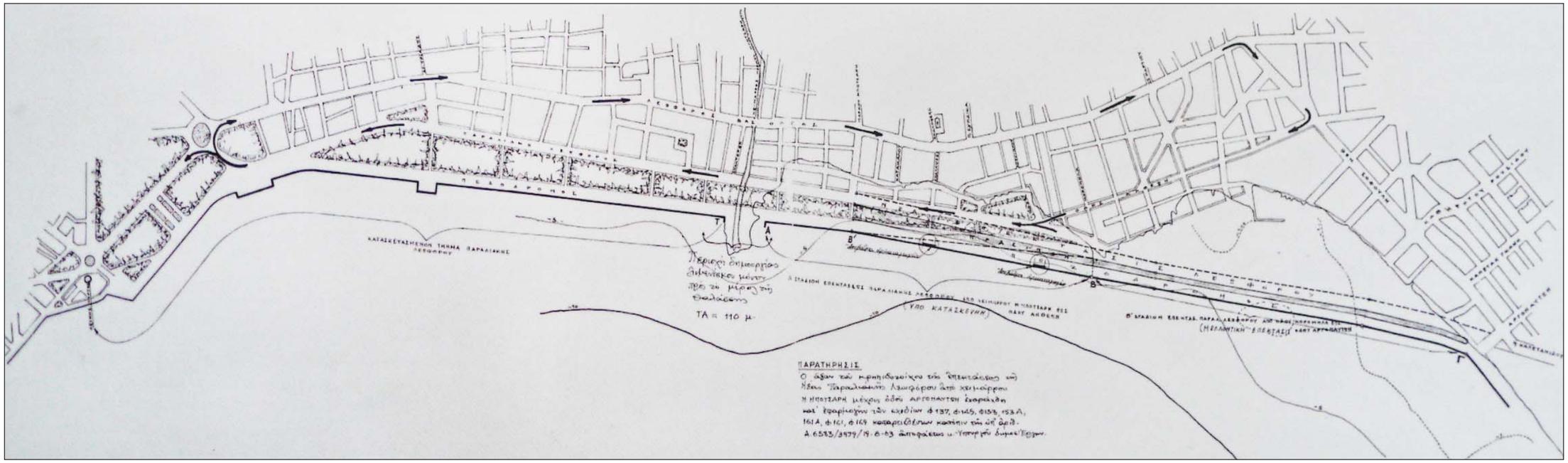
The key characteristics of the Plan with regards to the eastern seafront are the following:

i. the conservation of the pre-existing coastline with its undulating form.
ii. the conservation of the majority of the local streams, maintaining the hydroecological regional functioning.
iii. the connection of the seafront with key civic axes.
iv. the continuity of the seafront
v. the landmarks along the seafront and the recognizability of the seafront sections.

The seafront envisioned and temporarily established by the plan was to be later destroyed by the creation of the New Seafront (Nea Paralia), but serves as an indicator of Hebrard´s understanding of the regional structure and his attention to detail while planning.



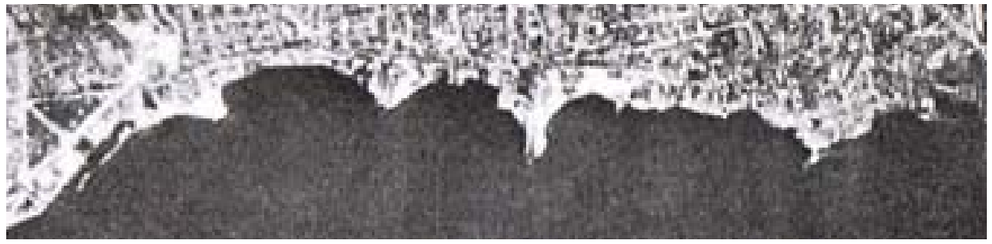
The Hebrard Plan and the buiphysical matrix
Diagram showing the green macro-infrastructure for the eastern seafront as provisioned by the plan, displaying the green corridors reserved along the existing streams, parks and civic axes.



The creation of the *new Seafront (1953-1973)*

One of the principal and key interventions of *modernization* of the city, was the construction of the new Seafront on the eastern coast of the city, from the White Tower to Kalamaria. The creation of the New Seafront area (Nea Paralia) is one of the most important urban interventions of the early postwar period, comparable to the reconstruction of the historic centre after the 1917 fire. The conception of the project started off with more technical-functional aims in mind but was materialized under the Marshall plan, as a portuary and waterfront creation project. In the frame of the cold-war climate prevalent during that era, certain military specification / standards had to be followed . Under the framework of *reconstruction* proposed under the Marshall Plan, and the service of the tactical needs of NATO, the Port Fund (that owned the land) starts the venture of embanking a total area of 60 hectares, creating a lineal continuous seafront of 2km and 30 meter wide, supplemented by a lineal park. The seafront included three distinct landing / docking points. (Makedonia Palace- Faliro - Megaro Mousikhs) to serve for the docking and disembarkation of NATO troops in the case of a *communist alert/threat*[66]. The work was also included in a wider plan of intervention, that provisioned the transfer of the sewage pipes and estuaries of the local rivers to *make available* the seafront for swimmers and the creation of public spaces. The reconstruction of the new seafront were part of an organized, well planned and conscious and carefully planned choice that entailed the ambitious modernist vision of the period.

This systematic urban re-design of the new seafront started in 1954 and peaked in 1962. For the initial plan, formulated in 1956, responsible was the architectural team lead by the P. Vasilidiadi in collaboration with Kl. Krantonelli and M. Papadopoulou. Simultaneously in 1959 it was assigned to the renowned architect Ag. Siaga the plan of the design of the public spaces of the new area that included fifteen gardens



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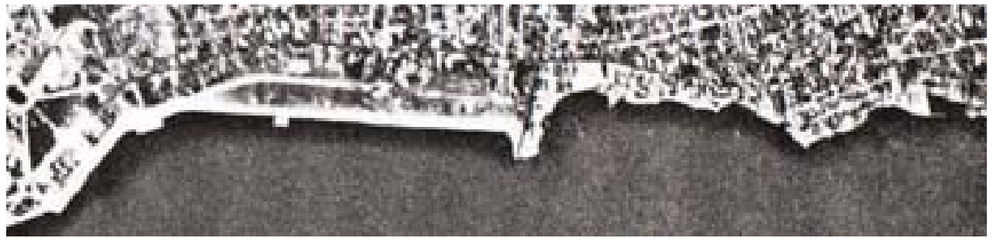

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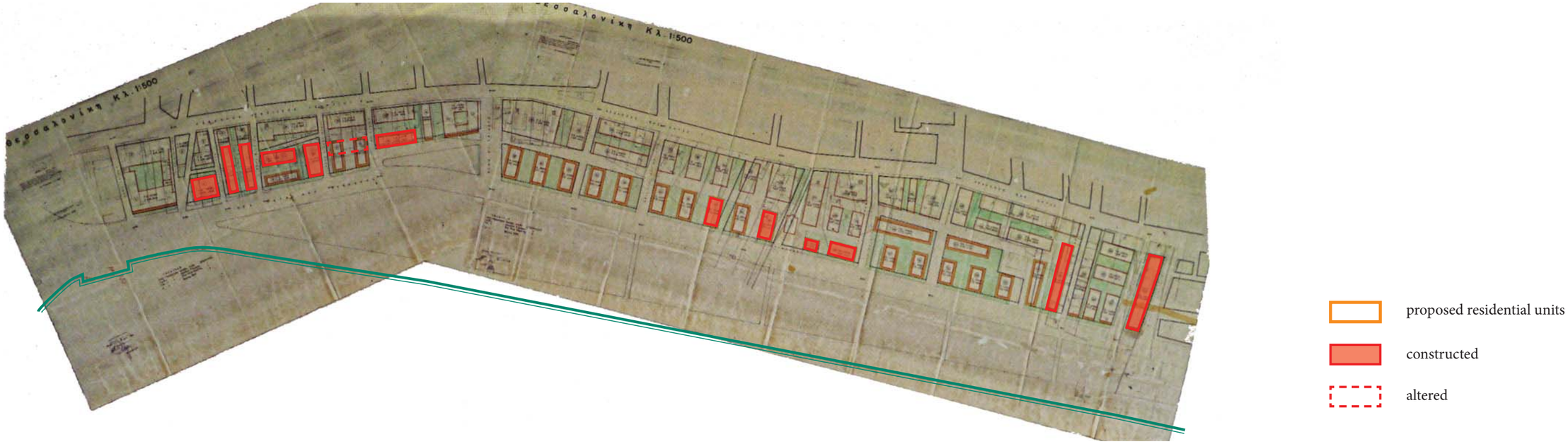
66, 67. Chastaoglou, V. from Kafkalas G, Lamprianidis L. Papamixos N. (ed.) (2008) -
68. Samarinis, P (2006)



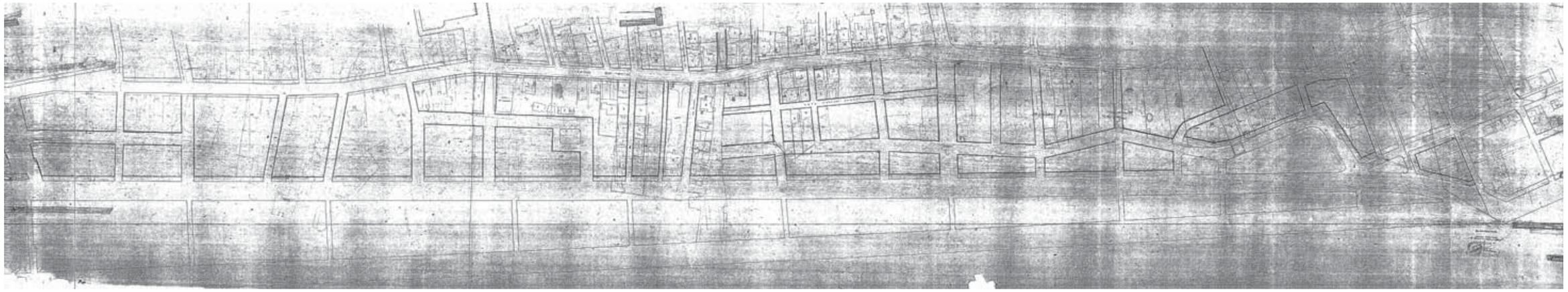
left: The technical draft of 1965 of the *Free trade zone and Port of Thessaloniki Organization* for the expansion of the seafront platfrom from the Mpotsari stream to the to the Antheon street.
right: The approved plan of 1962 for the new residential buildings - with additions by the author (source: Chastaoglou - Martinidi Archives)

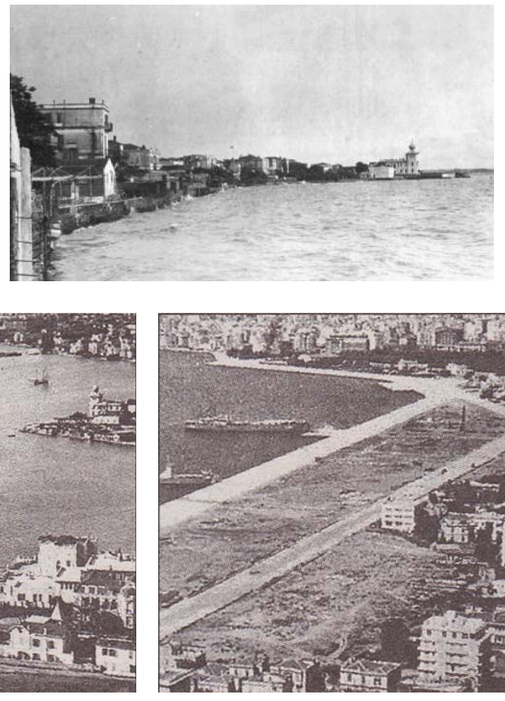
along the waterfront and three more on the inside of the avenue, provisioning for multiple special metropolitan installations. The intervention was not backed by any urban plan, and with little justification it proceeded to alter the 1929 plan that was in force at the time (and conserved the original undulating coastline). Given the support that the venture had by the prime minister at the time Konstantinos Karamanlis, (and minister of public works in the Papagou government), all obstacles were bypassed fast. The work was concluded 20 years later in 1973, resulting in the total transformation of the entire urban zone between Vas Olgas - Vas. Gewrgiou and the newly constructed seafront avenue. Meanwhile, in 1956 the city administrations had alloted residential parcels to arrange the previous properties, while the newly created land was sold in auctions[67]. The newly erected 8-floor buildings created a characteristic urban landscape, of a continuous urban built front with an abudance of green spaces.

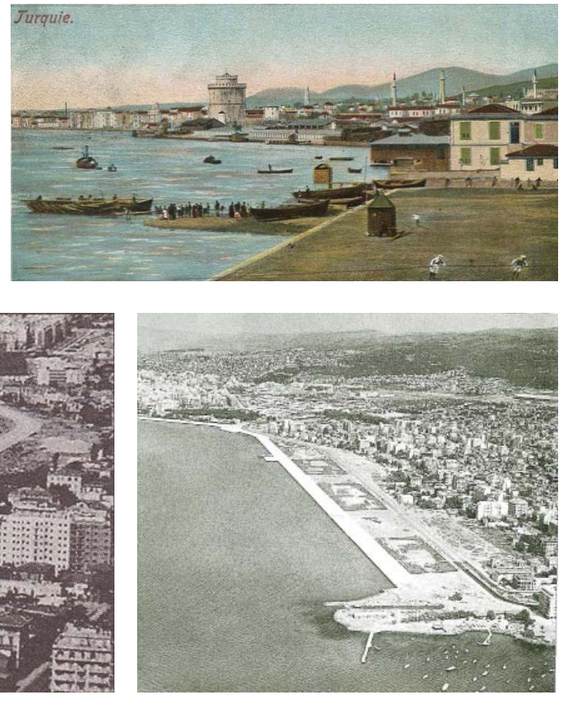
In the 60s a new way of redisinging the whole area was proposed, utilizing residential units with common functional characteristics. The breakthrough from the typical self-enclosed building unit to the greek version of the rational units, supported upon *pilotis* and permitting undisturbed flows between the open spaces and the parks of the seafront, marked the new modernized facade of the city to the sea. It also included a rationalization of the facade with the planning and control of building heights, product of the adoption of a common regulatory code. With consequent plans until 1971 the system of building units expanded gradually all the way to the limits with Kalamaria.

The intervention in retrospect and absolute terms was a prime example of a radical if not violent urban transfromation and urbanization. The character and city-sea relation of the area, was eradicated and was replaced by a new superimposed and oversized urban structure. The intimate and privileged relation that existed between the private residences and the sea before, was now passed to public use, offering to the city a new important public space, in continuation of the old seafront, and along a considerable length[68]. Compared to the old sea-front with its direct sea-building relation, the new seafront proposed a new mode of association with the sea, through a plain lineal void, and the combination of the two created the double character of the urban front. The oversized Meg. Alexandrou avenue marks a distinct limit line between the seafront and the urban fabric, creating an important discontinuity and a problematic accessibility to the seafront from surrounding areas.

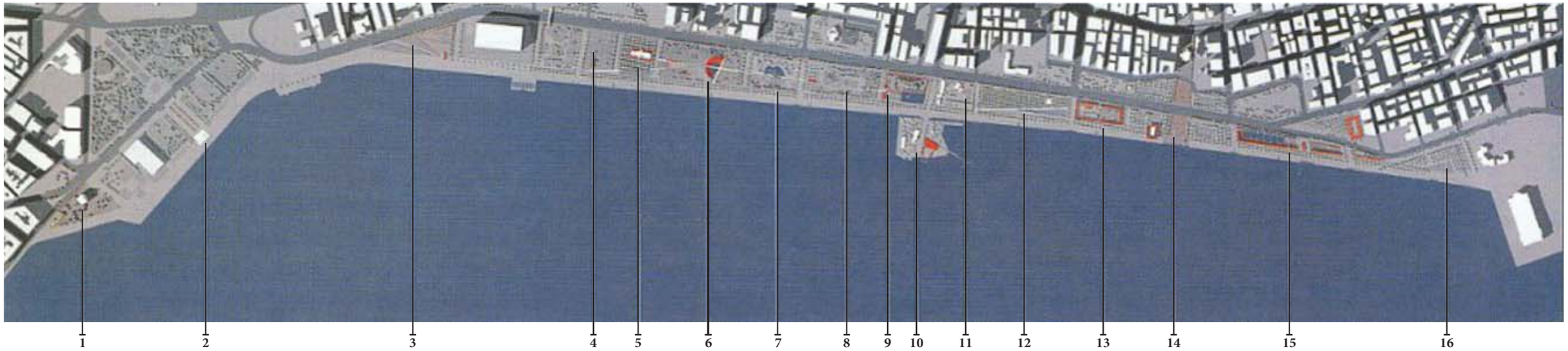
Examining the individual expansion plans certain interesting points can be made / highlighted: **i)** examining the plan of the first expansion phase of the new seafront one can see the totality of new residential units planned in the gained grounds from the creation of the seafront. Only approximately a third part of this units was eventually constructed, a fortunate turn that saved the city and its seafront an additional number of green spaces. **ii)** The expansion plan from the Mpotsari stream to Kalamaria demonstrates the fact that there were two more expansion phases planned. One from the Mpotsari stream to Antheon street and a consequent from that point all the way to Kalamaria, connecting with the diagonal street of Kapetanidou in Karampournaki. Finally only the expansion to Antheon was completed while the third one was never realized, and the area today presents a completely different configuration from the one proposed







top: Plan of 1958 for the second phase of the seafront extension, demonstrating the proposed road grid with the seafront avenue and residential units / blocks superimposed over the prexisting fabric. (source: City of Thessaloniki)
middle: photos and images of the area before the intervention, demonstrating the character of the area and the relation with the sea. (source: History Center of Thessaloniki)
bottom: various photos of the area during the construction of the seafront and the avenue. (google.com)



Regeneration of Nea Paralia (New seafront) - *Green Rooms in Thessaloniki´s urban seafront*

According to the proposal Thessaloniki's new waterfront is a linear space of limited depth. It appears to be a '*thin skin*', extended along the difficult to handle with and also provocative limit between sea and land, between natural and constructed landscape. Landscape planning on this limit should coexist and 'converse' with water, with nature in its most unstable form. Especially the sea background of Thessaloniki's gulf constitutes an extraordinary scenery, where ephemeral and mutable elements dominate, creating a constantly changing ambience. Whatever intervenes, immerses in its colours, owes its existence to this, cannot compete with it. It can only coexist and gain from its radiance. These where the reasons why the fundamental concept of the proposal was to maintain this distinctive identity of a united waterfront, its continuity and linearity.

The basic points of the proposal are the following[70]:

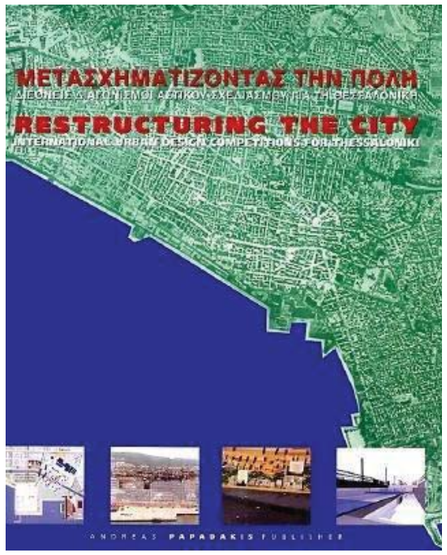
1. The linear way, just on the limit between land and sea, is a pedestrian area, an esplanade next to the seafront, linear, continuous, offering an open and uninterrupted field of vision, and also the sense of an endless horizon due to the presence of water. The line of the horizon, appearing and disappearing according to the weather, unifies in an impressive way sea and sky. The pier is an ideal, uninterrupted promenade space. Walkers are 'vulnerable' to the daylight, to the open perspective, following a continuous way over the charming limit between two opposites; the stable and compact mass of the pier - the unstable and pellucid water.

2. Planted spaces, including diffused uses of leisure and sports, give to this part a special identity, other than that of the pedestrian area. They offer shading, visual isolation, soft floor materials, multiple qualities of spaces and plants. Apart from the gardens that have already been constructed, which are; the Garden of Music, the Water Garden, the Garden of Memory, the Rose Garden and the Garden of Sound, the Sculpture Garden, the Mediterranean Garden, the Garden of Odysseus Fokas, the Seasons' Garden, the Shade's Garden, the Garden of Sand, the Garden of Sunset and Alexander's Garden.

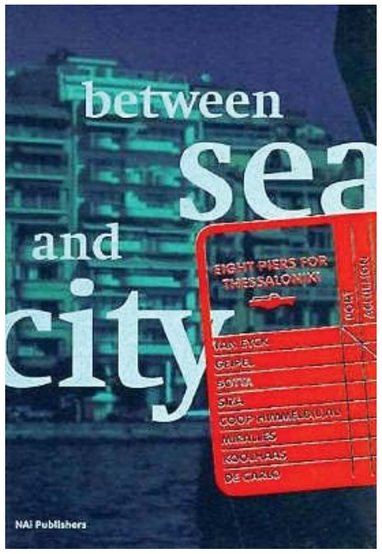
69, 70. Municipality of Thessaloniki, Centre for Architecture

International competitions in the framework of the 1997 European Cultural Capital

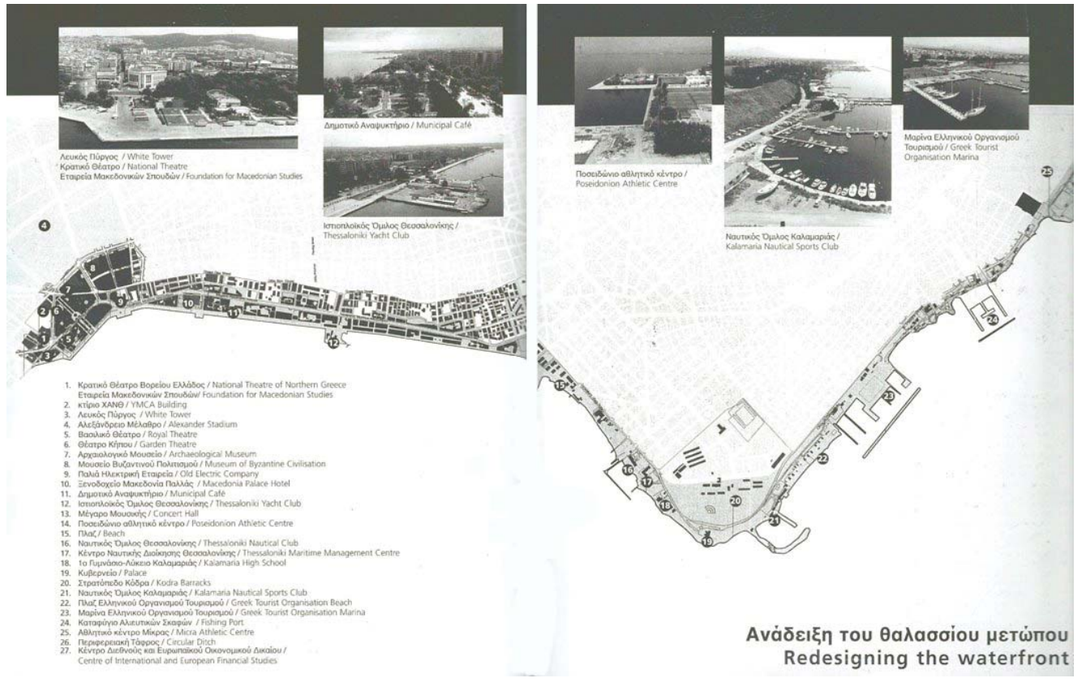
Different perspectives and input on Thessaloniki´s seafront



The 1997 international competition for the seafront



Eight Piers for Thessaloniki
The 1997 international competition



Joan Busquets, Cesare Marchi Cassia, Didier Rebois

Lois Papadopoulos, Nino Portas

viii. Redesigning Thessaloniki´s waterfront.
The 1997 International Competition.

The Organization for the Cultural Capital of Europe Thessaloniki 1997 began an international ideas competition, by invitation, for the redesign of the waterfront from the White Tower in the historic centre to the outer moat that marks the city´s south-eastern boundary. The competition thus focused on the core of the city´s waterfront, a segment of the coastline extending for 9km along its eastern seaboard. This section was developed in successive stages as the city expanded to the east.

Ten teams of architects were invited to take part in the competition, five from Greece, five from abroad. Selection was based on their experience with large town-planning project and particularly waterfront developments. Invitations were extended to the following :

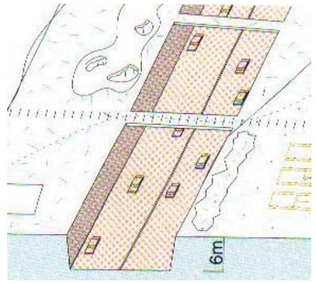
Greek Participants:
- ADA - Angelos Demetriou, Athens
- Doxiadis Associates, Athens
- Yannis Tsiomis, Paris
- Thymios Papagiannis and Associates. Athens
- Associated Architects E. Gigantes, E Zenghelis, P. Koulermos, Athens

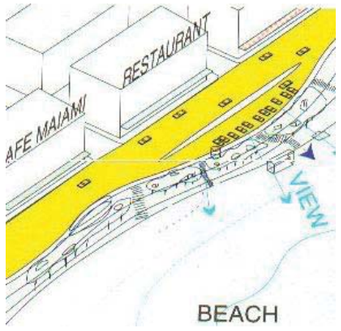
International participants:
- Toyo Ito, Tokyo
- Manuel Solá Morales, Barcelona
- Engel & Zillich, Berlin
- West 8 Landscape Architects B.V.
- Arch. Adriaan h. Geuze , Rotterdam

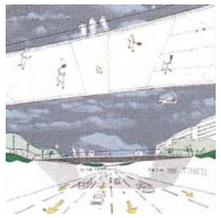
The competitors were asked to submit proposals for the use and enhancement of the seafront. Designers were called to introduce new strategies for the organization and development of Thessaloniki´s waterfront and the creation of investment opportunities, indicating uses and activities and also suggesting innovative proposals for intervention in the area, with urban design and architectural treatments. The objective was to trace new prospects for the management and redesign of the urban environment, giving the waterfront the potential to acquire a new role in the daily life of the city. The project proposals need to include:

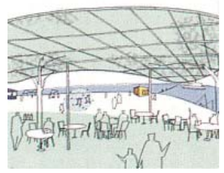
- Strategies for the relation with the city, organization, development and viability of the city
- Specification of activities and uses in the waterfront area
- General layout plan for the intervention area, location of activities and traffic patters, architecture of buildings and reshaping of public spaces in the waterfront area, in accordance with the proposed strategy and new relationship between city and sea.
- Proposals needed to document the feasibility and viability of the intervention and assess its impact on the city´s economic and urban development

The programme of the competition was open enough to permit a variety of approaches and strategies. This breadth meant that the results were applicable not only to Thessaloniki, but also as models for other mediterranean cities, that will have to face the task of rehabilitating their own waterfronts.









Toyo Ito - *Prize*

> *"Land and sea, city and nature, architecture and environment, individual and society, nation and region. Man has always laid demarcations and attempted to build firm walls between them to clarify their limits. We justify and glorify the self-reliance of the city, architecture, individual egos and the nation."*

The project concentrates on smoothing the demarcation between land and water, synchronizing the in-between edge following the principles of flexibility, ambiguity, fusion and mutual permetration. The concept of the proposal is based around the creation of "Archipelagoes", a new form of planning inspired by the islands of the Aegean Sea.

According to the proposal the entire area becomes an urban space as well as nature itself, a dwelling space and a park. The concept integrates nature with an artificial space to create a new form of an ecologically balanced living environment. Thus the demarcation of sea and land is fused. Various zones of flexible surfaces create a new form of physiognomy like a flowing landscape. The concept of the proposal does not follow the rules of conventional urban planning. It questioned the relation between city and nature, and suggests an ecological relation as a system where no zoning for land use exists

The Archipelagoes emerge like whirlpools in a flow of water. Conceptual islands forming cores of activities exist both on the sea and in the city. Some function as water and air purification devices, hosting outdoor spaces for recreation and for relaxation. Other offer communication spaces such as theatrical venues and sports facilities.

The idea of a strict master-plan is not applicable to the proposal. According to the author there is no complete image of the growth of the city´s activities: a programme of time, as a spatial system - rather than a complete image - is what the proposal intends to depict. The proposal , therefore, does not create the destruction of any legacy of past and present , it adds a new physiognomy as a layer on the city´s history.

Summary

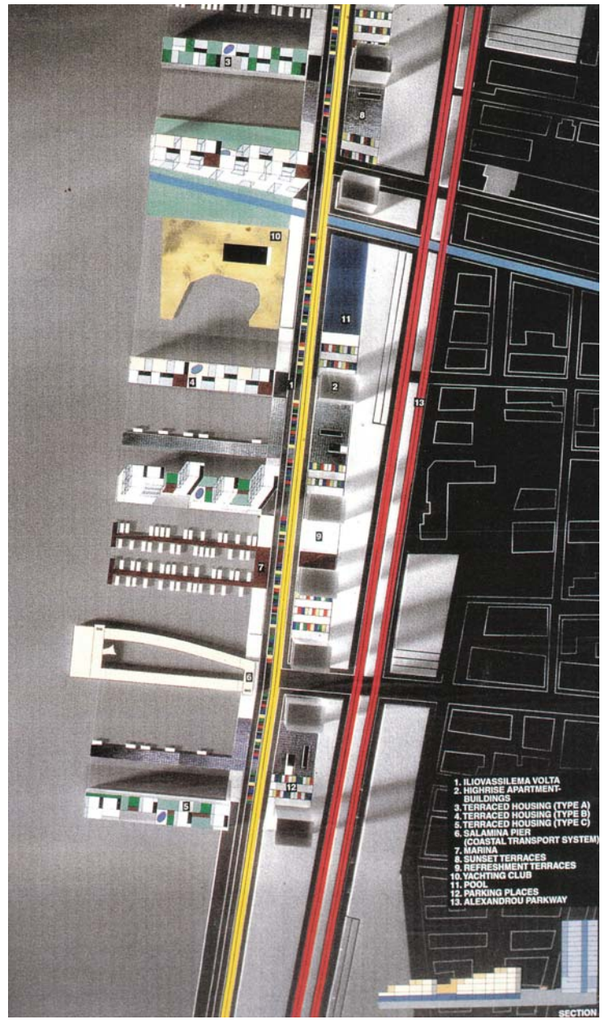
- A concept of *Archipelagoes* along the coast in order to smooth the demarcation between land and water
- Location of diverse activities on the various islands
- Water and air purification by floating islands
- A Flowing and continuous landscape
- A programme of time as a spatial system / no masterplan applicable
- Envisioning a new form of urbanism

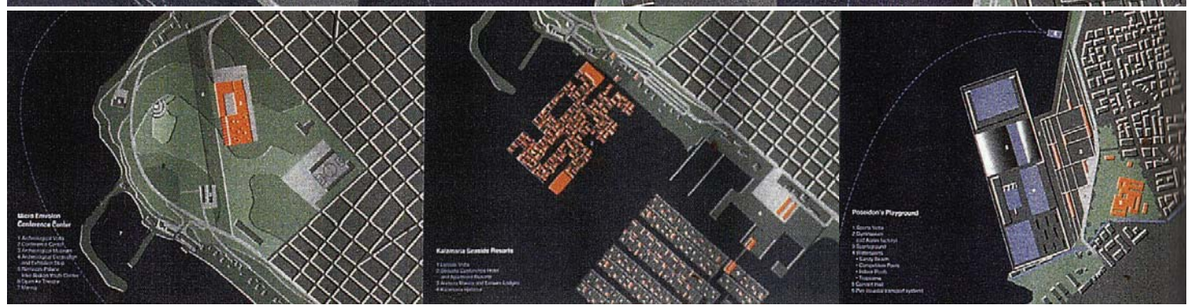
Engel & Zillich - *Prize*

The unique urban potential of the 1km coastal waterfront is realised in the form of a necklace around the gulf of Thessaloniki, proposed to host four major activities: commerce, conference, culture and cuisine. Egnatia St. is supplemented by a new axis joining the waterfront of Thessaloniki and Kalamaria. This coastal boulevard that the proposal calls *iliovasilema* (sunset) links a chain of individual *voltas* (promenades) and is oriented towards the setting sun.

According to the proposal if the *Iliovasilema* is meant to be a successful link between the city and the water, two critical factors must be addressed: the heavy pollution in the Thermaikos gulf and the enormous traffic volume along the coast. The first issue is resolved by a series of environmental measures of restorative and protective nature (revitalization of local streams, floating treatment plants, relocation of industries etc) . The second issue is addressed by proposing a general reorganization of the wider urban traffic scheme with a series of redefinitions / interventions that aim on one part to redirect high volume traffic to the principal arteries and at the same the pacification of selected arteries to return them to urban use and activity.

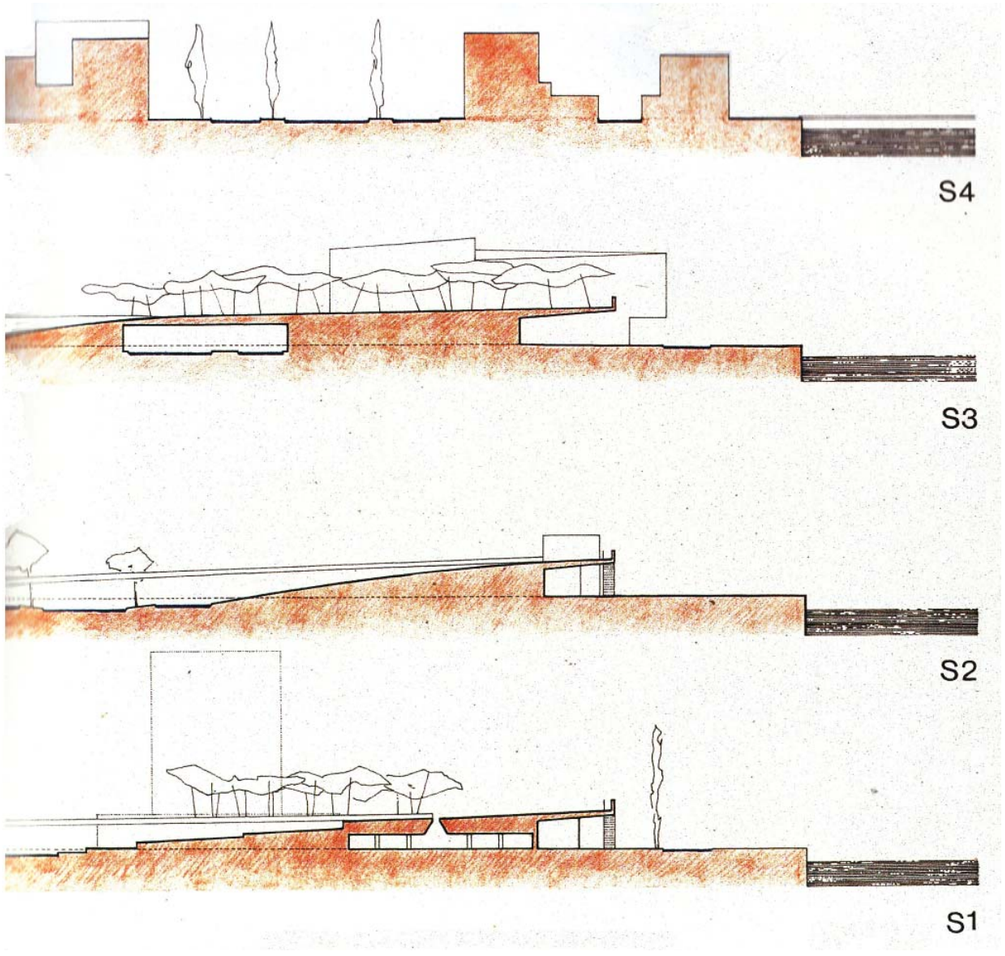
The coastal strip between the gulf and city edge is transformed into a continuous waterfront. The linear structure of this park is punctuated by a transverse axes that function as public open spaces and riverside walks. The different sites and their activities perform a dual role: as part of the general sequence of the coastal park and as part of the urban fabric of the adjacent city quarter. The waterfront architecture comprises of: infills in the existing fabric with new waterfront architecture, high quality architectural objects and defined urban structures such as artificial islands and platforms along the coast, emphasizing the maritime character of the site. The landscape elements soften the linearity of the seaside quay while the seaside activity is animated by restaurants, markets and marinas.

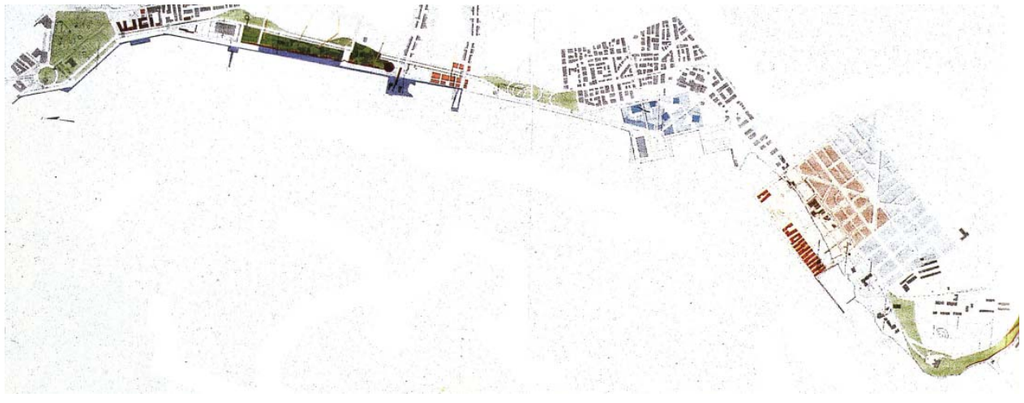




Summary

- Four major activities: Commerce, conference, culture and cuisine
- Water quality of the Thermaikos addressed by a series of measures
- Introduction of a tunnel underneath the Historic centre seafront linked to Egnatia and M. Alexandrou streets.
- Re-routing of heavy traffic from M.Alexandrou St. and V.Olgas to Egnatia and re-establishment of the formentioned arteries as local city streets
- Redesign of existing heart between the historic centre and the eastern expansions as the new Alexander Park
- A new city-centre as focal point at the end of the Niki Ave. and a Seaside resort in the Kalamaria area.





Manuel de Solá Morales - *Prize*

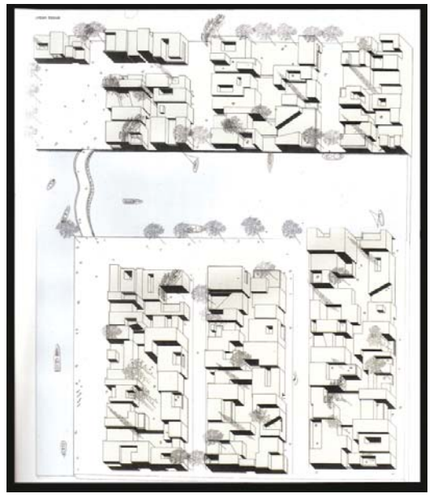
The project faces two of the basic questions that urban waterfront pose to old cities today: an excess of open land and a change in scale of the city. Three new areas of urban development are proposed along the bay: a new Business District in the Poseidonio Area to relieve congestion in the historic centre; two new residential quarters (Salamina, Karabournaki) based around water activities and a reorganized traffic network. Leisure and cultural activities, sports and promenades take place mainly in the White Tower Park, the Strand with its new place and uses, the Water Park at Karabournaki and at South Kalamaria Leisure Shore. The central waterfront (the Strand) is for the animation and service of the city and the are behind it. At South Kalamaria and Mikra, marinas, beaches and sport pavillions offer wide recreational facilities on a metropolitan scale, with a park and archeological sites for a panoramic promenade or relaxation.

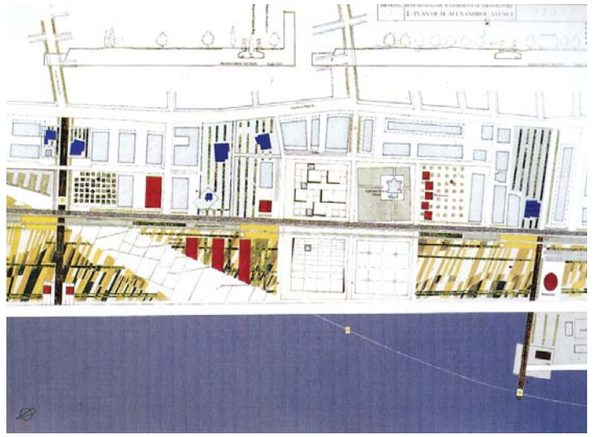
The proposal recognized that fragmentation and identify are complementary goals for a stronger urban structure and a more significant image. Thus four landmarks with five separate links are proposed: **i)** the New Strand Porches **ii)** the Salamina Harbour Quarter, **iii)** the Karabournaki Marina Village and **iv)** the Poseidonio Business district. This operation according to the proposal is extremely important for the visual enclosure of the bay and the maritime image of Thessaloniki as a multiple, complex and built-up city on water. These four landmarks have five separate links : **i)** White Tower Park and Circle, **ii)** the realineation of Alexander the Great Avenue, **iii)** the modification of the topography of the same avenue **iv)** the tunnel interchange gate and finally, **v)** the South Kalamaria Leisure Gate.

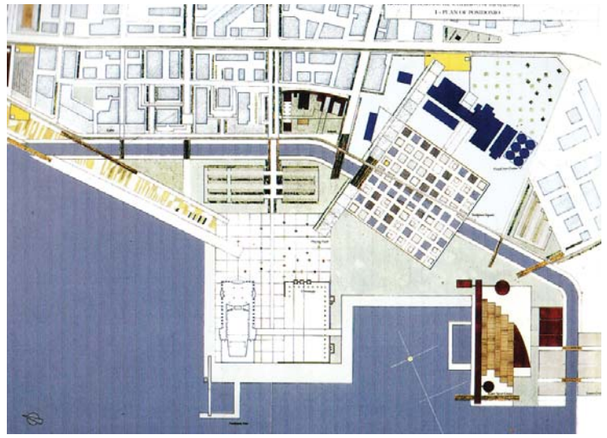
The linking of the waterfront to the urban fabric is given special attention. Various solutions are proposed to ensure variety in the links between the city and the water. There are nine independent proposals. All together they reshape the topography of the coast-line to form a succession of urban episodes.

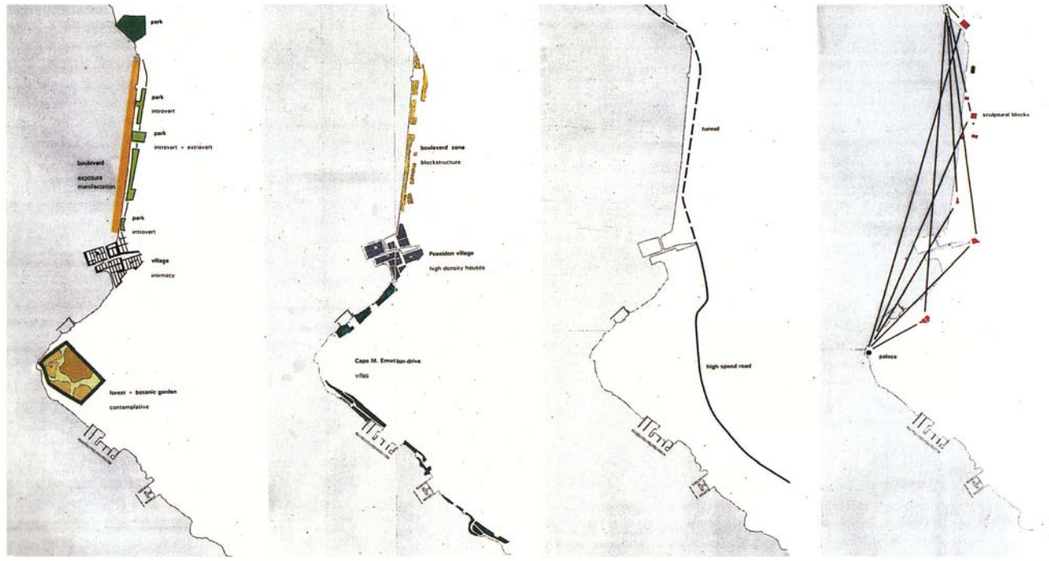
Summary

- Three new areas of urban development are proposed along the bay: a new Business District in the Poseidonio Area, and two new residential quarters in Salamina and Karabournaki.
- The waterfront has three sections: the new Quay and Alexander Avenue;the Poseidonia-Karabournaki shores; and the south Aretsou-Nea Krini shore.
- Provide pedestrian scaled medium scale landmarks to form a sequence of significant events combined with voids.
- Development of strategic sections, integrating infrastructure, landscape and innovative new uses in a single whole.
- A quest for articulated forms of integration between the existing and/or planned urban fabric and infrastructures.







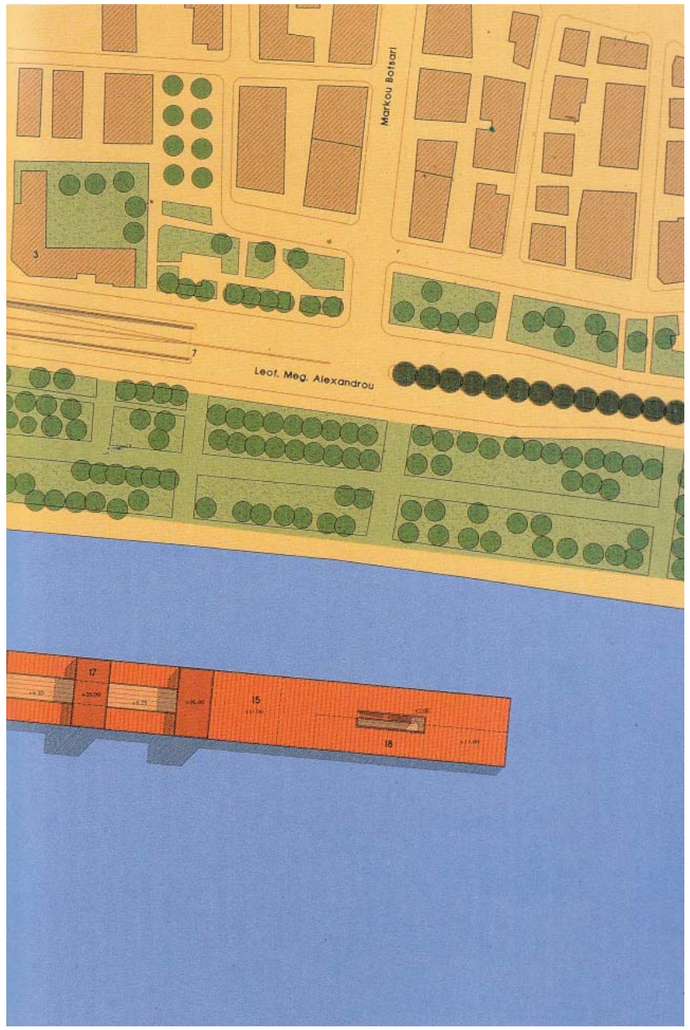


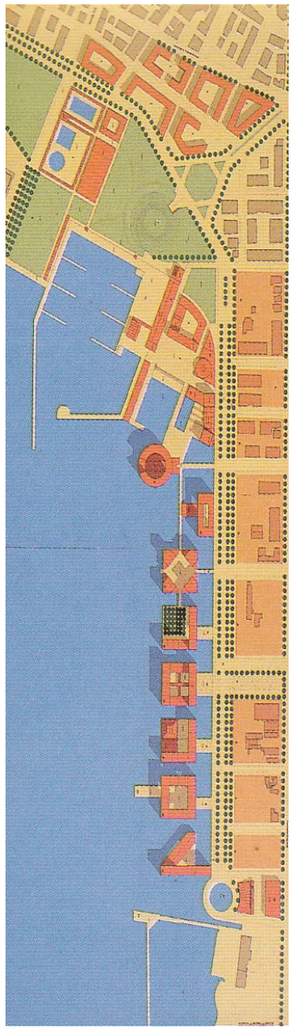
West 8 Landscape Architects - *Prize*

- Housing & living environment (base) mixed with cultural and commercial functions (absorbed in the urban fabric)
- Small-scale image definitions of public space - intimacy- , enhancing the link between city and water.
- Introduction of strong architectural elements to dominate the skyline. Respecting the existing context, the new waterfront area is mainly developed as a low-rise zone resulting in a flat, horizontal *roofscape*.
- The Thessaloniki waterfront must be approached on the basis of three urban identities evolving in time: the boulevard, the marina, and the Cape of Megalon Emvolon. The boulevard and piers are public spaces suitable for promenading, meeting and enjoying events. The marina has a network of quays, landing, small streets and squares of outstanding character and typical Mediterranean atmosphere.

Atelier d´Architecture Yannis Tsiomis - *Prize*

- The project takes form around a theme: the relationship of water, in all its specificity, to the city of Thessaloniki.
- In the case of Thessaloniki there are four principal diachronic relations/situations that have influenced city form over time: **i)** the parallel lines close to the shoreline, **ii)** the pockets of space created in the 50s with the creation of the Nea Paralia, and the disappearance of the ondulations of the original natural coastline, **iii)** the transversal lines corresponding to former riverbeds, **iv)** the hippodamian urban grid which absorbed the riverbed lines, and fixed the position of lateral streets as reflection of the overall curvature and slopes of the site.
- The proposal pojects three distinct sectors: i) the first extends from the White Tower to Poseidonio, ii) the shoreline of Sophouli and Kodra, preserved largely as a natural site, iii) the pole comprised by the Kalamaria Marina, the enlarged Mikra Athletic Centre and the New European Technological and Institutional District.

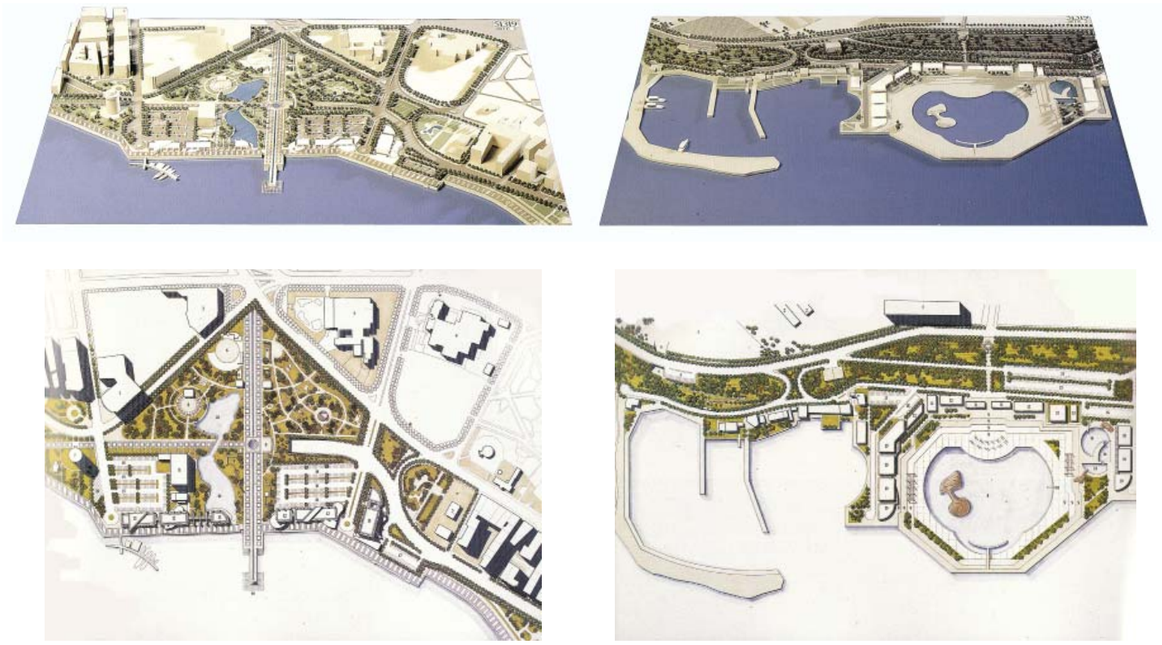




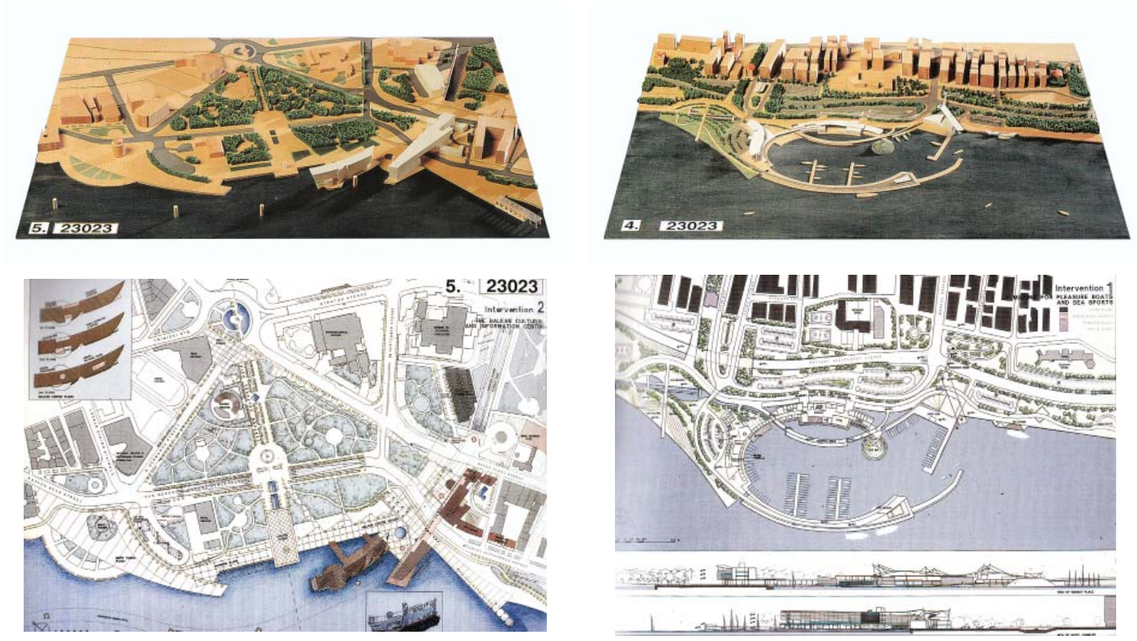
Gregoti Associati International SRL - *Runner-Up*

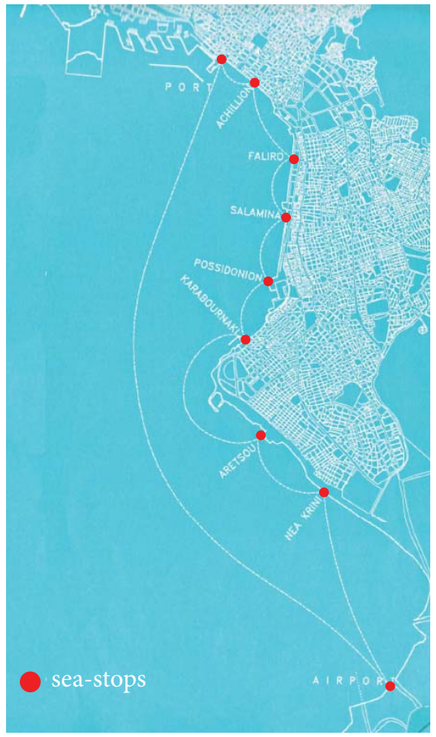
- The new design of the waterfront should embody the image of the city upgrading for its inhabitants, and describe the links between the city economy and the Balkan peninsula: commercial, service and financial premises.
- The proposal also suggests a general re-ordering of vehicular circulation, determined by the expected traffic growth.
- The proposal divides the waterfront into two parts: from **i)** the White Tower to Cape Emvolon (*urban image*), **ii)** from Cape Emvolon and Mikra (*natural image*).
- A sequence of nine areas of interventions are proposed by the project: **i)** a modified road layout, **ii)** an upgrading of the lineal coastal park, **iii)** creation of the Poseidonia Park to balance the central park, **iv)** a new entertainment center, **v)** the new Business Pole between Poseidonia and Karabournaki, **vi)** the Cape Emvolon Park that will house the Archaeological Park, **vii)** upgrading of the fishing port, **viii)** the Mikra Natual Park, **ix)** Remaining areas of the fragmented fabric will be filled with residential blocks.

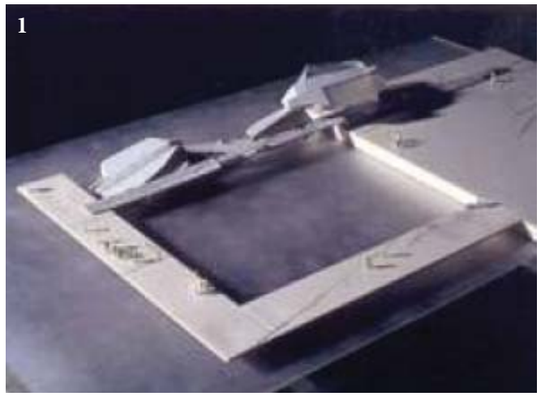
Thymos Papayannis & Associates

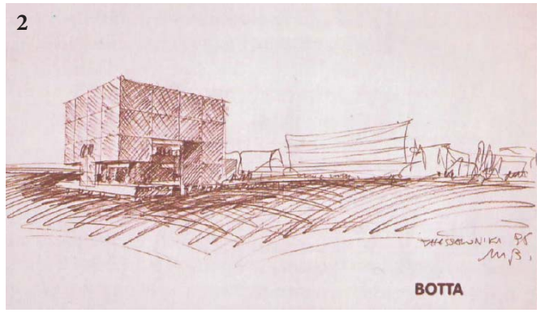


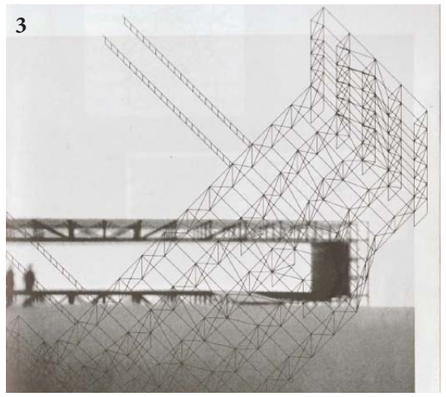
A. Dimitriou & Associates











1. Coop Himmelb(l)aou **2.**Mario Botta **3.**Finn Geippel (Lab Fab) **4.**Alvaro Siza **5.**Enric Miralles **6.**Rem Koolhaas **7.**Aldo van Eyck

Eight Piers for Thessaloniki

The 1997 international competition

The last intend of the Oranization of the Cultural Capital of Thessaloniki to revitalize the urban seafront was the study conducted on the possible creation of a network of local sea transport, combining infrastructural development with architectural attraction elements.

The topic conversation of the sea transport returned in the late 80s. In 1989 a study was realised that attracted the interest of private actors, and was finally integrated in the plans of the O.R.Th. As observed earlier on, the study stresses the importance of the connection of the city centre with the rapidly growing eastern areas. Intensified by this geographical extension, the notable traffic and contamination problems, the application of the study was made even more urgent. The study proposed three lines crossing the bay in 3 distinct hierarchies:

- *urban displacements* (Eleytheria Square - Kalamaria)
- *connection with the airport*
- *periurban* (City centre- Peraia - N. Epivates - Ag. Triada)

Based on this original study and taking advantage of the 1997 year, a further dimension was added to it. It organized a closed study by invitation of eight architects, with a strong presence in contemporary architectural proceedings, to design the stations/piers of the sea transport network. The logic of the utilization of renown and recognizable architects to produced characteristic images / landscapes for the city was already present and expressed by the subtitle given to the study " Provoking urban episodes on the coast". Thus indirectly an open conversation is enacted on two levels: first the more conceptual one, of the dialogue between the city and the sea, but expressed in architectural formalization and secondly in the more metaphoric sense, of the relation of the people (the urbs) with the sea, the used that they make, the stories that they create. The eight architects invited and their respective assigned stations were :

1. Aldo van Eyck - *(SeaPort)*
2. Finn Geippel (Lab Fab) - *(Achillion)*
3. Mario Botta - *(Faliro)*
4. Alvaro Siza - *(Salamina)*
5. Coop Himmelb(l)aou - *(Poseidonion)*
6. Enric Miralles - *(Karapournaki)*
7. Rem Koolhaas - *(Nea Krini)*
8. Giancarlo de Carlo - *(Airport)*

Nevertheless, neither the original study nor the architectural proposal was ever made reality, despite a widespread support and enough demonstrable benefits. The issue has returned in the discussions recently (2005) when the Region of Central Macedonia reenacted the dialogue around the potential periurban connection of the sea transport (City centre- Peraia - Neoi Epivates - Ag. Triada - Nea Michaniona). One more time the car-dominated scheme prevailed over other options, that were shelved for future reconsideration. The incapacity of the local administrations to present the service as an attractive investment for the private sector sank any efforts for the realization of the project.

x. Lebesque, S. & Eyck, A.V (1996)
xx. Samarinis, P (2006)

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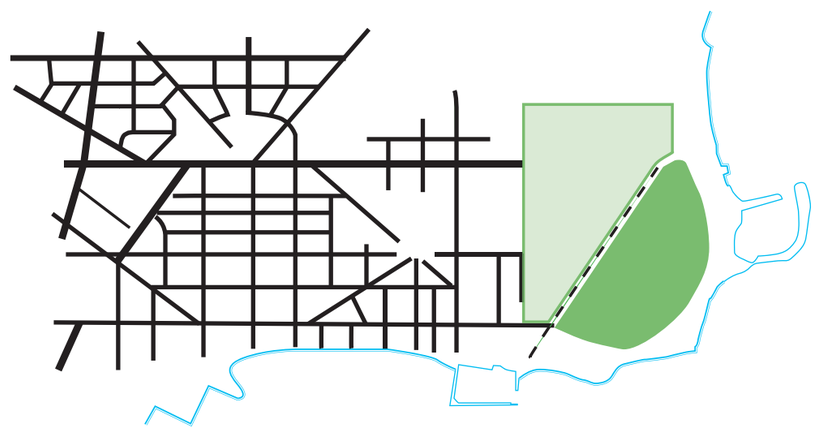


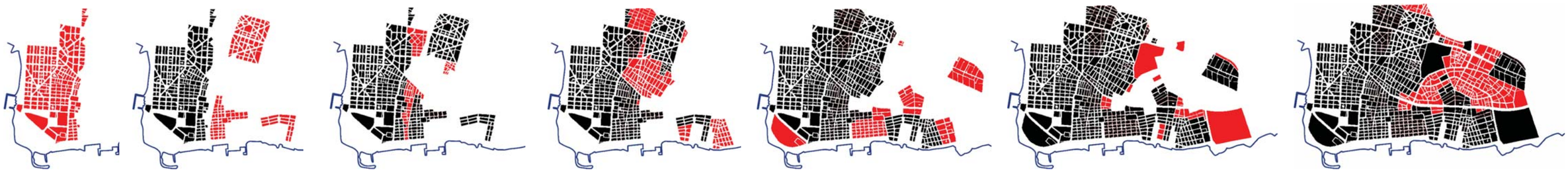
Above : The Karampournaki area in the 60s and 2010 (source: airphotos.gr)
Diagrams on the right : i) the area in the 1918 Hebrard proposal ii) Plan for the area in 1926 iii) the area in 2013 iv) *traces* of the Hebrard plan in the contemporary fabric (source: **i,ii.** National Map Archives **iii.** Google Maps **iv.** own elaboration.)

The Karampournaki area

As seen the eastern areas from the White Tower and to the east towards the Villa Allatini and all the way to the Karampournaki cape, were designated as residential areas of middle and high-income classes and for the creation of respective monumental recreational / leisure facilities. The Karampournaki area, the easternmost area of the Hébrard plan for the city of Thessaloniki and a characteristic landscape element for the seafront had held various uses throughout the history. From a prehistoric settlement ground and a port area for the city of Thermi later on, it progressively passed to military use due to its strategic position. The Ottomans were the first to built a camp and fortification on site use which it maintained practically until 1990. The site also hosted allied forces during the first world war and their stay in the city of Thessaloniki.

The initial 1918 Hébrard proposal for the Karampournaki area however envisioned a slightly different character for the area, recognizing the privileged and strategic position it hold. The principal element proposed for the area is the Spa / health centre developed at the point of the cape and configuring a diagonal axis from the seafront to the peri-urban area. (The Thomas Mawson proposal also considered a similar facility but with a different orientation for the respective axis). Stemming from the cape health centre a lineal park penetrates the urban fabric, that is founded dotted with additional green areas. The proposed grid respects the already existing fabric and adopts it in combination with the local topology, avoiding a orthogonal or even distributed grid and opting for a more organic form. In the final 1926 plan for the area the grid morphs into a more ordered structure. Starting from Sofouli street 3 parallel axes (Oikonomidou, Kallidou, Mitropoliti Kallidou, Aigeou) cross the entire area and structure the space accordingly in combination with the characteristic diagonal arteries of the Hébrard plan. The leisure area is seen restricted in size, occupying the point of the cape, and with the disappearance of the lineal green areas, that had to be sacrificed for increased housing needs of Minor Asia refugees to be settled in the area.

The area today developed partially according to the plan and partially with modifications and improvisations to the original, as it can be seen in the diagram above. One fortunate misshaping was the occupation of additional space for the creation of the Kodras military camp, that once disarmed conserved additional free (and green) space for the urban fabric, and its increased built-up. The seafront and most importantly its unformulated and even neglected character are a negative characteristic and a missed potential still for the area. The seafront buildings have not been completed as planned freeing up additional and unexpected seafront spaces.



top: Aerial photos of Kalamaria (source: airphotos.gr)

bottom: Evolution of the city plan expansion of Kalamaria (original data source: Municipality of Kalamaria)

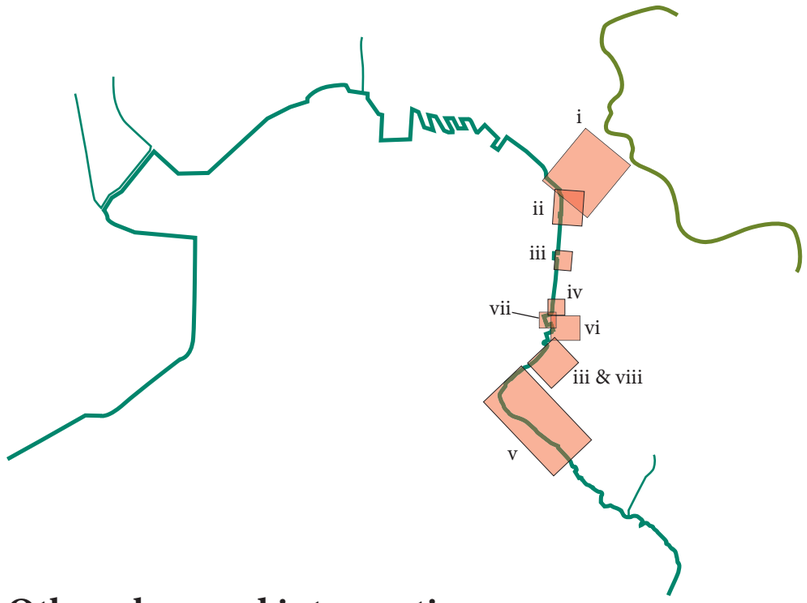
Kalamaria & Nea Krini seafront.

The expansion of the city to the east past the expected limit happened quite earlier than the plan expected. The arrival of the Minor Asia refugees demanded the urgent expansion of the city, pressure which did not allow time for a proper plan to be developed. Thus, settlements were located / arranged by consequent urban plan extensions and no planning considerations in mind apart from basic grid requirements. This trend continued with the consequent arrivals of internal refugees after WWII, the Civil War and later on with the rapid urbanization and expansion of the late 20th century. The evolution of the urban fabric to the east rapidly occupied the seafront with these progressive extensions before filling in the inland parts.

The Karampournaki cape seafront area eventually followed it owns spontaneous development the original indication of the Hebrard Plan, with the development of diverse leisure / sport activities along the area, but as results of punctual intervention and private initiatives. The Nautical club of Thessaloniki on the west side and the Nautical club of Kalamaria and the Aretsou Marina & beach on the south side; the formal royal residence; the Footbal stadium and the swimming pool of Kalamaria on the edge of the military camp edge are examples of such activities. For the most part though the area reserved originally for the recreational area still remains unbuilt / unoccupied, and partially occupied by the obsolete military installation and the local Nato headquarters that have ultimately decided to reside in the area.

The seafront activity of the entire Aretsou / Nea Krini seafront is dominated by leisure activity with diverse restaurant, cafe, bars etc. The connection of the seafront with the urban fabric maintains a high visual value, but is more problematic in practical terms. Direct access to the water, apart from the sport activities, is not facilitated and many times discouraged it with the absence of a formulated, secure and attractive public space. Punctual occupation of the seafront occurs on the eastern end of the section by restaurants with a privileged position but not a legitimate presence. Other local voids and green areas / parks along the front or in the area give indices of a primal and unstructured potential green space.

The seafront of Aretsou & Nea Krini holds a key role and potential for regional seafront continuity. Its connection with the Thessaloniki seafront is a pending question and one that needs to be catered for the soonest possible. On a next stage, a restructuring of the area needs to be performed to **i)** increase integration of the seafront with the urban fabric **ii)** its reconsideration as a public space **iii)** and a privileged area of activity attracting and encouraging revitalization and **iv)** as a connector with the peri-urban seafront and area.



Other plans and interventions

i. Central Axis plan, delimiting the main areaas of activity as well as principal axes crossing the area (July 1952)

ii. Special plan for the construction of a tourist hotel facility, demonstrating the location for the construction of the Macedonia Palace hotel. (July 1962)

iii. Plan of the Mill of Allatini and the adjacent terrains, showing the properties of tehe Allatini Family, the mansion and the mill and the its proposed re-arrangement. (no date)

iv. Plan for Mpotsari residential area, showing the connection of the first expansion of the new seafront with the consequent part. Note the provisions for a subterranean pedestrian passage, never constructed. (April 1966)

v. Antheon avenue, showing the intersection of the Antheon avenue with the and the organization of residential units, educational facilities and public spaces. (March 1970)

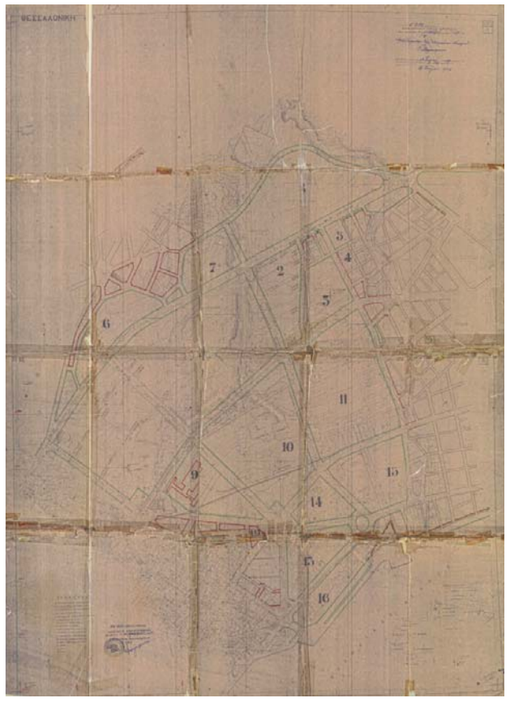
vi. Topographic survey from Karampournaki to the Agricultural school, showing the limits of the settlements of Aretsou, Nea Krini as well as seafront properties and uses (1930)

vii. Allatini area plan, showing an alternative and later cancelled route for the seafront avenue, the Poseidonio area and adjacent residential buildings. (Julio 1987)

viii. Music Hall complex, showing the location for the construction of the two buildings for the Thessalonikis Music Hall (Julio 1996)

ix. Plan for the Karampournaki, with the proposed road grid and residential units for the organization of the area, as well as ground floor uses (March 1934)

i



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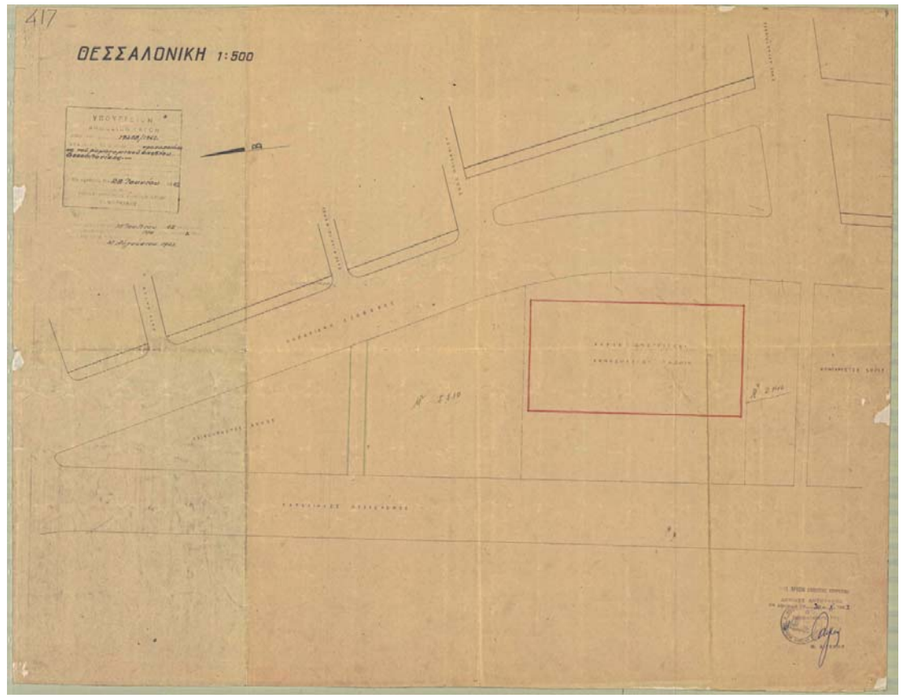

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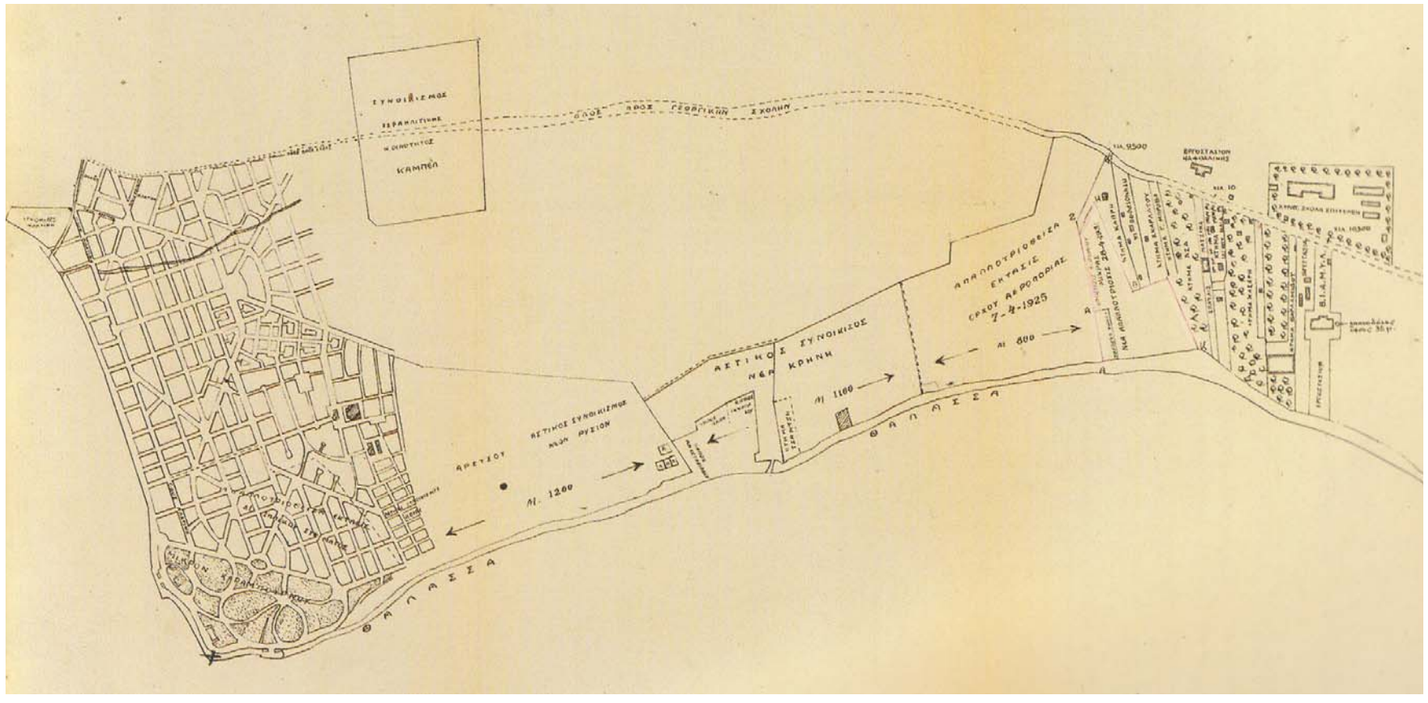

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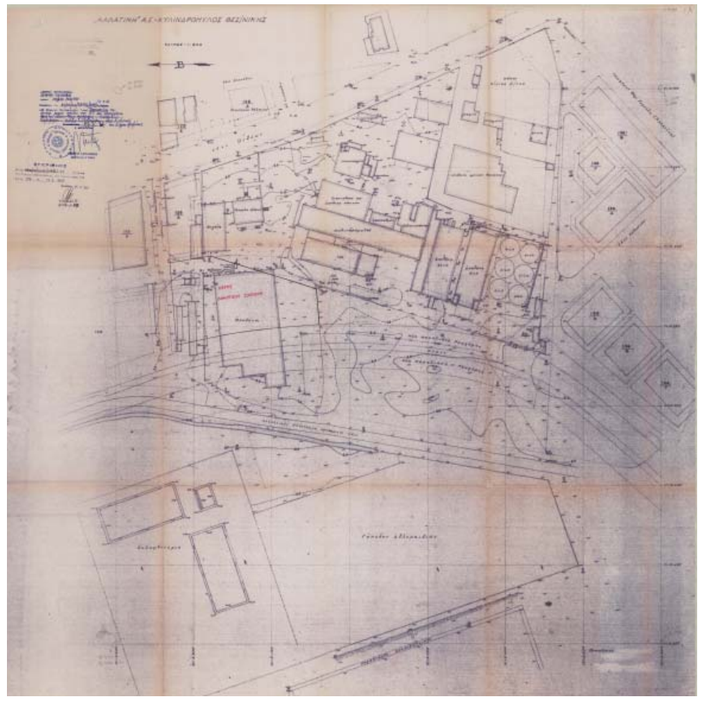

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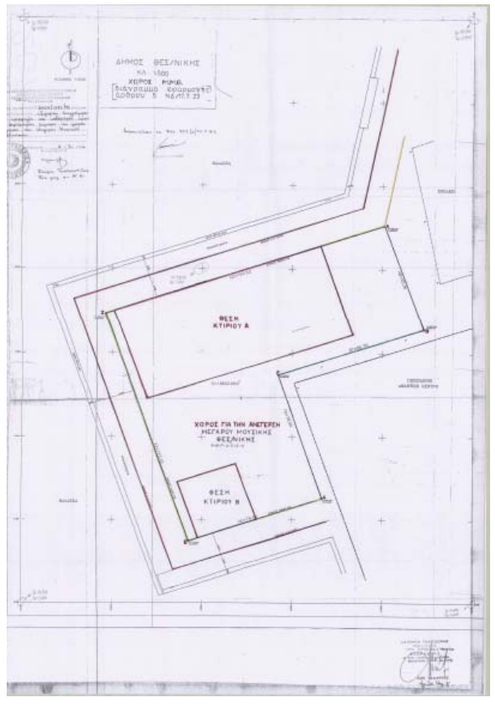


ix

Perea to Central Axis

Mesogaia - *Μεσόγαια*

Ethnikis Amynis Street to Port

(image sources: airphotos.gr, panoramio.com)

viii. Situations Detected - *Risks and Opportunities*

Having analysed this particular, 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 emerge are listed.

Accessibility

infrastructure barriers

Risk: The road infrastructure along certain stretches creates a barrier effect with regards to the accessibility to the seafront. This effect is pronounced along the Nea Paralia, where the Meg.Alexandrou avenue with its high and fast flows creates a visual and functional barrier to the seafront park, with the exception of the pedestrian crossings and a pedestrian bridge next the hotel Macedonia Palace. ¡Similarly in the east periurban area the highway creates a similar effect in conjunction with the presence of big size commercial facilities.

Opportunity: Reconsider the barrier effect of these mobility axis, and consider possible ways to reduce it, increasing permeability by putting an increased emphasis on pedestrian flows and accessibility / connection with the seafront.

large transportation facilities as barriers

Risk: The large transportation facilities such as the seaport (cargo+passenger) or the airport have created a barrier effect and discontinuities along the seafront. The large size of these facilities in combination with the security questions that apply, being a key transport infrastructures, increases the effect and at the same time makes harder the restoration /reconnection / reparation of the fragmented fabric.

Opportunity: The special nature and importance of the facilities makes imperative the examination and reconsideration of their limits. Work with the limits to allow bypasses restoring continuities, consider landscape integration and ensure their secure function. At the same time it is necessary to reconsider current activities and uses on their grounds, making an inventory of occupied and void spaces and of new potential activities that could be introduced.

commercial barriers

Risk: The commercial / leisure facilities occupying the Thermi seafront have failed to develop a relationship with the seafront that they are occupying. Apart from obvious landscape considerations there is also a considerable accessibility issue presented with regards to easy public access and continuity of the seafront.

Opportunity: Given the privileged space that these facilities occupy, it is necessary and useful to convince and promote an upgrade architectural & landscaping of this seafront´s section and adjacent area, encouraging private engagement in the active improvement of the area´s quality indicators.

small leisure occupation & barriers

Risk: This category makes reference to small tavern/bar facilities that appear punctually principally in the Karampournaki and Nea Krini seafronts. Their main characteristic is the direct occupation of the seafront and direct relationship that they have with the sea.

Opportunity: Reconsider the presence of these facilities on the seafront. Restore seafront continuity and aim for integration, relocation or cancellation of the formentioned facilities. Promote public and private engagement.

Intensity

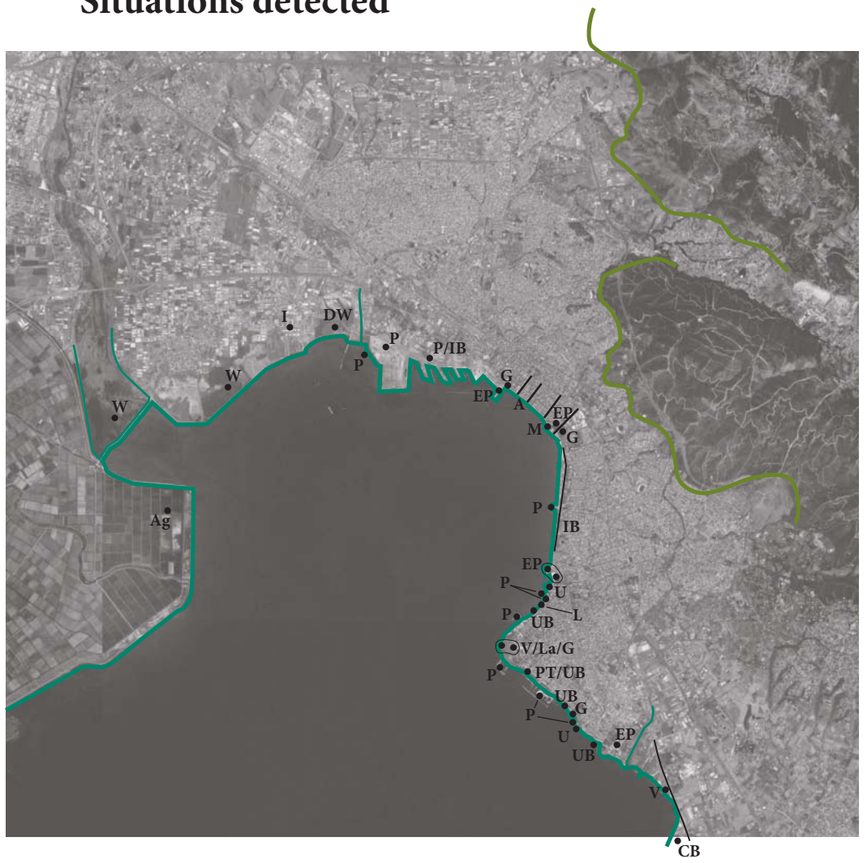
This is a broader category that makes evident the presence of different and rhythms along the seafront. The intensity refers both to intensity of flows as well as activities. Taking this into account one can recognize the intense edge area of the historic centre, with its characteristic sea facade in direct contact with the sea, and a buzzing and concentrated activity; or the Nea Paralia, with the lineal park and the adjacent Meg. Alexandrou avenue with its high flows that separates from the urban fabric; the Karampournaki seafront, with its sand beaches, and a more relaxed rhythm; the Aretsou / Nea Krini seafront with its diversity of uses / activities and slow pace. All these represent the different and distinct rhythm of the seafront territories, forming almost a radient from the historic centre gradient of intensity. Recognizing these rhythms is a vital step for understanding the functioning as well as the necessities of the territory, in this case the seafront edge.

Activity

Ports (big port installations, marinas, sport & leisure ports, casual)

Risk: The Thessaloniki´s seafront boasts a great variety/diversity of port facilities of different character and usage. Apart from the cargo port of the city that has been experiencing a slow but constant expansion along the coast, the rest of the ports, have maintained a constant size. Apart from the official ports one can also recognize smaller unofficial / casual ports maintained in small natural bays or the orifices of streams and rivers. This diversity and richness of uses should be maintained and intend to boost furthermore to reinvigorate portuary activity and diversity.

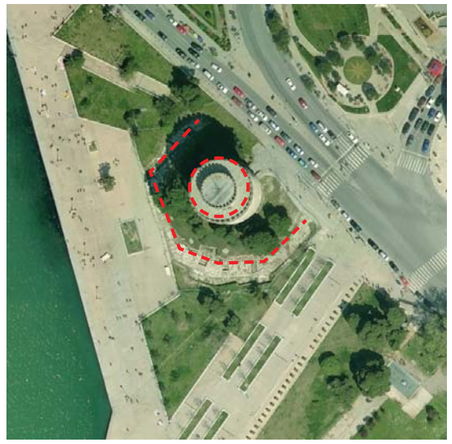
Situations detected



legend

M: monumental
A: axis end
Ag: agriculture
EP: emerging poles
IB: infrastructure barriers
V: voids
La: latent spaces
UB: urban beaches
I: polluting industries
CB: commercial barriers
PT: public tourist facilities
L: leisure occupations
U: uncosolidated spaces
W: wetlands
DW: degraded wetlands

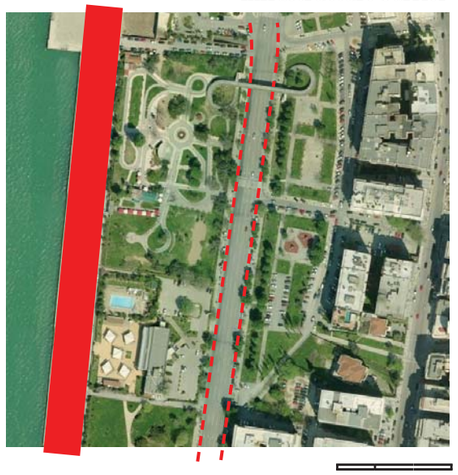
monuments



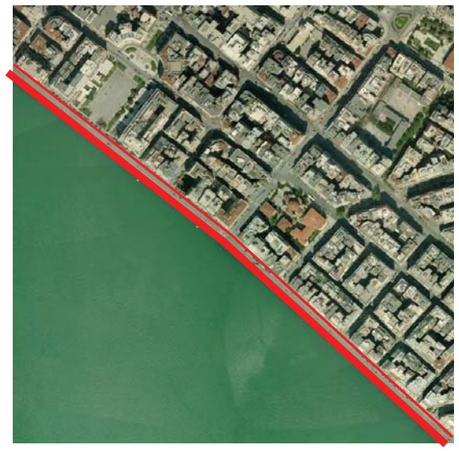
axis end

pole emergence

infrastructure barrier



intense edge activity



relaxed edge activity

voids / latent spaces

urban beaches

Opportunity: Thus a coordination of all port facilities should be made, on a regional scale, in terms of capacities and services provided. Reconsider uses and occcupied spaces, taking into consideration public access, seafront continuity and ecological integration of each facility. Consider upgrades and revitalizing where necessary.

public tourist facilities
Risk: This category refers to exisiting public tourist/leisure installations principally the Aretsou Beach or other public properties that could develop such type of activity. The degradation of existing facilities over the time has created a run down image that deters visitors.

Opportunity: Upgrade and reactivate the facilities to re-attract users and re-enact activity. Maintain and secure public access as well as integration of new uses.

urban beaches
Risk: The presence of urban beaches within the urban fabric of the city is a topic that passes by without being noticed nor by the user or planners of the city. The degradation, lack of maintenance and cleaning, combined with poor water quality have brought these spaces to a gradual abandonment and marginalization from the rest of the city body.

Opportunity: These spaces represent prime examples for reactivation that could bring a shift in terms of activity and attractivity of the respective areas. Their ecological reactivation and urban reintegration should be the two principal objectives.

voids / obsolete / latent spaces
Risk: There is a great number of spaces along the seafront that could enter in the above categorization. Examples could be the Kodras military camp and the Palataki, the old shipyards of Thermi or smaller scale areas such as parks that given their location can play a key role. The prolongation of low level activity and abandonment act as deterrents for their reactivation apart from problems of accessibility they may present.

Opportunity: The reintegration of these areas, of smaller or bigger scale, is crucial for reactivating the different areas of the city´s seafront. Apart they could host different civic related activities in the areas that present deficiencies in such terms.

unconsolidated spaces
Risk: This category refers to a series of spaces found along the coast that do not have a formulated character in terms of urban space and activity. Examples of such spaces are the coast next to the Poseidonio Sport complex, certain parts of the Nea Krini seafront as well as the Mikra sport facilities.

Opportunity: These spaces present great opportunities for seafront upgrade and introduction of new and dynamic uses.

Landmarks & Emerging poles

monumental spaces
Opportunity: The presence of monument and landmarks along the coast should be highlighted and utilized as a coherent sum to structure seafront visual points.

axes´ ends / dockings
Risk: The intersection of the seafront with the principal urban / civic axes are key mobility and activity points. Examples the Aristotelous end, the Central Axis end, the Kerasountos axis in Kalamaria and smaller urban axes like Agia Sofia, 25 Martiou etc. Despite the importance that this spaces hold, this is not demonstrated in any visible or practical manner in the contemporary context.

Opportunity: The activation of these points can play a major role in the reactivation of the seafront and the fluidity of flows in and out of the seafront.

emerging poles
Risk: The emergence of spatial poles along the coast can be seen in various sports. The cultural / administrative pole of the Central axis; the cultural / sport pole of Poseidonio; the Park / cultural pole of Kodras, the Sport pole of Mikra etc. Neglecting to form proper and adequate plans at this point can have future adverse effects in spatial terms.

Opportunity: Organize and structure these areas as coherent and efficient poles with proper organization and functioning. Consider accessibility and public usage.

Natural & ecological

wetlands
Risk: The presence of critical wetland such as the Kalochori and Gallikos river in close distance to the urban fabric and more importantly industrial facilities presents a great risk for their ecological integrity, which in combination with the poor hydrological management of these resource is facing serious challenges

Opportunity: Restore ecological integrity of the ecosystems, resolving conflicting uses and landscape issues / questions. Encourage public usage and ecology related activities restoring seafront continuity and accessibility.

degraded wetlands
Risk: This category refers to wetlands that do no enter in the above category and are found in a degraded state. The wetlands at the delta of the Anthemounta river by the airport is the prime example which occupies a considerable area, a big part of which was gradually occupied by the airport.

Opportunity: Restore the ecological functioning of these areas and consider the transformation into aquatic / wetland parks with public access and research objectives.

polluting industrial activity

0 250m 500m

commercial barriers

0 50m 100m 250m

public tourist facilities

0 50m 100m 250m

leisure occupation

0 25m 75m

large port installation

0 100m 250m 500m

marinas

0 50m 100m 250m

sport / leisure ports

0 50m 100m 250m

casual /unofficial

0 20m 50m

undefined relation

0 25m 75m

wetlands in flux

0 100m 250m 500m

degraded wetlands

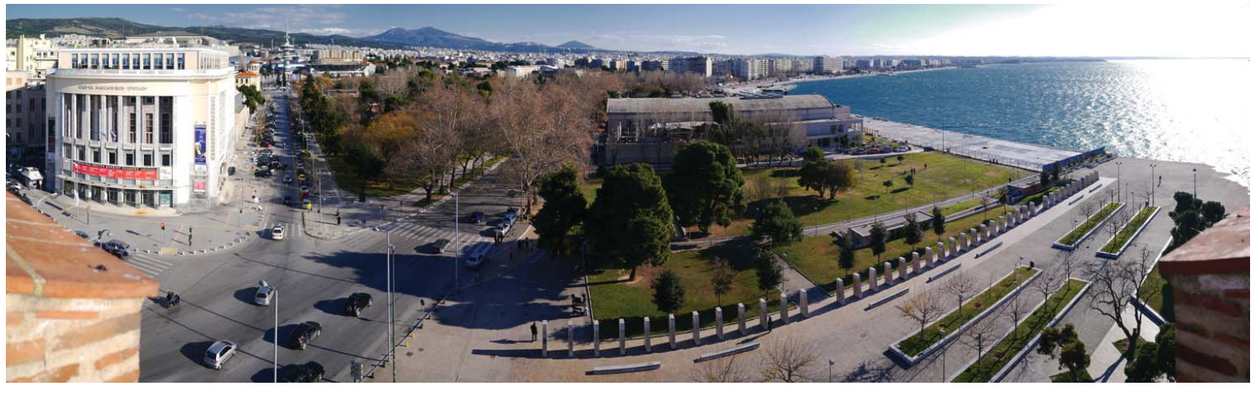
0 100m 250m 500m

port expansion

0 100m 250m 500m

Historic Centre waterfront taken from the 1st Pier of the port

Historic Centre waterfront taken from atop the White Tower



Nea Paralia taken from atop the White Tower

Music Hall B

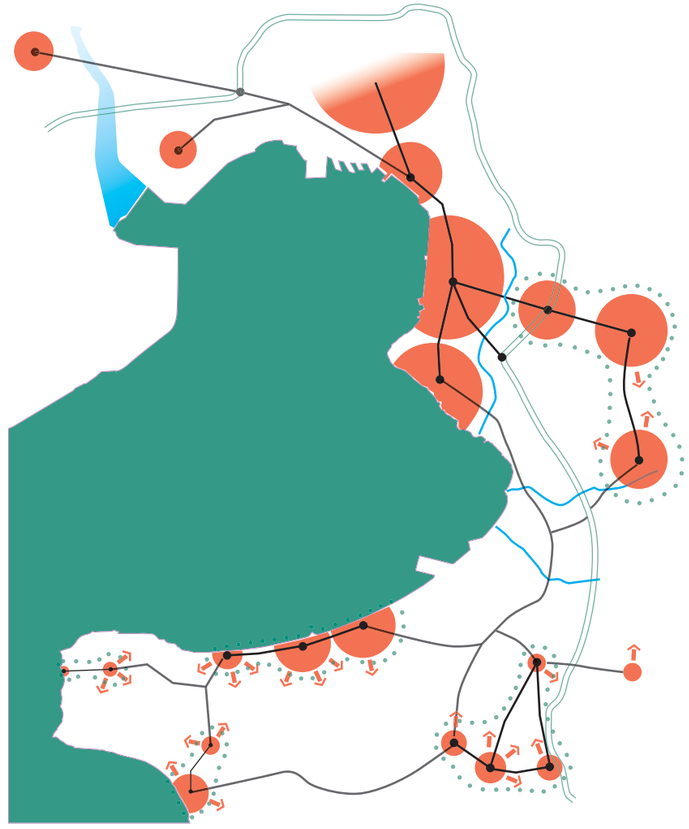
View of the Karampournaki from atop Music Hall B

Small port on the north-east end of Karampournaki

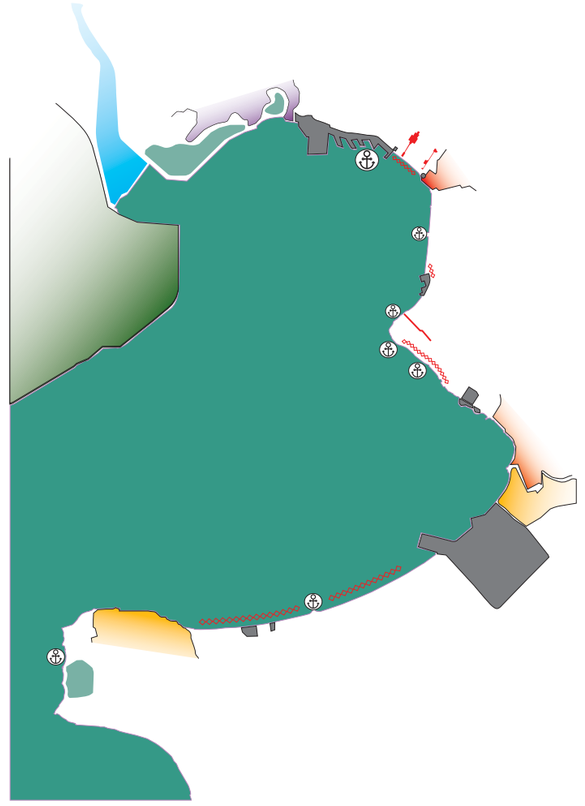
Nautical Club of Thessaloniki in Karampournaki

Nautical Club of Thessaloniki in Karampournaki

General Scheme of the bay and city centre and development



Settlement location and urban structure



Big areas and Activity along the bay

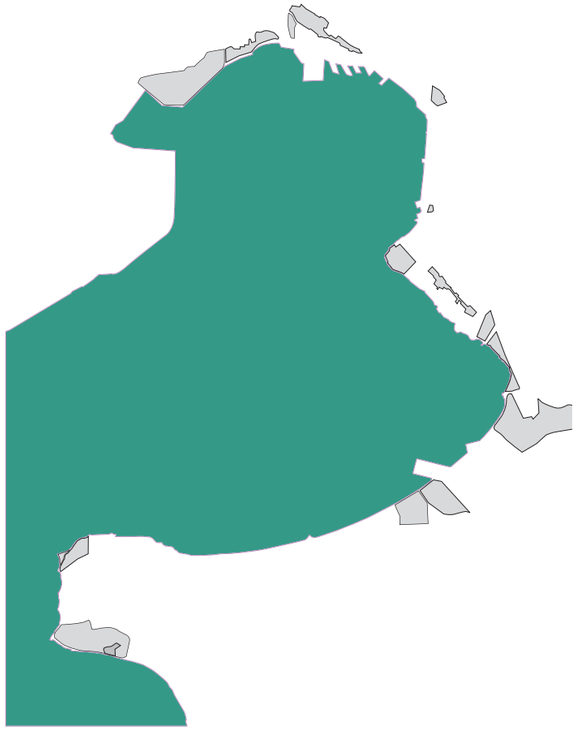
ix. A Seafront Synthesis

Following the analysis of the Thessaloniki´s bay seafront, it will be useful to make a first assessment / synthesis of the analysis results before proceeding with the outside limit analysis of the ring road. As seen in the previous chapters of the analysis, the urban barycenter of the city of Thessaloniki, the regional point of gravity of the urban activity, has shifted slightly to the east of the historic centre, along the Central Axis and its respective area and facilities, following the transformations and dynamics of the last 50 years.

The development of human settlements the last century along the bay have surpassed by far the limits of the historic centre and extends on both directions, overcoming previous natural obstacles or unfavourable conditions. The drying of the swamps / wetlands on the north coast, west of the historic centre as well as the ones one the southern coast, in the Peraia and airport area, in conjunction with sociopolitical conditions permitted an unprecedented development of the coast. There is a continuous urban front created starting from the seaport and extending almost to the exit of the peri-urban canal with small variations/diversifications, and a second one, of a milder character starting with the settlement of Peraia and extending to the west all the way to Agia Triada. Smaller settlements also appear along the seafront or in its proximity with direct or indirect connection to the coast. Public accessibility is possible along these urbanized fronts, while on the rest of the cases, it presents a restricted of even unformed state.

Accordingly numerous activity poles have been attracted by the coastal conditions along its length. These include **big size transportation facilities** like the airport and the seaport (with the respective barriers that they create), **functional area**s (industrial, commercial) with big size installations; medium sized **specialized areas** for sports and culture (Poseidonio, Mikra) or central functions (eg. Central Axis); or **smaller size pieces**, like public spaces, tourism installations, marinas, parks and sport facilities.

At the same time, there are numerous areas of variable size that are either void or are found in a latent / transitional stage. These are characterized either **i)** their strategic position (ex Kodra camp, Megalon Emvolon tip, International Expo) **ii)** their vicinity to important installations (eg. areas around the airport) **iii)** their historic character (Aeneia archeological site) **iv)** their emerging ecological and landscape value (Kalochori & Angelochori lagoon) **v)** and the reconnection potential that they present. A careful



Big voids & latent spaces along the bay

Present ecological structure

Strategies and opportunities

voids & latent areas

forest

agriculture

degraded wetlands

wetlands

green corridors

emerging / latent corridors

corridors

commerce/ leisure

wetlands

barriers

corridors

urban corridors

reconnection

green limits

barriers

reconsideration of these areas taking into consideration the wider context of the bay, could help diversify and dynamize the activity and flows along and towards the coast, resolve conflicts and enhance the overall structural and functional scheme .

As far as natural / semi natural activity is concerned it is encountered in a limited and pressured state. On the western coast, the tri-delta estuary area with the Gallikos river create an important natural and ecological zone and a considerable limitation for westward expansion of the city. Then there are the wetlands of the Kalochori area, with its special nature and equilibrium and the Angelochori lagoon on the tip of the Megalon Emvolon of the bay. Agricultural areas and semi-natural areas are still found extensively in the same area (Megalon Emvolon) and along the exit and course of the Anthemountas river on the east coast of the bay.

As fas as ecological functioning is concerned the bay is connected with the inland via various corridors, the majority of which have experienced to a bigger or smaller extend the effect of human alteration. These corridors provide connection on a short scale (e.g. with the forest of Seich-Su via the peri-urban canal) or a larger regional scale (Anthemountas & Gallikos river). Respectively there are also numerous barriers limit that obstruct several of these corridors. Examples of these barriers are the ones created by the highway along the Perea-Neoi Epivates axis, the eastern Thessaloniki urban unit or the big size facilities like the airport and seaport.

The opportunities that arise out of the analysis of the bay, and the proposed strategies can be seen in the last diagram on the right. These will be presented in more detail in after the completion of the next chapter. The analysis will follow with the investigation of the conditions and dynamics along the city´s Ring road, being the contemporary´s city outer limit of expansion. The results of the next chapter will then be co-related with the ones from this one, to provide a more comprehensive depiction and synthesis of the city´s structure and mosaic.

x. The Emerging Seafront Mosaic
From rigidness to resilience

This next section will compose the synthesis of the emerging mosaic of along and adjacent to Seafront. 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 while at the same time taking into consideration the previously detected situations 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 of the Seafront into a dynamic and resilient edge that can maintain ecological function while integrating human activity efficiently. The updated structure of the Thessaloniki´s urban seafront 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 seafront area as a key ecotonal area performing a critical ecological function and serving as a major attractor for the urban activity in a diversity of uses / fabrics (urban & natural) of local and regional reach. Thus the strategy proposed needs to be considered in terms of ecotone characteristics in order to be able to better comprehend its function. They are presented in more detail in continuation in two broad categories:

A. Poles of Activity

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

- **Dendropotamos :** The first pole on the west end of the city serves as the limit of the wetland area of Kalochori as well as hosting other regional activities. The ecological and landscape restoration of the streambed can serve as the leverage to initiate an upgrading of the area. The reconversion of the military installations and the relocation of the adjacent fuel silos should be the subsequent objectives. The proximity to the Dendropotamos highway node as well as the port and the Lachanokipoi area, offer strategic advantages for the development of the pole.

- **Cultural Port:** The second pole emerges in the vicinity of the first pier of the port. The 1997 reform with the inclusion of cultural uses and the 2012 public space and accessibility interventions have opened up the port to the public. The presence of the bar / restaurant has attracted additional visitors throughout the day. The adjacency to Eleftherias Square, the Ladadika area and the broader historic centre district offer strategic advantages for this pole.

- **Central Axis :** The third pole lies at the end of the Central Axis and thus hold a key role for the entire seafront in terms of centrality and function. As seen in the analysis chapter of the Central Axis the area hosts a great diversity of uses and activities as well a considerable amounts of green areas (existing and potential) and public spaces. The position of the Central axis offers great strategic advantages for the development of a pole of centrality.

- **Poseidonio**: The fourth pole emerges around the Poseidonio Sport Complex and the later addition of Thessaloniki´s music hall ´s two buildings and the key latent area of Allatini. The presence of schools, a cultural center (Vafopouleio), a church, parks and void latent spaces provides enough dynamic elements to trigger a consolidation and restructuring. The metropolitan reach of the Music Hall and Poseidonio, as well as the potential of the Allatini property all offer important strategic advantages for the development of the pole.

- **Karampournaki**: The fifth pole is also situated on a key geographical spot, the Karampournaki (or Μικρόν Έμβολον) in the municipality of Kalamaria. The obsolete military camp of Kodras is the principal area (in terms of size and potential) supplemented by other elements, such as the Palataki (old royal residence), the ports of the Nautical Club of Thessaloniki and Kalamaria, the Aretsou beach, the schools and the sport facilities (Soccer stadium, and Swimming pools). The strategic position of this emerging pole is its main advantage, that can serve both on a local scale, for local residents needs or a wider regional scale with respective uses.

- **Mikra**: The last sixth pole is situated at the end of the Kalamaria pole, the edge of the Thessaloniki urban fabric, next to the Periurban canal. The Mikra Sport facilities have long served as the principal attractor of activity in the area but there are also other elements such as the academic institutions (Centre of International and European Economic Law, the Department of Forestry) the Greek-French School of Kalamari, or the planned Metro system depot that create favourable conditions for the emergence of a new pole with increased mobility advantages.

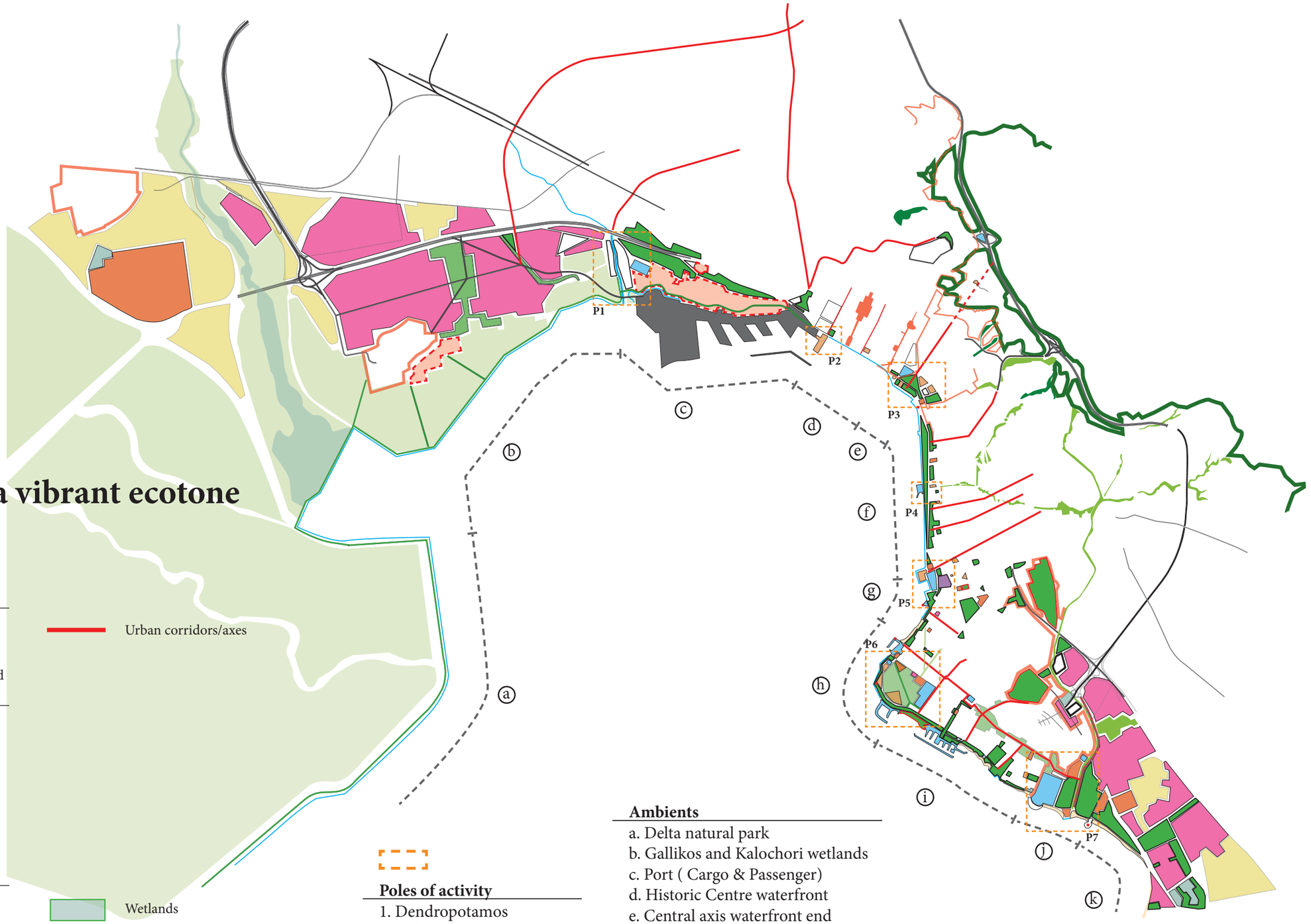
B. Edge Activity

The second set of strategies refers to ways to achieve a vibrant and dynamic edge activity taking advantage of the local mosaic in terms of connectivity and latent potential. To achieve this two factors need to be taken into consideration: the seafront continuity and the accessibility / connectivity factor.

- **Seafront Continuity** : The question of seafront continuity contains two implicit questions; public access to the seafront, and consequently uninterrupted access to it. The restructures mosaic proposes a continuous seafront walk all along the city´s seafront and adjacent wetland areas. The area of the port is the exception to public (for the cargo port) and a rerouting is proposed on the edge line of the Lachanokipoi area and the port. The rest of the route encompasses different ambients and settings as well as intensities, making evident the different rhythms of the territory and the vibrant character of the edge area.

- **Accessibility / Connectivity**: The question of accessibility is of critical importance for ensuring the necessary quantity and quality of flows characteristic of a healthy and vibrant edge area. Correspondingly there are two considerations with respect to the question of flows: **i)** ***natural flows***: making reference to ecological connectivity (vegetation, hydrologic, fauna) and quality indicators (diversity, complexity) as well as **ii)** ***anthropogenic flows***: referring to the question of social and public use of the seafront as a common resource and heritage (*a cultural landscape*).

The seafront as a vibrant ecotone



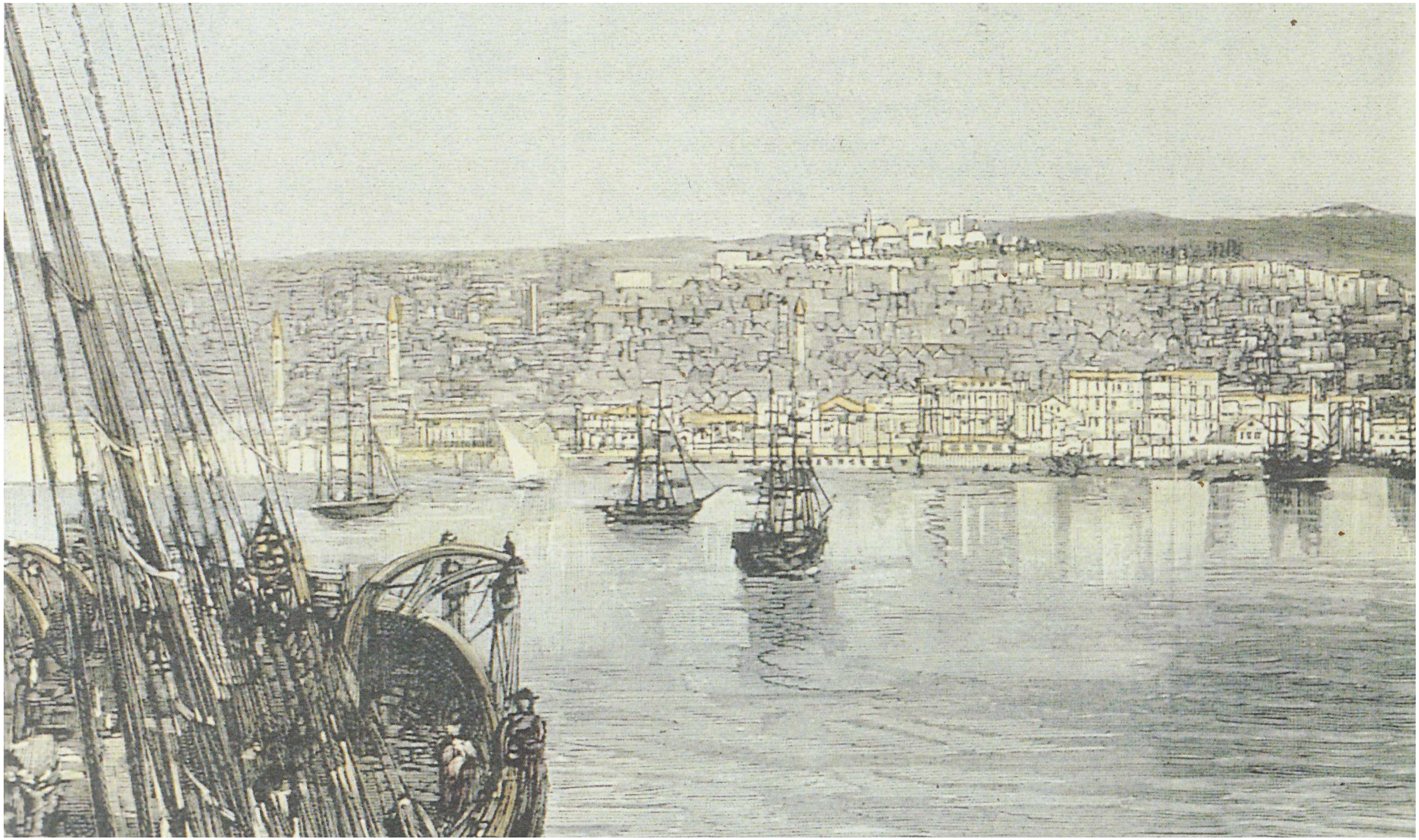
- Activity Areas
- Innovation Poles
- Residential areas
- Res. areas to be densified
- Sport
- Health
- Culture
- Education
- peri-urban agriculture
- Forest areas
- Peri-urban forest areas
- Areas to be reforested
- Urban corridors/axes
- Wetlands
- Green corridors
- Green areas
- Key Green areas

Poles of activity

1. Dendropotamos
2. Cultural port
3. Central axis
4. Nea Paralia
5. Poseidonio & Music Hall
6. Karampournaki
7. Mikra

Ambients

a. Delta natural park
b. Gallikos and Kalochori wetlands
c. Port (Cargo & Passenger)
d. Historic Centre waterfront
e. Central axis waterfront end
f. Nea Paralia waterfront
g. Karampournaki beach
h. Karampournaki walk
i. Aretsou & Nea Krini beach
j. Mikra Sport pole
k. Pylea waterfront



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