8. EGEOU STREET

8.1. Case Study Area and Character Sections

Case Study Area

Egeou case study street is located in the commercial centre of Kalamaria. It is a two direction secondary arterial street. Due to commercial land uses, there is a high parking demand, as well as need for parking places for pick-up vans. A scheme was implemented in 1998 aiming to:

- Organize traffic and parking supply
- Improve pedestrian mobility
- Refurbish the street’s environment.

The reconstruction included:

- Effective carriageway width reduction with sidewalks extensions at junctions and creation of parking bays at both sides of the street
- Redesign and reconstruction of sidewalks surface
- Application of road markings and installation of traffic signs (warning and informative).

Egeou Street has a total length of 2000m, while a length of 790m is included in the Study Area. It is an important street of Kalamaria. It has a daily average traffic volume of 16,000 vehicles (both directions), 3 public transport (bus) routes, including a municipal bus service. The carriageway width is 10m.

Buildings’ height at Egeou street study area vary from 1 to 6 floors, with residential use in upper floors and commercial uses at the ground floor such as: Banks, Super Markets, and retail shops.

After the application of the new scheme the traffic and parking problems were deteriorated, due to lack of control and enforcement. Traffic and parking demand grows of course significantly with time.
Character Sections

Egeou Street Study Area is divided into two Character Sections. The first one runs from Ethnikis Antistasis Street to Adrianoupoleos Street (490m), while the second begins at from Adrianoupoleos Street and ends at Pontou Street (300m).

Both character sections have two-way operation.
8.2. Street Attribute Descriptors

8.2.1 Built Form

Buildings

Building Height: Buildings at Egeou street have 4 floors in most cases. Only three buildings have 7 floors, and there are some old one-storey houses.

The average height of roofline on both sides of the street is 12m.

Spacing of Buildings:

Northwest side of street
- Length of frontages: 478m
- Width of space between frontages: 177m
- Ratio of frontage to space between frontages: 2.70

Southeast side of street
- Length of frontages: 451m
- Width of space between frontages: 134m
- Ratio of frontage to space between frontages: 3.36
Inactive Frontages:

**Northwest side of street**
- Number of inactive frontages: 0
- Length of inactive frontages: 0m

**Southeast side of street**
- Number of inactive frontages: 5
- Length of inactive frontages: 57m

Doorways:

**Northwest side of street**
- Number of doorways opening onto the public realm: 34
- Number of doorways per 100m is 4.3

**Southeast side of street**
- Number of doorways opening onto the public realm: 32
- Number of doorways per 100m is 4.0

Historically important buildings:

There are no historically important buildings in Egeou street case study area.

Quality of Built Fabric:

Both character sections have a good image in terms of the quality of built fabric: reinforced concrete and masonry are the basic materials used, due to strict Greek building regulations and seismic code. Decoration elements in the new residential buildings are the balconies and windows. There has been no change of the quality of built fabric before and after the reconstruction.
Space Between Buildings

Primary Descriptors

Street Width: The average distance between building lines is 30 m in both sections.

The average width of public space between buildings is 10m shorter than the distance between opposing building lines, that is 5m in each side of the street. Even if the 5m wide spaces in front of buildings in Egeou street are private and belong to the border properties, they are unified with the public side space.

Side Space

Width of side space on Southeast side of str (m)
Average: 5.0 (5.1-section 1 4.6-section 2)
Narrowest: 4.1 (4.4-section 1 4.1-section 2)
Widest: 5.6 (5.6-section 1 5.1-section 2)

Width of side space on Northwest side of str (m)
Average: 4.3 (4.2-section 1 4.6-section 2)
Narrowest: 3.8 (3.8-section 1 4.5-section 2)
Widest: 4.9 (4.9-section 1 4.8-section 2)

The following photos are taken successively in different points, walking from Section 1 to Section 2.
**Median Strip:**
Egeou Street does not have a median strip.

**Width Between Side Space:**
The average width between side spaces is 10. Along Egeou street; it is 10m in Section 1 and becomes 11 m in Section 2. There is one lane per direction in both sections. The effective width in Section 1 is reduced by 2 meters in each side, due to the parked cars, while in Section 2 there are designated parking bays.

**Change Before/After reconstruction**
In Section 2, one lane per direction was converted to parking bays, and the width of the remaining lane has been increased to 4 meters after the reconstruction. Despite this change, which aimed to facilitate traffic and pedestrians, cars park illegally in a second row, usually during rush hours and obstruct traffic flow.

**Trees and Other Greenery:**
Green has an influence on Egeou street space. Various species of local trees are planted in rows on the sidewalks. There are also few flowerbeds on Egeou side space, planted with bushes and grass.
Apart from the trees on the side space, there is a triangular park covered with pine trees.

![Section 1 - trees on the side space](image1)
![Section 1 - flowerbeds](image2)
![Section 2 - park with pine trees](image3)
Street surfaces, furniture and other design elements:

Egeou street is paved with asphalt. The sidewalks are covered by concrete slabs.

The pavement is in good condition, with sporadic patches and cracks. Pavement markings are not in a very good condition.

Pedestrian zebra crossings are provided at all signalized intersections although marking maintenance is poor.

Guard Railing:

Bollards are placed along the sidewalks in section 2, to prevent parking on them.

Change Before/After reconstruction

After reconstruction, lowered kerbs and ramps were constructed at pedestrian crossings in Section 2.

Additionally, after reconstruction the sidewalks surface in Section 2 was reformed and improved, with decorative coloured slabs and parking bays.

Bollards were installed after reconstruction.

People Spaces:

Egeou Street has one place for people to congregate in section 1.

It is a park planted with pine trees, and equipped with benches and a playground.
Lighting: Egeou street has one row of street lighting, placed at the southeast sidewalk of both character sections. The average distance between two successive lighting poles is 34m. Apparently the northwest sidewalk is not very well illuminated.

**Secondary Descriptors**

1A Definition (Two Dimensional Scale):

- **Ratio of street width to building height**: 2.5 (2.4-section1 2.7-section2)
- **Type of green**: ‘influence’ = green has a strong influence on the street space, only near the park at section 1.

At both sidewalks trees of various size and a ge are planted in rows. In addition, flowerbeds full of grass, bushes and small trees have been constructed at the new sidewalks of section 2.

1B Definition (Enclosure):

- **The average width between side spaces is 10.7m. Total average side space is 9.3m. Not all of the side space width is public.**
- **The enclosure effect is not intense.**

1C Transparency:

- **Inactive building line**: 30% (27%-section1 35%-section2)
- **Number of doorways per 100 metre building line**: 5.3 (5.5-section1 5.0-section2)
- **Illuminated building line**: There are only few heavily illuminated large windows at the ground floor level on both sides of Egeou street.
8.2.2 Function, Management and Regulation

Primary Descriptors

| One-Way or Two-Way Working: | Egeou street operates in two directions. Most of the adjacent streets (crossing or parallel to Egeou) are one-way streets, as shown in the map. |
| Speed limit: | Speed limit is 50 km/h in both sections and it is posted on traffic signs. |
| Traffic Calming Measures: | Near the park, in section 1, a zebra crossing was marked on the pavement. The crossing is protected by illuminated warning signs with flashing lights. |
| Number of Marked Traffic Lanes: | There is one marked traffic lane per direction at Egeou street. On street parking is allowed in Section 1, leaving space for only one traffic lane in each direction. In Section 2, one traffic lane per direction has been allocated to parking bays, leaving space for only one traffic lane in each direction. |

**Change before/after reconstruction**

Before reconstruction there were 2 lanes in each direction, but parked cars constantly occupied one of them.

| Lane Width: | The lanes’ width is 2.75m along Section 1 and 4m along Section 2. |

**Change before/after reconstruction**

Before reconstruction the average lanes’ width was 2.75m in both sections.

| Visual Width: | There is no visual reduction of carriageway width. |
**Segregation of carriageway**

<table>
<thead>
<tr>
<th>Carriageway Space</th>
<th>Segregation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bus</td>
<td>☐ separate</td>
<td>☑ in mix</td>
</tr>
<tr>
<td>pedestrians</td>
<td>☑ separate</td>
<td>☐ in mix</td>
</tr>
<tr>
<td>bicycles</td>
<td>☐ separate</td>
<td>☑ in mix</td>
</tr>
<tr>
<td>HOV / taxis etc</td>
<td>☐ separate</td>
<td>☑ in mix</td>
</tr>
</tbody>
</table>

Pedestrians use the sidewalks.

Bicycles are not specially cared for and they use the carriageway or the sidewalks.

**Pedestrian Crossings:**

There are 4 signalized pedestrian crossings, with zebra markings and lowered kerbs. There is one non-signalized pedestrian zebra crossing in Section 1, in front of the park and playground. This crossing is on a pedestrian route, used by students to their way to and from a nearby school complex. The zebra crossing is protected by illuminated-flashing traffic signs. In average, there is one pedestrian crossing every 160m along the study area.

There are no pedestrian over / underpasses neither built pedestrian crossings.

Occasionally, refuse bins or illegally parked cars obstruct pedestrian crossings.

Even though there are enough signalized pedestrian crossings, many pedestrians cross Egeou street outside the protected area of pedestrian crossings. This situation is rather hazardous because of the high vehicles’ speed, as well as the two-directional traffic.

**Signal Junctions:**

There are 3 signalised junctions in Egeou Street study area. No special phase is provided for cyclists or buses.

**Roundabout Junctions:**

Egeou Street has no roundabout junctions.

**Other Junctions:**

Egeou Street has 8 non-signalised (priority) junctions.

**On-Street Parking:**

On street parking is allowed along Egeou Street at both sides. In total, there are 115 on-street parking places 80 of them in Section 1 and 35 in Section 2.

Occasionally, cars park illegally on the sidewalk and obstruct pedestrians. In few cases there are cars parked illegally in a second row, during rush hours, and obstruct traffic flow; most of them are pick-up vans and trucks.

**Change before/after reconstruction**

Parking bays were constructed during reconstruction in section 2. The Municipality intends to expand the scheme to section 1, in the near future.

**Cycle “Lanes”:**

There are no special facilities for cyclists. The lowered kerbs and ramps at pedestrian crossings are used by the cyclists as well.
Bus Stops and Stands:

In section 1 there are two bus stops, well defined and furnished with shelter with a bench and a map showing the public transport bus routes within Kalamaria. There is also a bus stop marked only with a sign.

Parking in front of bus stops to a length of 25m is prohibited by Greek regulations.
### 8.2.3 Patterns of Use

#### Traffic Primary Descriptors

<table>
<thead>
<tr>
<th>Average Vehicle Flow:</th>
<th>Average Daily traffic flow (24 hour AADT) by vehicle type:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cars/vans</td>
</tr>
<tr>
<td></td>
<td>14,750 in both sections</td>
</tr>
<tr>
<td></td>
<td>Vans/trucks &gt;3.5T</td>
</tr>
<tr>
<td></td>
<td>160 in both sections</td>
</tr>
<tr>
<td></td>
<td>Buses</td>
</tr>
<tr>
<td></td>
<td>400 in section 1</td>
</tr>
<tr>
<td></td>
<td>320 in section 2</td>
</tr>
<tr>
<td></td>
<td>Motorcycles/mopeds</td>
</tr>
<tr>
<td></td>
<td>650 in both sections</td>
</tr>
<tr>
<td></td>
<td>There are two major crossing streets with significant traffic, Ethnikis Antistasis and Adrianoupoleos.</td>
</tr>
</tbody>
</table>

**Change before/after reconstruction**

Traffic flows did not change after reconstruction

#### Daily Traffic Flow

<table>
<thead>
<tr>
<th>Peak Vehicle Flow:</th>
<th>Peak Hour traffic flow by vehicle type:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cars/vans</td>
</tr>
<tr>
<td></td>
<td>460 in both sections</td>
</tr>
<tr>
<td></td>
<td>Vans/trucks &gt;3.5T</td>
</tr>
<tr>
<td></td>
<td>5 in both sections</td>
</tr>
<tr>
<td></td>
<td>Buses</td>
</tr>
<tr>
<td></td>
<td>20 in section 1</td>
</tr>
<tr>
<td></td>
<td>10 in section 2</td>
</tr>
<tr>
<td></td>
<td>Motorcycles/mopeds</td>
</tr>
<tr>
<td></td>
<td>20 in both sections</td>
</tr>
</tbody>
</table>

**Bus Reliability:**

Average bus delay is 2 minute. Although the calculated average delay is too low, it has a significant deviation from average, that affects bus reliability.
There is a number of pedestrian street activities along Egeou street study area. During the morning hours, the residential uses generate every-day pedestrian trips, home to work, school, shops etc.

Pedestrian flows along the road sections of the study area were not available from Municipal or other sources. These flows vary significantly with time of day, season and exact location, and therefore flow counts in one period and at one point only are not indicative of the real situation and representative of the pedestrians’ level of service. Nevertheless, limited pedestrian flow counts were conducted according to the ARTISTS’ suggested instructions in November 2002. These counts were taken during Saturday morning peak period (11:00-11:30) and resulted in the following figures:

- 216 pedestrians / h in Section 1
- 312 pedestrians / h in Section 2

(in both street sides at the busiest point)

Although there are several obstacles on the sidewalks, such as illegally parked cars, flower beds, kiosks, bus stops, trees and poles (lighting, electricity, telecommunication, traffic signals, advertisement etc.), the effective walkway width is quite wide. Thus, pedestrian mobility is not significantly obstructed.

In a similar manner, observations of pedestrian flows at peak hour (Saturday morning from 11:00 to 11:30) were conducted and resulted in the following figures:

- 60 pedestrians/ h Section 1
- 156 pedestrians/ h Section 2

(in both directions at the busiest point in winter)

There are few pedestrians crossing the street at non-protected (traffic signals, zebra crossings etc) points.
The case study area is mostly a residential area. Most of the buildings facing the street have mixed residential and retail use. Some buildings, which are facing Ethnikis Antistasis and Adrianoupoleos streets, have a pure commercial use.

### Number of workplaces on ground floor *

<table>
<thead>
<tr>
<th></th>
<th>Total str</th>
<th>Section 1</th>
<th>Section 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>11</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Industrial</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Retail</td>
<td>58</td>
<td>38</td>
<td>20</td>
</tr>
<tr>
<td>Public service</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

### Number of workplaces on ground & upper floors *

<table>
<thead>
<tr>
<th></th>
<th>Total str</th>
<th>Section 1</th>
<th>Section 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>34</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Industrial</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Retail</td>
<td>43</td>
<td>28</td>
<td>15</td>
</tr>
<tr>
<td>Public service</td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

### Floor space in m² of ground & upper floors *

<table>
<thead>
<tr>
<th></th>
<th>Total str</th>
<th>Section 1</th>
<th>Section 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business</td>
<td>3468</td>
<td>2233</td>
<td>1235</td>
</tr>
<tr>
<td>Industrial</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Retail</td>
<td>2750</td>
<td>1367</td>
<td>1383</td>
</tr>
<tr>
<td>Public service</td>
<td>735</td>
<td>594</td>
<td>141</td>
</tr>
</tbody>
</table>

The upper floors’ use is primarily residential. There are only a few office/commercial buildings in the area.

The ground floor of buildings in front of Egeou street has mostly commercial/retail use (banks, offices, car sales, super markets, home furniture and equipment, offices bars, restaurants, cafes).

There are no public or private off-street parking places in Egeou Street study area.
8.3. Performance Indicators

8.3.1 Street Safety

Traffic deaths and injuries: Existing Situation

The numbers of accidents presented hereby are referred to the period 1999-2001.

- Total number of road deaths = 0
- Seriously injured pedestrians = 0
- Slightly injured pedestrians = 0
- Seriously injured two-wheelers = 0
- Slightly injured two-wheelers = 3
- Seriously injured in motorised vehicles = 0
- Slightly injured in motorised vehicles = 16

The above-mentioned accidents have occurred in Section 1.

From the above it is shown that there has not been any serious or fatal accident in the study area during the last three years. Some of them involve two-wheelers, while most of them were recorded at intersections.

Changes before/after reconstruction

There has been a slight decrease in road accidents during the past years, but the number of road injuries has been slightly increased. This fact is not related to the street reconstruction, since the modified elements do not affect directly traffic safety.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>road deaths</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>serious road injuries</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>slight road injuries</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td>accidents</td>
<td>11</td>
<td>16</td>
</tr>
</tbody>
</table>

Accidents during 1999-2001

- 0 road deaths
- 2 serious road injuries
- 21 slight road injuries
- 16 accidents

Number of casualties
- 0 Fatalities
- 0 Heavy injuries
- 21 Light injuries

Distribution of accidents by participants
- 1 Two or more vehicles
- 8 Two wheelers
- 0 Single vehicle
Vehicle Speed: The average speed of motorised vehicles is 48 km/h (free flow conditions) throughout Egeou street case study. V85 of motorised vehicles is 51 km/h throughout Egeou street case study. Even in free flow conditions vehicles’ speed is below the speed limit, because:
- The two-ways operation of the street keeps speed low
- Parked vehicles obstruct traffic and reduce speed.

8.3.2 Economy

Viability:
Homes (Apartments): The average rent of a 80m² flat for one year is € 4,250 (estimated for 2002).
Homes (Apartments): The purchase price per owner-occupied flat is € 1,750 per m² (estimated for 2002).
Kalamaria, and the particular neighbourhood, is a place of high-income households. Many of the apartment buildings are constructed within the last fifteen years and they are of very good quality. Therefore, the cost of renting or buying a house is rather high comparing to other districts of Thessaloniki.
Retail: Average rent price per year is € 247 per m² (estimated for 2002).
Office: Average rent price per year is € 71 per m² (estimated for 2002).
The above mentioned rental price of retail shops is considered high. The office rental price is similar to the average for Kalamaria.

Residential Population:
The total population of the Study area is 4950, which is equally divided between the two sections. The population density of the area is medium (33 m² of space per inhabitant).

8.3.3 Noise

The noise level due to traffic along Egeou street varies from 66 to 71 dB (Leq) These values show that the noise level sometimes exceeds the limit imposed by the Greek and European legislation for residential areas (67 dBA).
8.4. Decision-Making and Design Processes

Egeou street is a central commercial arterial of Kalamaria. Traffic flows are rather high, as well as the parking demand. The pick up vans used to cater the commercial land uses are a very important issue, because they occupy street space. The purpose of the project, which was implemented in 1998, was to organize the traffic and parking characteristics of the street.

The scheme included:

- Construction of special on-street parking spaces, with sidewalks extensions at corners, so that vehicles cannot park on street corners and obstruct visibility. In addition, kerb extensions make the street narrower and facilitate the street crossing by pedestrians.
- Pavement markings, including pedestrian crossings, lane separation markings etc.
- Redesign and reconstruction of sidewalks.
- Installation of new street and sidewalks lighting.
- Planting of trees and flowers on the sidewalks.
- Installation of decorative bollards along the footways edge, in order to prevent pedestrians to cross the streets anywhere but at pedestrian crossings.