

# PEOPLE vs EARTHQUAKE

Pre-Organisation of safe zones in  
Istanbul, Turkey

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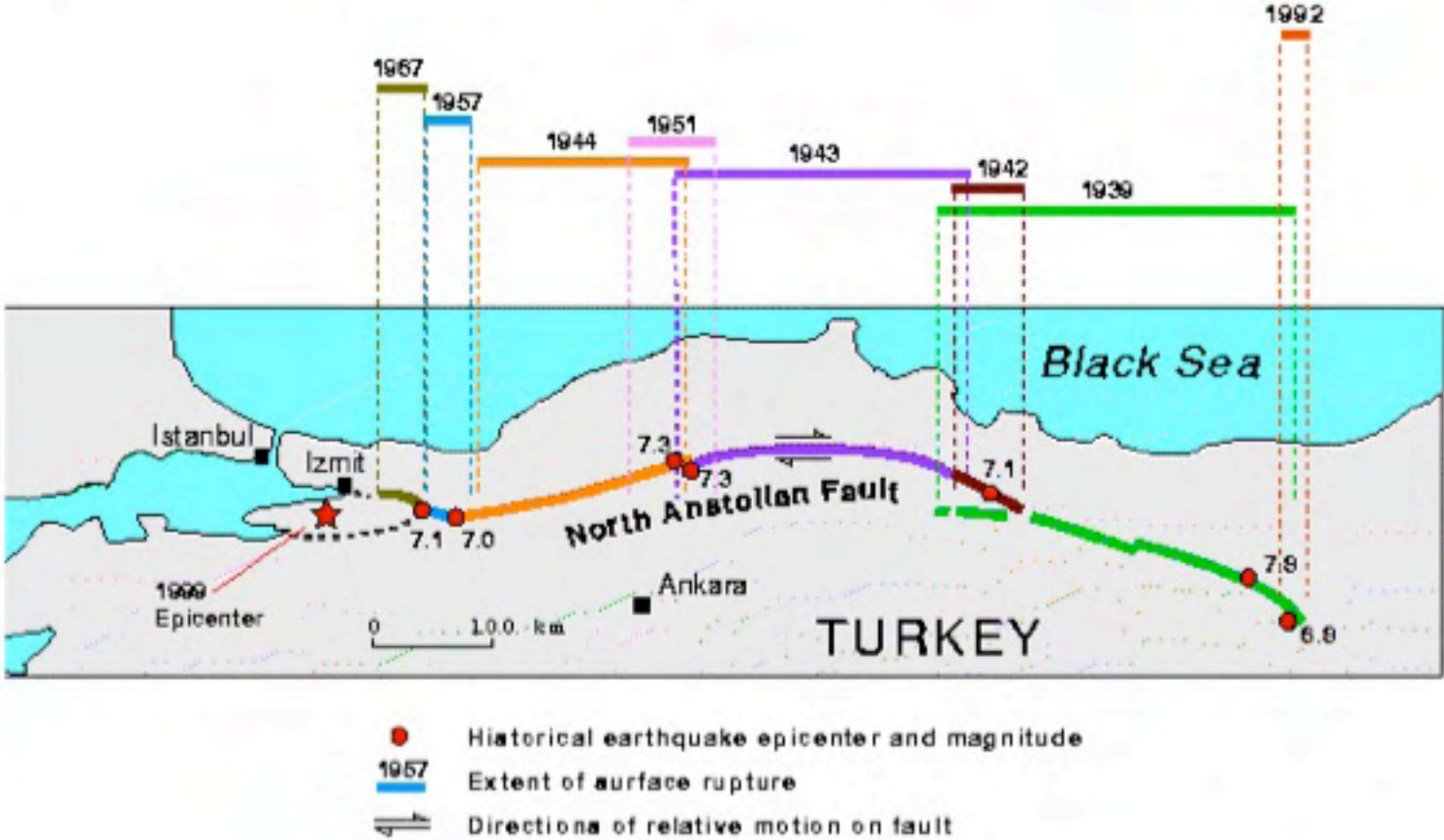
## 1999 Izmit Earthquake





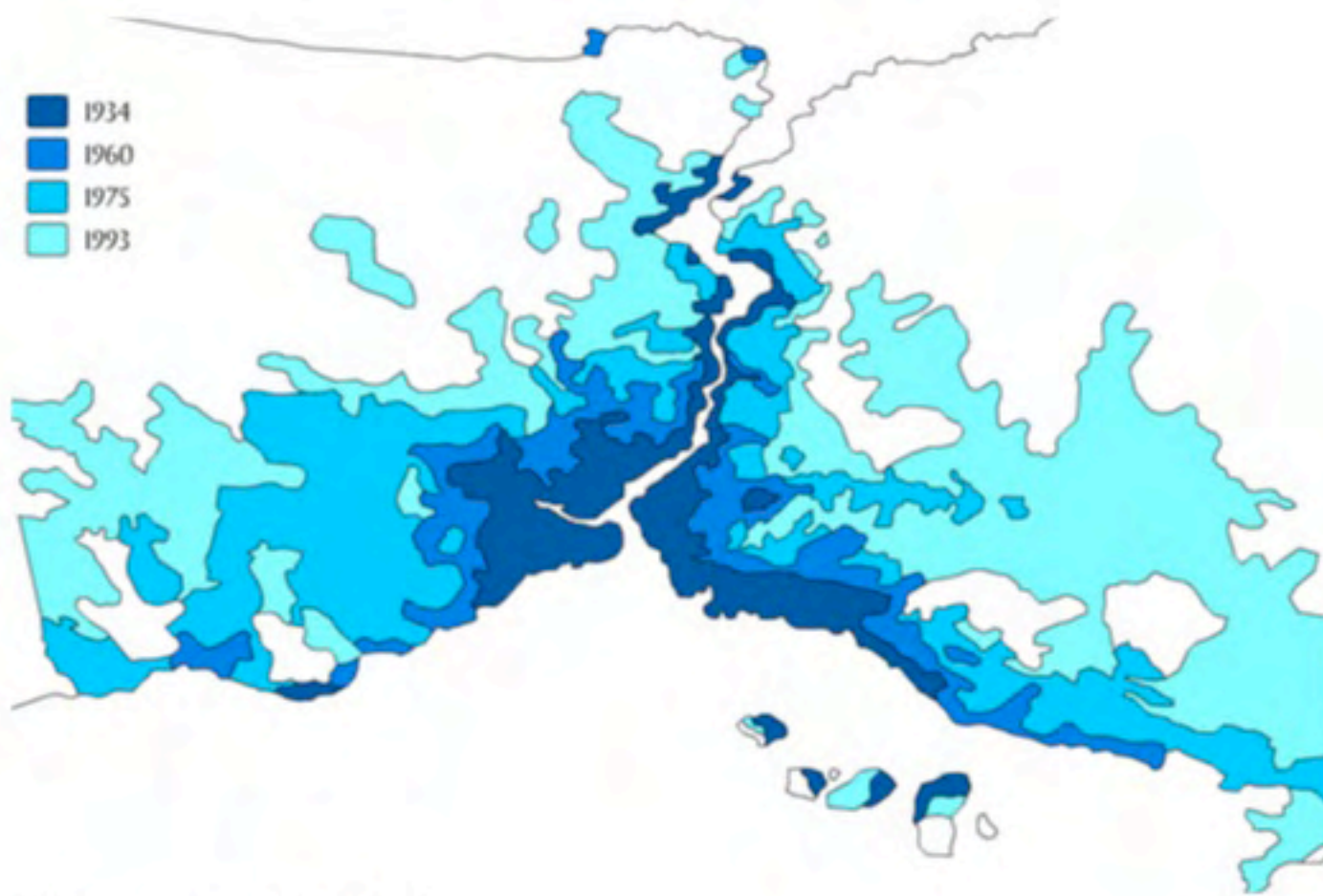


# EAST-WEST progression along the NAF (North Anatolian Fault)





ISTANBUL



Urban Growth of Istanbul



1946



1966

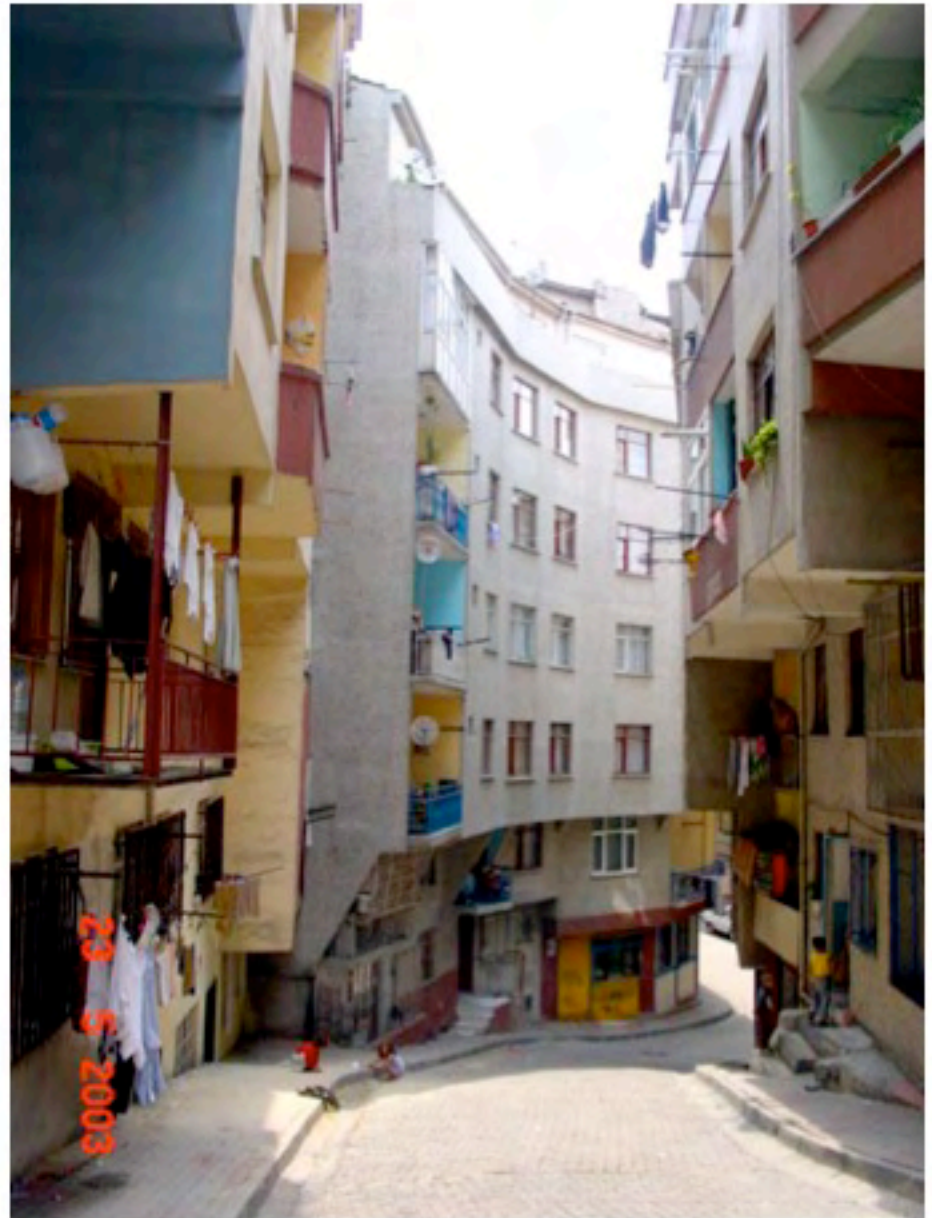


1982

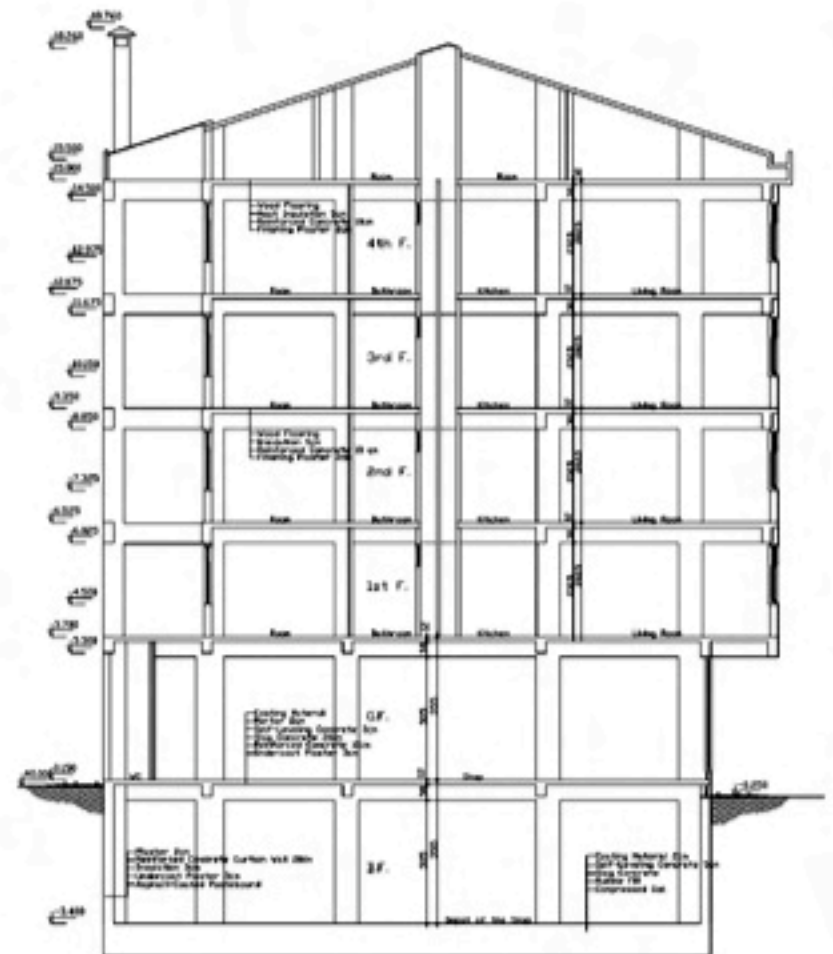


2005





STREET picture

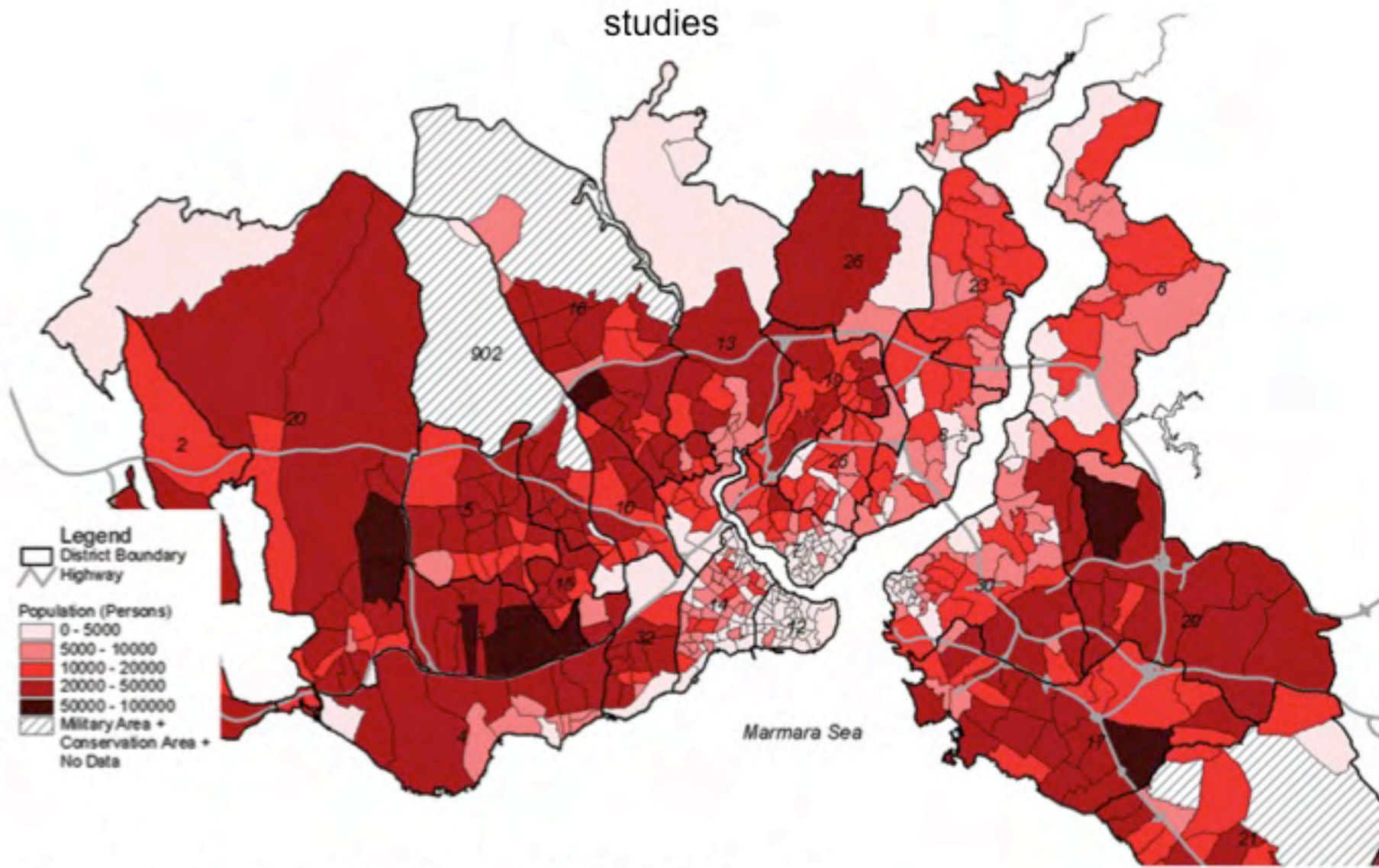


Typical building section



District Disaster Volunteers Support

# JICA studies



**Legend**

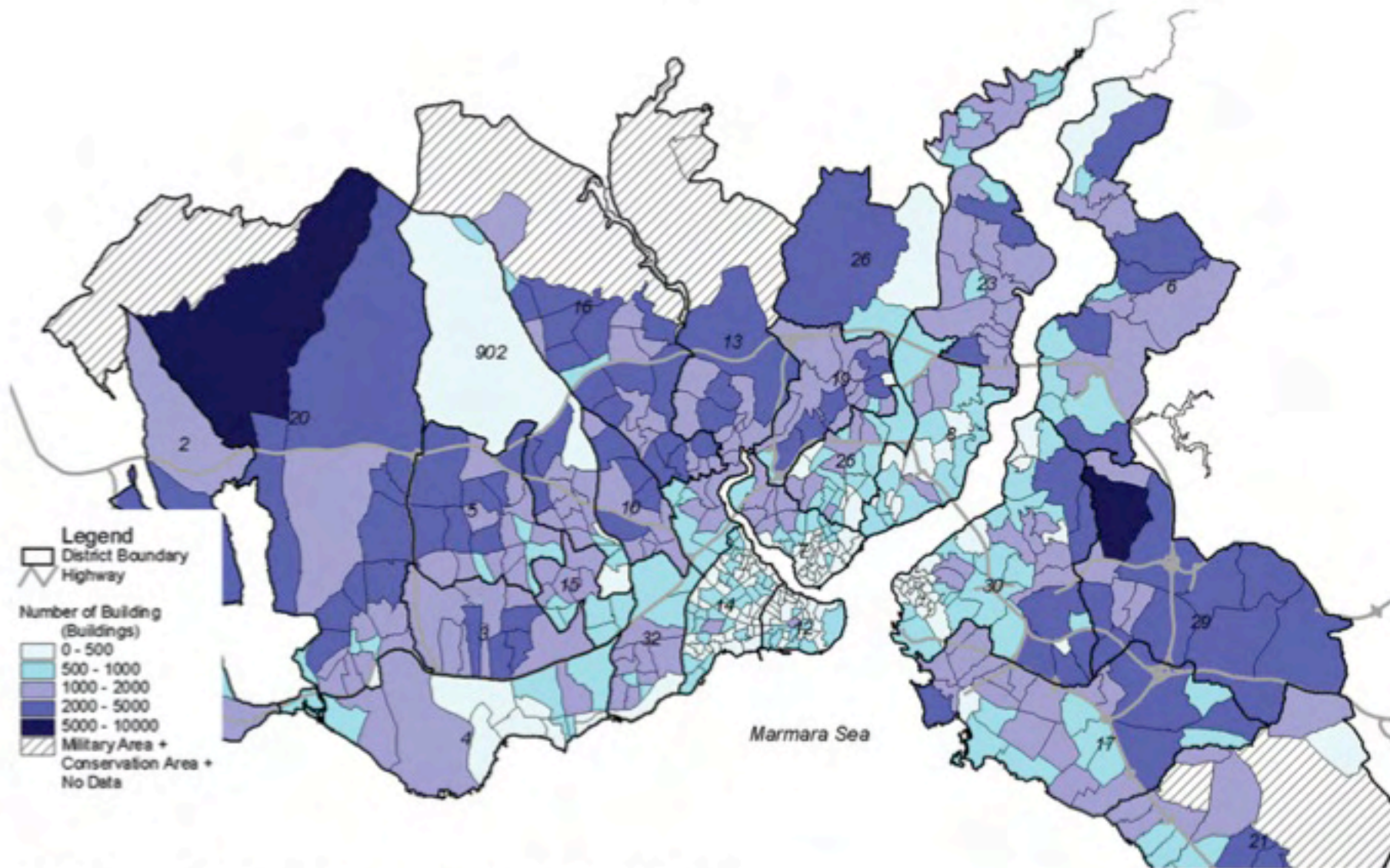
- District Boundary
- Highway

**Population (Persons)**

- 0 - 5000
- 5000 - 10000
- 10000 - 20000
- 20000 - 50000
- 50000 - 100000

Military Area +  
Conservation Area +  
No Data

Population by Sub-District : 8.831.766 inhabitants  
Total area 98.981 ha



Number of buildings by sub district: 724.609  
 Around 12 people per building

# Earthquake Models



Model A



Model B



Model C



Model D

## Earthquake Models



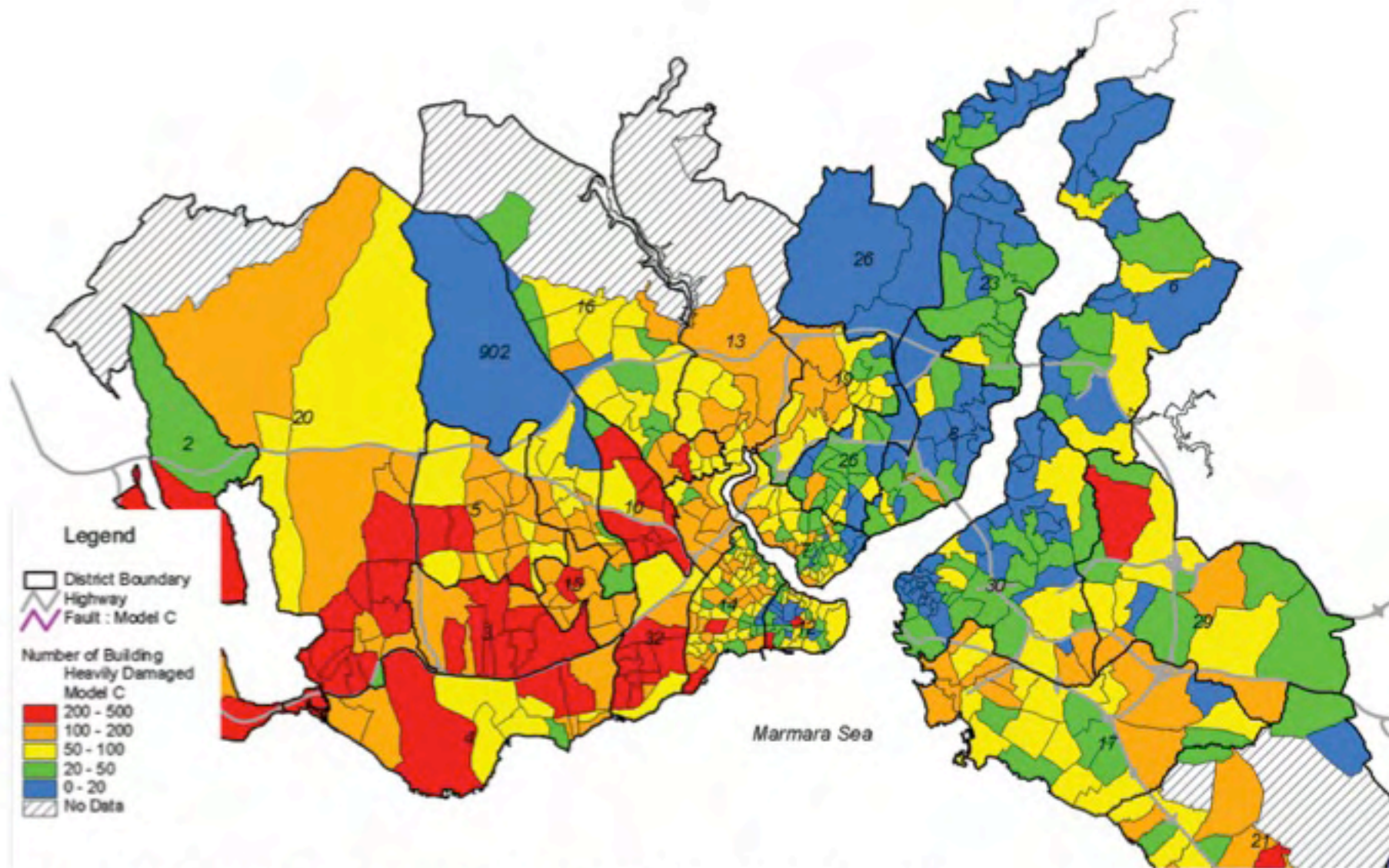
Model A

Model A: This section is about 120 km long from the west of the 1999 Izmit earthquake fault to Silivri. This model is the most probable model of these four scenario earthquakes because the seismic activity is progressing to the west. The moment magnitude ( $M_w$ ) is assumed to be 7.5.



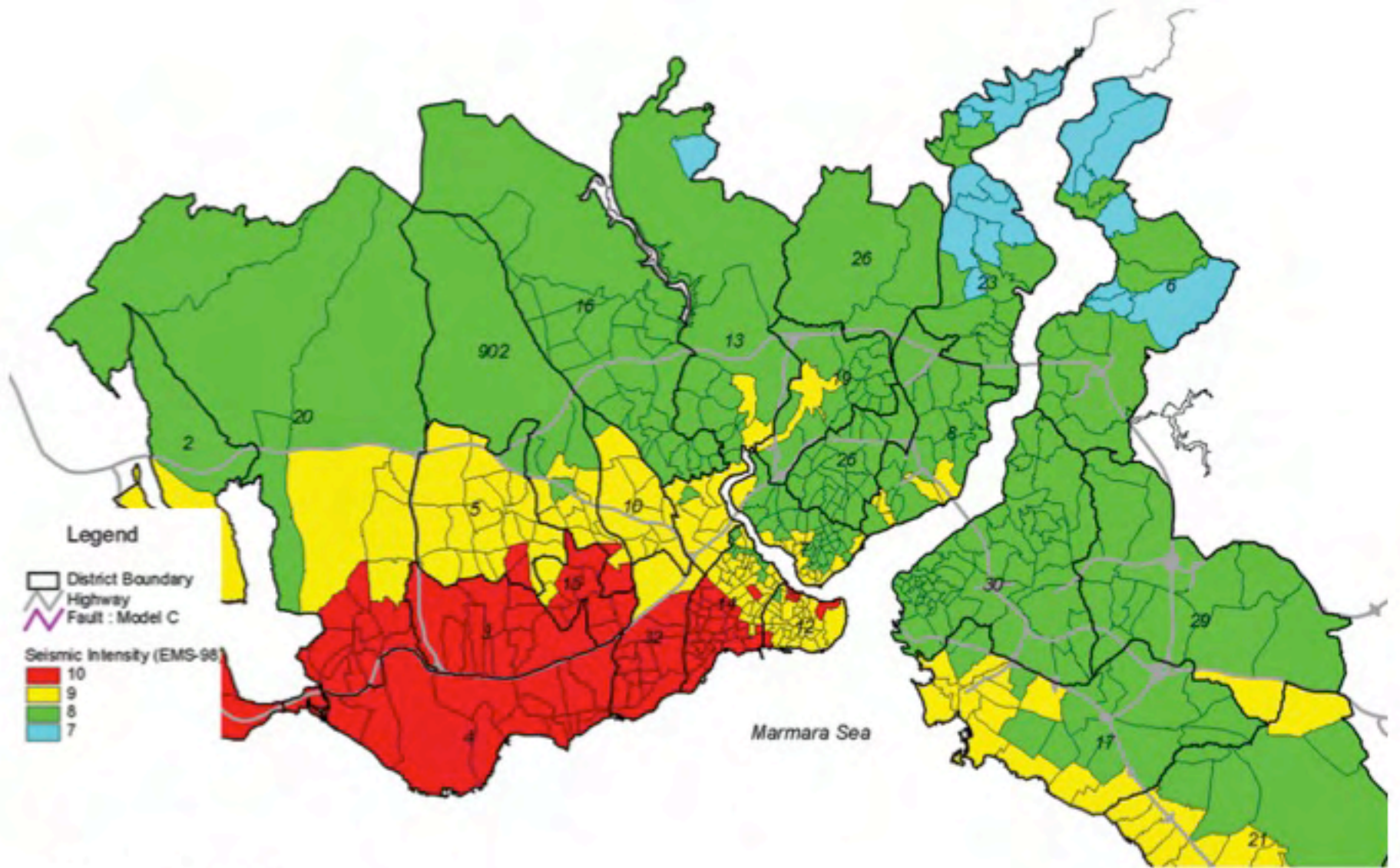
Model C

Model C: This model supposes a simultaneous break of the entire 170 km section of the NAF in the Marmara Sea. The moment magnitude is assumed to be 7.7. If a rupture of the maximum length of the faults is assumed, this is the worst case.

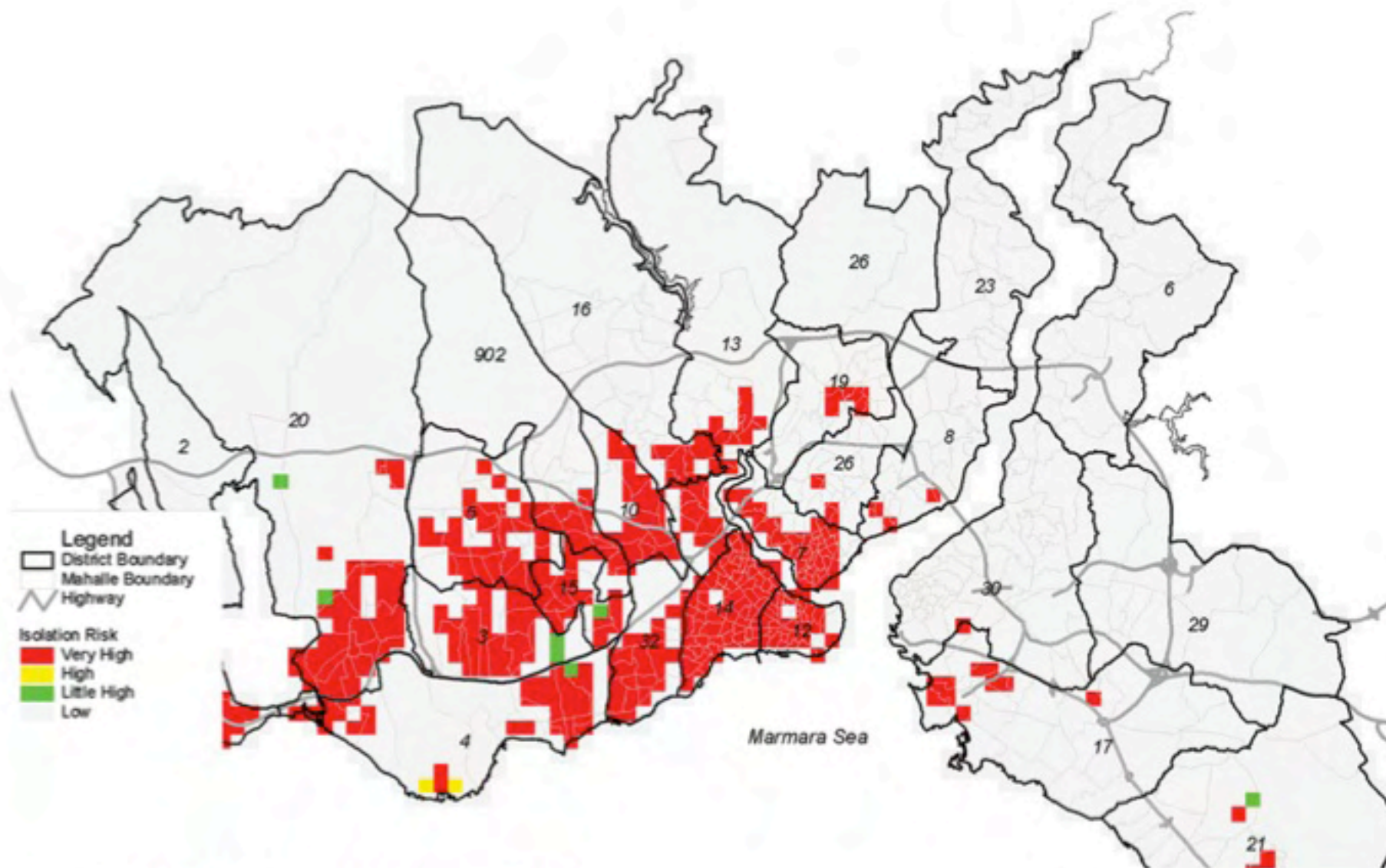


Number of heavily damaged buildings Model C : 59.176  
 Model A : 51.447

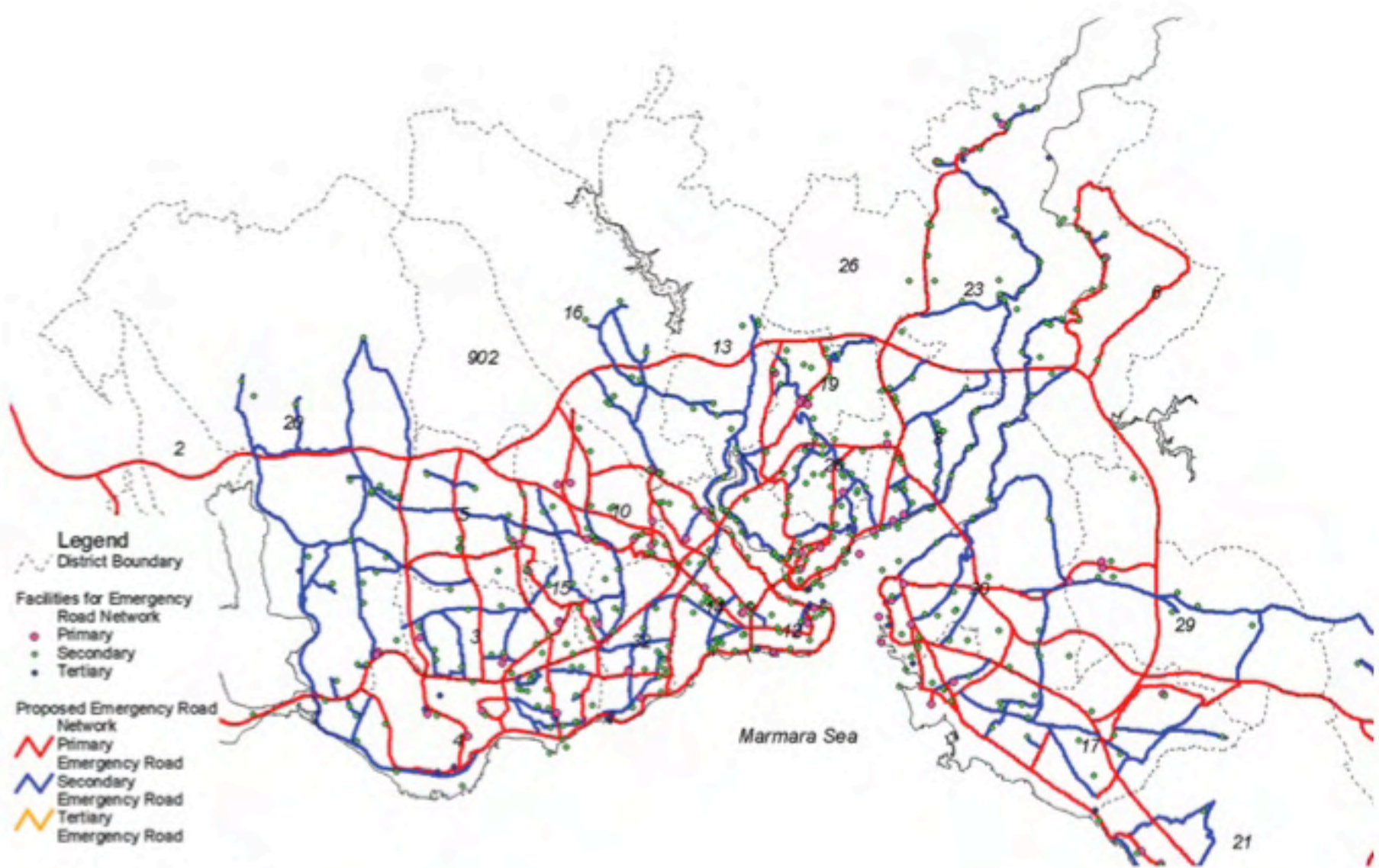




Seismic Intensity



Isolation Risk due to collapses roads



- Legend**
- District Boundary
  - Facilities for Emergency Road Network**
    - Primary
    - Secondary
    - Tertiary
  - Proposed Emergency Road Network**
    - Primary Emergency Road
    - Secondary Emergency Road
    - Tertiary Emergency Road

Seismic Intensity

## Process for Relocation of IDP

Primary evacuation areas. These areas are generally less than 500m<sup>2</sup> and aim to regroup people. These areas can be parks and open spaces like school grounds.

Tent village, transitional shelters. The framework proposes 2 types of cases. Case 1: 35m<sup>2</sup>/tent, and Case 2: 25m<sup>2</sup>/tent

Temporary Housing, located outside the city limits for people whose house has been completely destroyed.



Tent village Izmit

## EMPI (Earthquake Master Plan for Istanbul)

The aim was to determine a course of action based on JICA report

Analysis of cadastral applications / retrofitting or reconstruction

Financial resources studies / funds for all applications

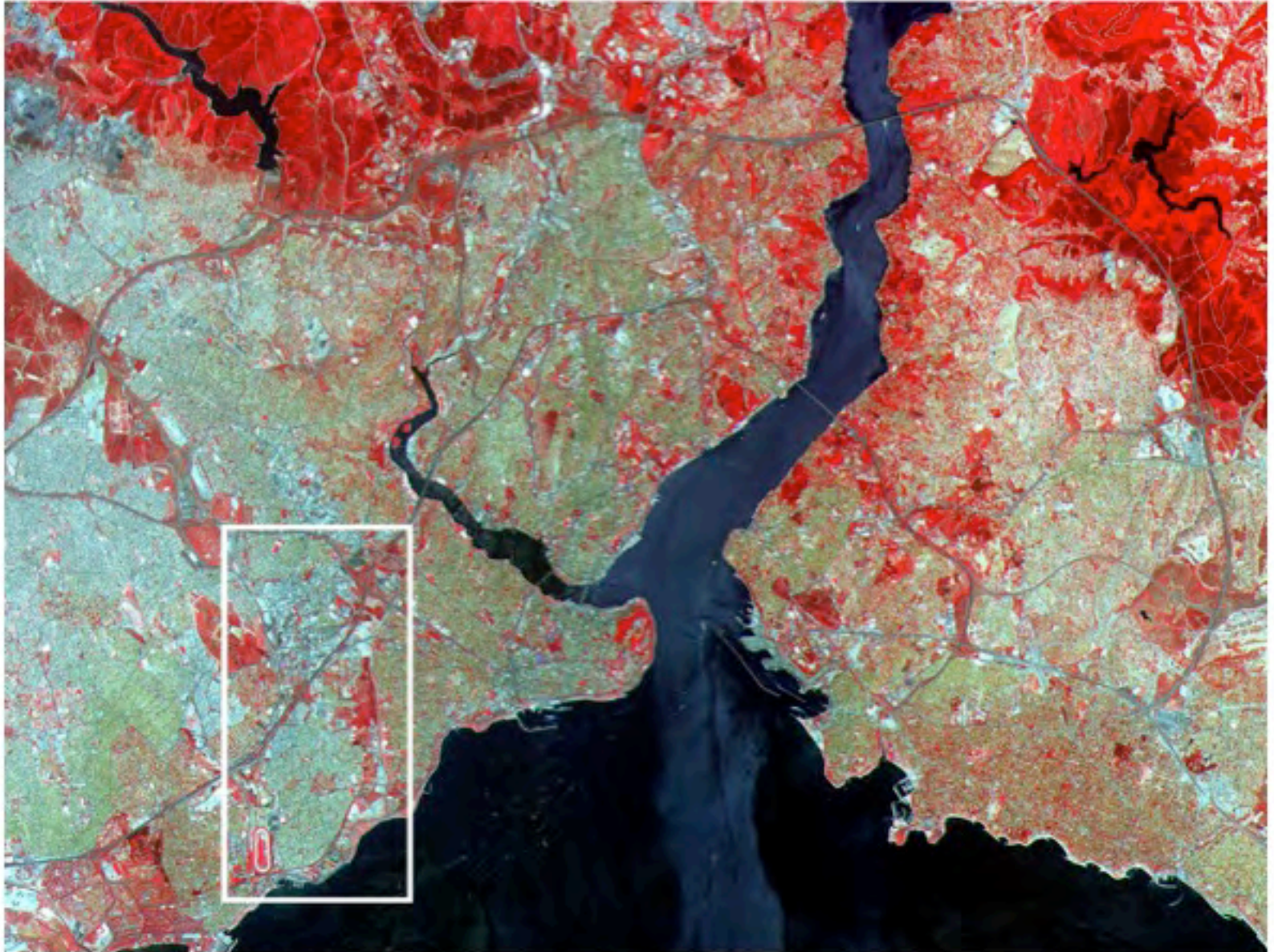
Legal studies educational

Disaster and risk management / emergency action plan



Retrofitting of a school at the Asian side





ISTANBUL + ZEYTİNBURNU

## ZEYTINBURNU

According to JICA report it is one of the most vulnerable districts in Istanbul, every single building will be damaged in an earthquake.

Building Damage:

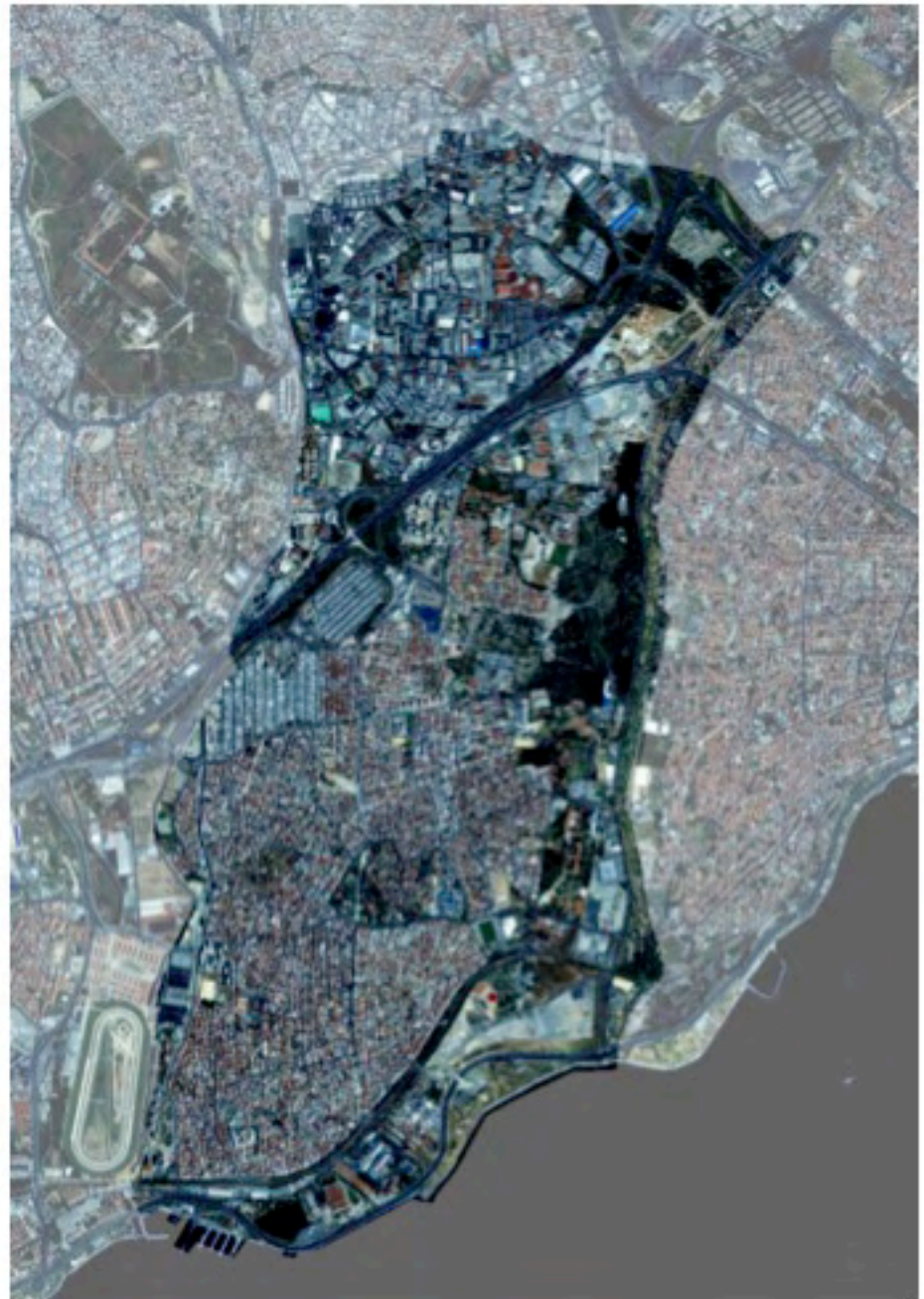
The total number of buildings is 15.573

Model A:

Total 9.525 buildings will sustain damages, 61,2%

Model C:

Total 10.184 buildings will sustain damages, 65,4%.



ZEYTINBURNU



ZEYTINBURNU DISTRICT  
1/50000  
ZONES

- INDUSTRIAL ZONE
- MIX ZONE INDUSTRIAL + RESIDENTIAL
- GREEN ZONE
- RESIDENTIAL ZONE
- HARBOUR

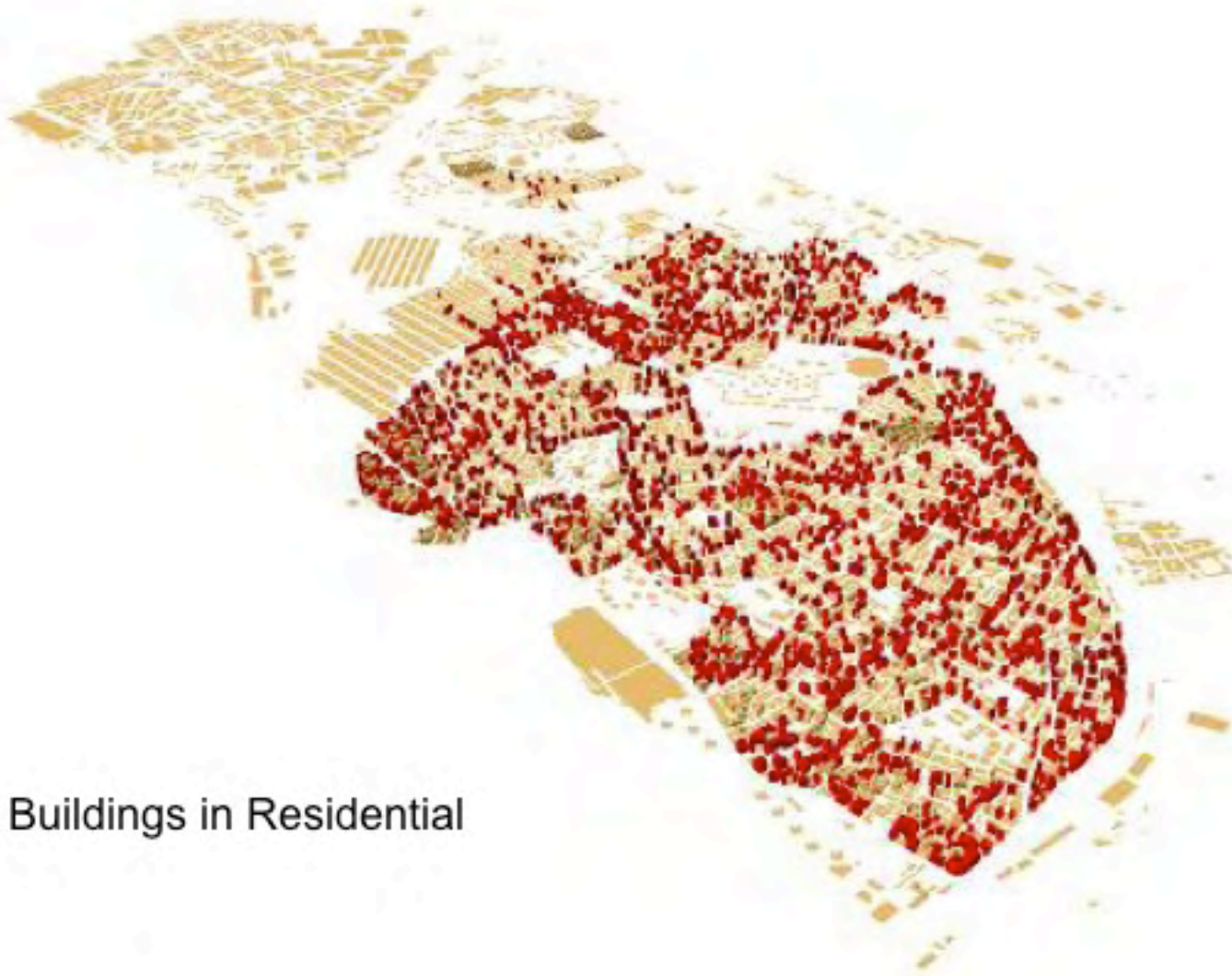


## Density according to sub-districts



ZEYTINBURNU DISTRICT  
1/50000  
DENSITY MAP (population/hectar)





High Risk Buildings in Residential Zone

# Emergency Action Plan for Zeytinburnu

Purple zones : estimated tent zones

3 major zones at the south

- only zones without a daily use, no-mans land

Other zones

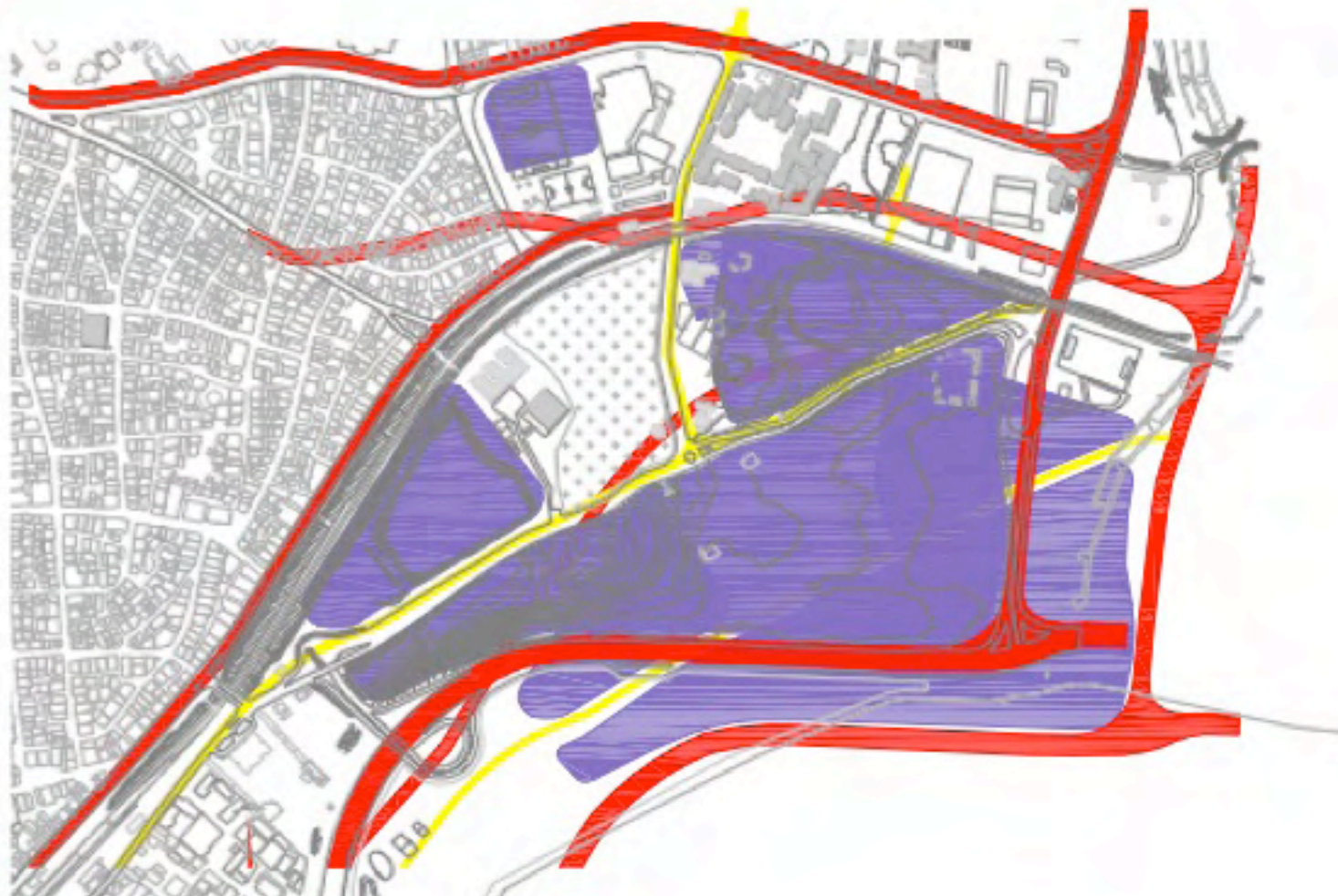
- Hospital or school yards, or recreational areas.

ZEYTINBURNU DISTRICT  
1/50000

- MAIN EMERGENCY ROADS
- SECONDARY EMERGENCY ROADS
- TENT VILLAGE ZONES



## South Zones



## Current Situation



# Plan Aims

