



HELLENIC SURVEY OF GEOLOGY AND MINERAL EXPLORATION (H.S.G.M.E.)

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**DEPARTMENT OF GENERAL AND APPLIED GEOLOGY
UNIT OF ENGINEERING GEOLOGY**

Palaio Mikro Chorio LANDSLIDE

by

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Palaio Mikro Chorio LANDSLIDE

Position - Morphology

Palaio Mikro Chorio is a settlement belonging to Evritania prefecture, located at a distance of 18km south of Karpenissi. The morphological relief is mountainous (altitudes between 850 and 950m) with steep slopes at places.

The intense morphological relief that prevails in the wider area is mainly due to its geological structure and tectonic evolution, formed by formations of the Pindos geotectonic zone.

Geological – Engineering Geological conditions

The wider residential area is constructed of flysch sediments, limestone transition layers to the flysch, thin plated limestone and shale-cherts (Fig. 1). At the lower morphological levels, the presence of quaternary formations, which are distinguished in landsliding masses (materials of old slides), screes (old and new) composed by limestone, shale-chert fragments, as well as river deposits in the adjacent torrents (Fig. 2).

Two major sets of discontinuities are found in the basement formations, N60°-70°W and N5°-50° E, and a third (secondary) with an A-W direction.

Landslides

On the 13th of January 1963, a major landslide destructed the largest part of the settlement with huge consequences, causing 13 dead people.

The landslide affected predominantly the scree, which at the failure site had considerable thickness. The landslide affected also the basement formations as the slip plane followed major discontinuities (probably shear zones) present in the area. The current situation reveals a detachment front with a 20-30m height where the basement formations (mainly limestones and shale-chert) can be seen.

According to the findings from the correlation of a set of aerial photographs (1945, 1960 and 1985), the failure in the area was progressive. Already, as shown in the aerial photographs of 1945, in the above of the settlement there were initially, very small cracks, which in the 1960 aerial photographs have been expanded. The very intense weather phenomena of the 1962-1963 winters, with heavy rains and snowfall, the seismic activity that occurred at the same time, combined with the low geomechanical properties of the formations, triggered the sudden manifestation of the landslide along the surfaces, which had already been created.

Authorities Actions

During the decade 1960-1970, more than 500 settlements were relocated because of serious landslide risks that threatened their sustainability. One of them was “Mikro Chorio”.

After 1990 a trend developed for people to return to these old villages, while new developments, such as agrotourism, provide an incentive for residents to remain for the long-term. Faced with these new social demands IGME, in co-operation with the

Ministry of Environment and Public Works, began a program of reviewing all settlements viewed as susceptible to landslides, with the aim of judging whether the site was actually suitable for habitation.

Micro Chorio was one of the reexamined settlements and the housing suitability map is shown in Fig. 3.

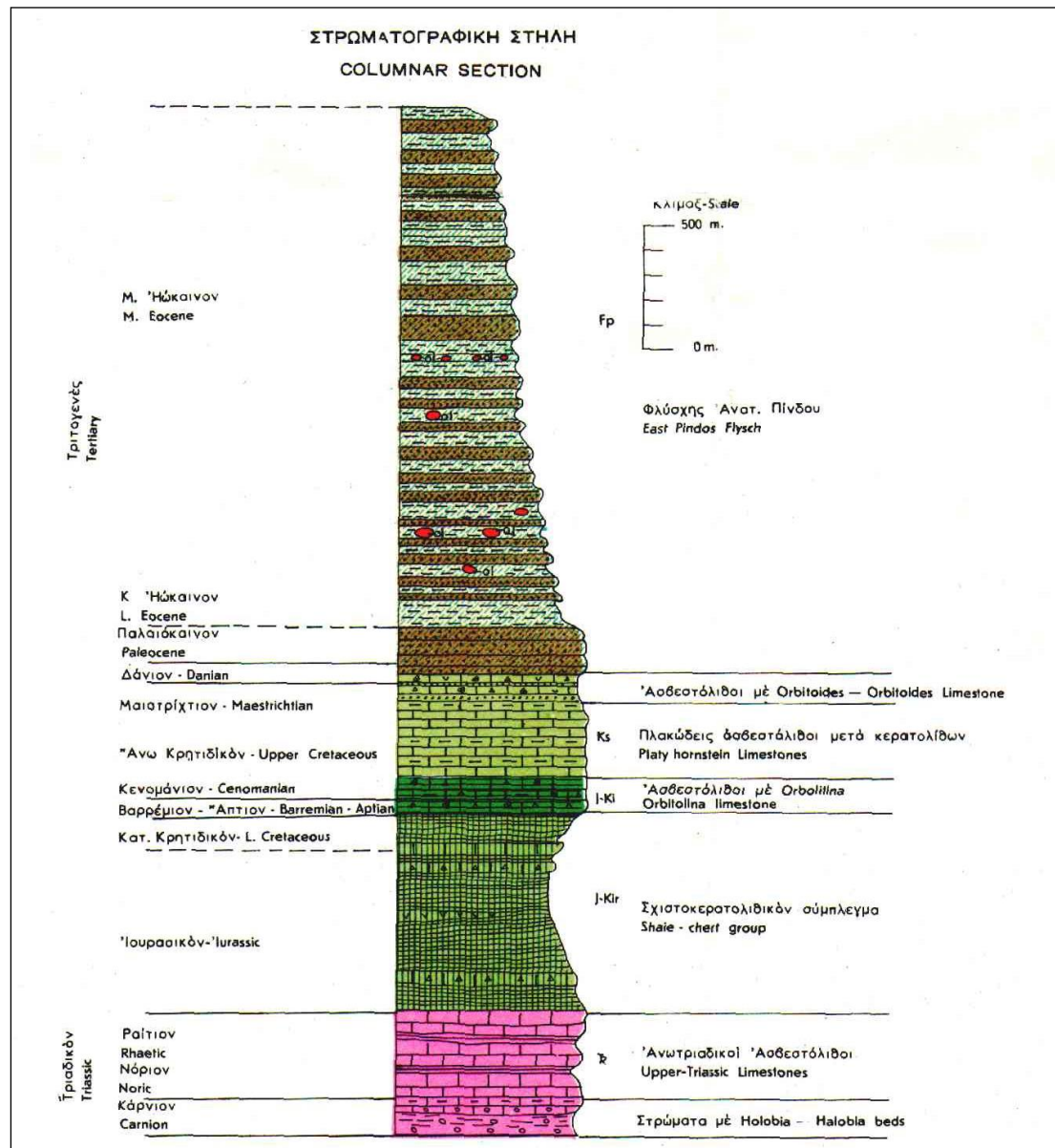
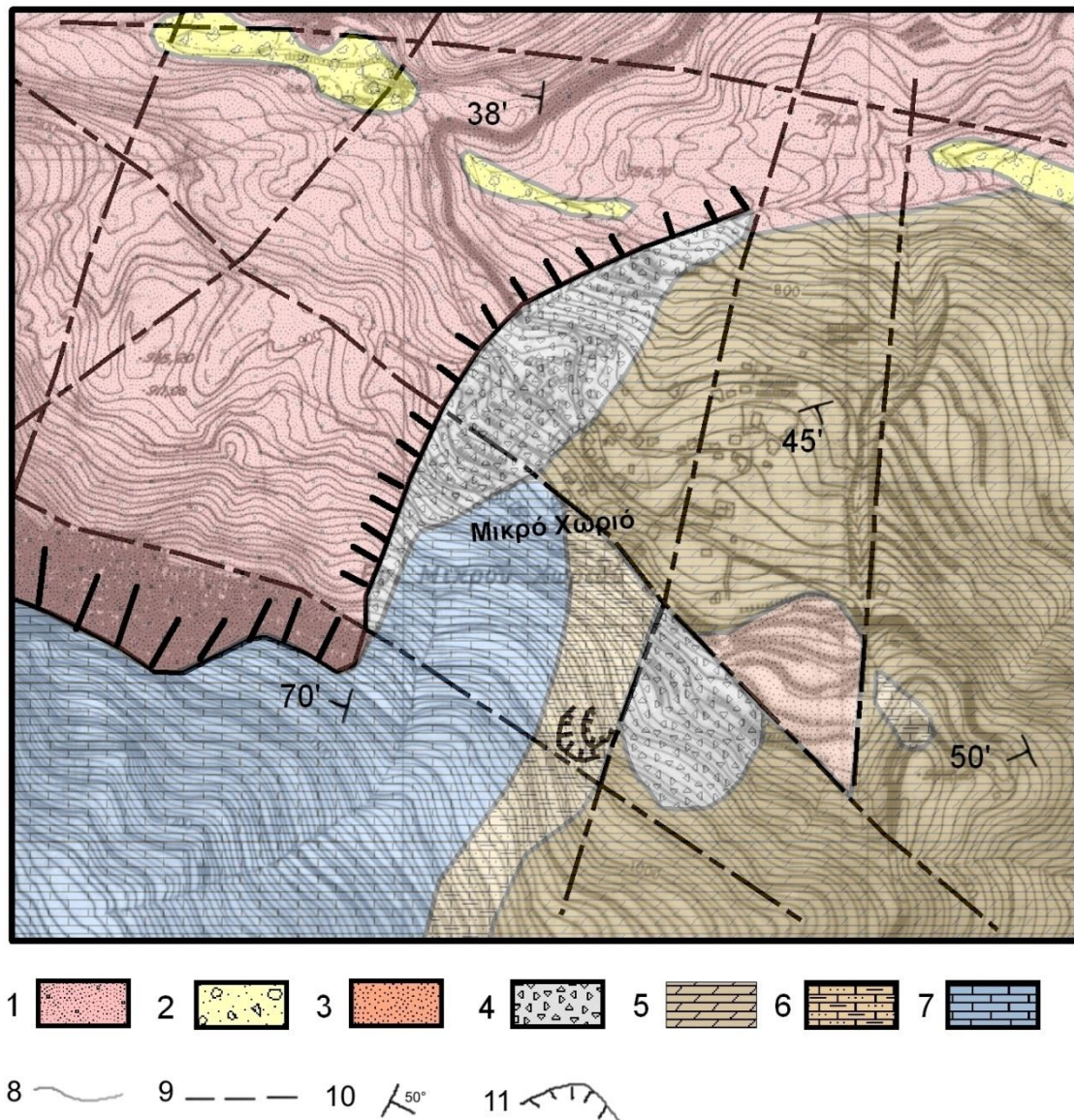


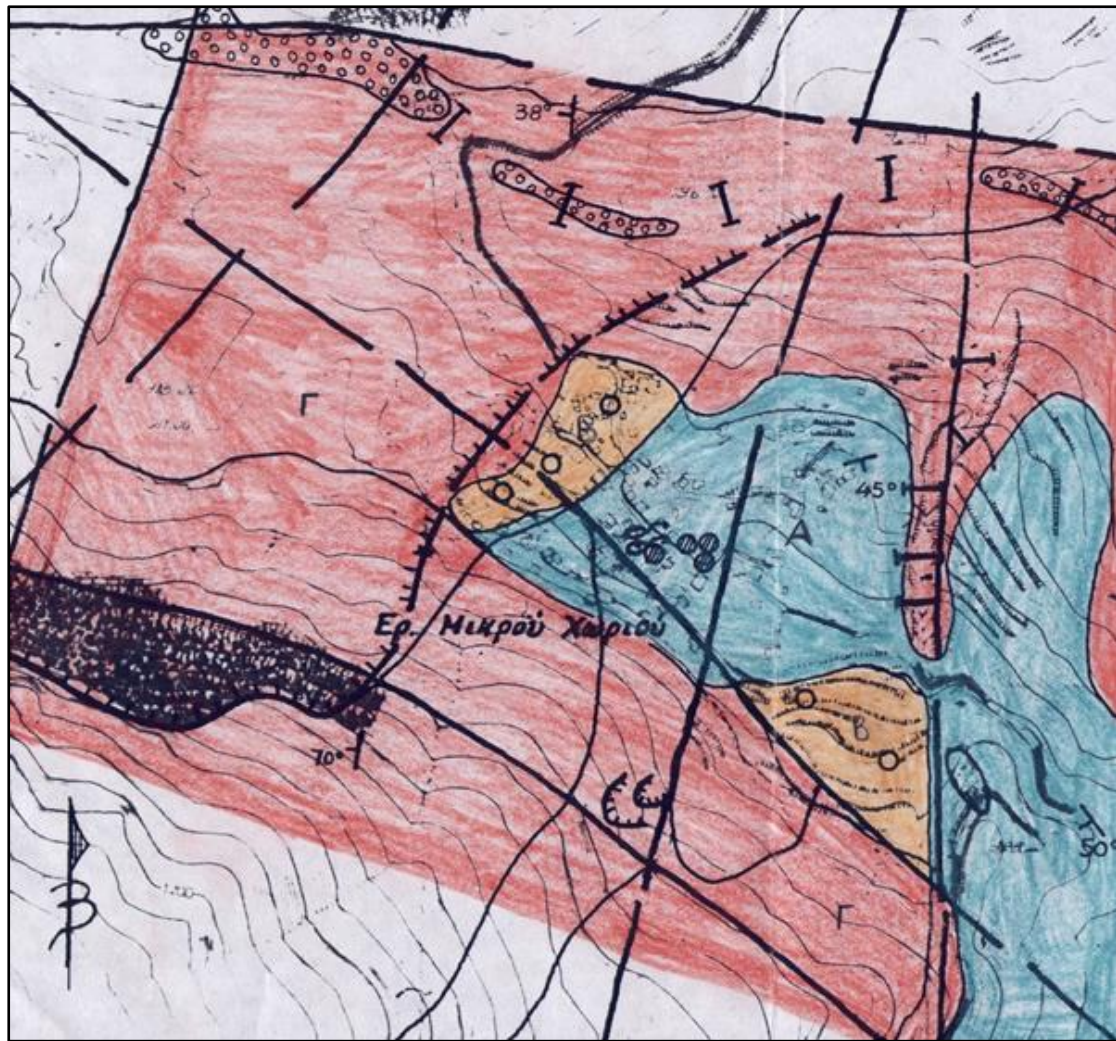
Figure 1. Stratigraphic column of the Pindus zone (from the geological map of scale 1: 50,000, Karpenissi sheet, IGME, 1970).



Legend

(1) landsliding masses, (2) river deposits, (3) Weathering mantle, (4) screes, (5) flysch sediments, (6) transition zone sediments (from limestones to Flysch), (7) thin layered limestones with chert, (8) boundaries of engineering geological formations, (9) major shear zones (faults), (10) strike and slip, (11) landslides.

Figure 2. Engineering geological map of Palaio Mikro Chorio wider area.



Legend

	(A) Suitable areas for building without protection measures.
	(B) Suitable areas for building under conditions.
	(Γ) Unsuitable areas for building.

Figure 3. *Housing suitability map of Palaio Mikro Chorio wider area.*



(a)



(b)

Photo 1. General view of the Palaio Mikro Chorio before the 1963 landslide (a) and after (b).



Photo 2. Landsliding masses (materials from old slides). In the background, the front of the detachment is visible.



Photo 3. Weathering mantle.



Photo 4. Lateral Screes.



Photo 5. Flysch sediments.



Photo 6. Transition zone beds from the carbonate sediments to the flysch.



Photo 7. Thin plated limestones with hornstone.