

Functional and energetic rehabilitation in Kapedes.

Appreciation of vernacular architecture.

Type of intervention

Restoration Rehabilitation / Renovation

Concerned elements on the intervention project

- 1. Foundations and underground structures
- 2. Vertical structures
- 3. Horizontal structures and vertical connections
- 4. Roof and terraces
- 5. Façade and building envelope
- 6. Finishes and completion elements
- 7. Integrate services
- 8. General strategies for building recovery

Site Vernacular dwelling, 1st of April 12, Kapedes, Nicosia, Cyprus

Objectives Restoration and reuse of a listed vernacular dwelling and addition of new constructions, so that it can serve contemporary needs, without compromising the character and uniqueness of the space.

Property Private: Maria Philokyprou

Designer Maria Philokyprou ; Takis

Date 2010-2011



Background to the intervention

The aim of this intervention was the conservation, restoration and reuse of the entire vernacular dwelling and addition of new constructions using contemporary materials, so that it can serve contemporary needs, without compromising the character and uniqueness of the space. Focus was given to the preservation of the special characteristic and values (aesthetic, historic, social, environmental) of the vernacular dwelling that was declared as listed by the Department of Town Planning and Housing.

Description of the building

The building was constructed at the beginning of the 20th century. The structure features a typical rural vernacular dwelling with some special characteristics such as the dichoro with a central stone pointed arch, the semi-open entrance in the form of dichoro with another arch, two traditional balconies, one with a unique triangular shape towards the central yard and a more simple one towards the road.

The house consisted of two main spaces in the ground level: a central semi-open space leading from the road to the courtyard and a large main double-space room (dichoro), as well as more auxiliary spaces: small rooms at the back (kitchen, store spaces etc). It also consists of two rooms (probably bedrooms) on the first floor and a very small store area above the kitchen. The rooms are arranged in an L shape on the two sides of an elongated courtyard. For the construction of the building, traditional materials have been used following traditional techniques: Stone of igneous rocks for the lower part of the structure and adobes for the superstructure, timber as roofing material.

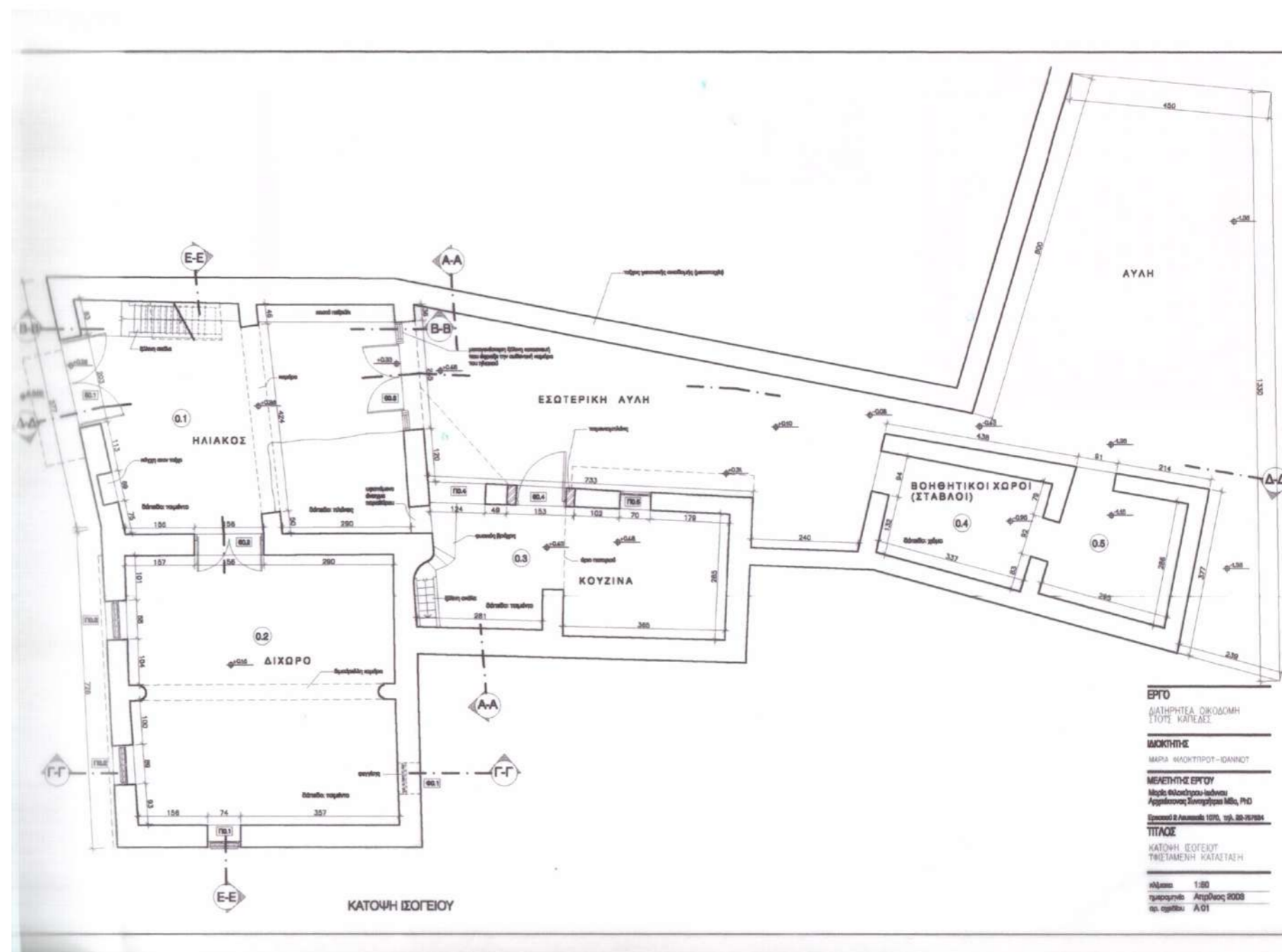


Fig.1: Plan of the dwelling before restoration. © M. Philokyprou

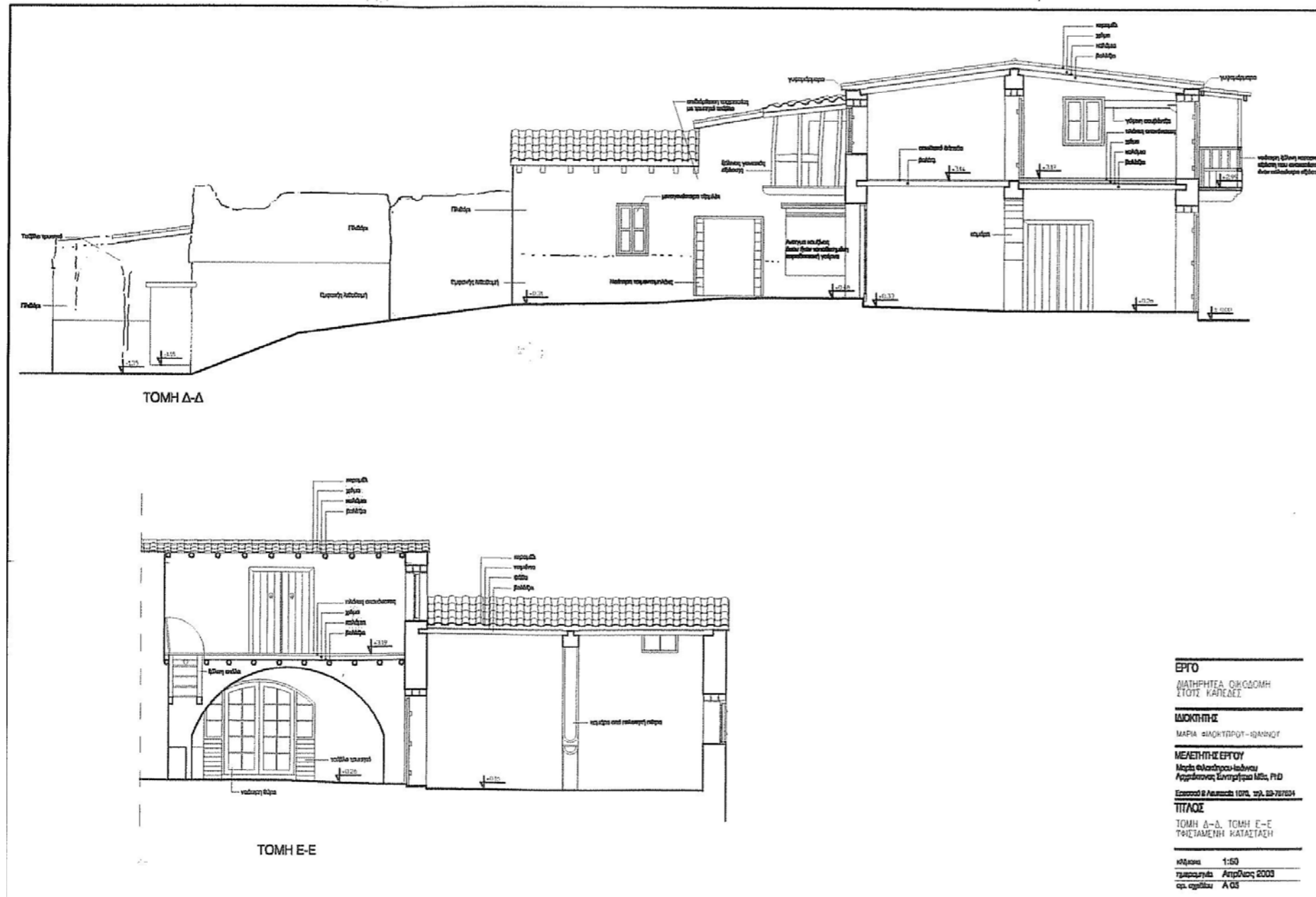


Fig.2: Section of the dwelling before restoration. © M. Philokyprou



Fig.3-4: Views of the exterior facade of the dwelling towards the road before restoration. © M. Philokyprou

The Diagnosis of the building (values and state)

The building was in a poor structural condition before restoration. The only part of the building that was preserved in a rather good condition was the lower part of the walls made of stone. On the other hand the upper part of the walls made of adobes was in a very poor structural condition due to the cement plasters introduced later. The roof of the house was also in a bad condition mainly due to the introduction of inappropriate building materials such as reinforced concrete.

Despite the structural condition of the dwelling the house preserves its main architectural characteristics and constitutes one typical vernacular rural dwelling of the beginning of the 20th century. It is a part of the traditional core of the village of Kapedes. The house incorporates many environmental features such as walls of high inertia, cross arrangement of openings, small openings at high position of the walls etc. Generally the dwelling incorporates many values such as architectural, historic, aesthetical, social and environmental



Fig.5-6: The dwelling before restoration work. Views from the courtyard. © M. Philokyprou



Fig.7-8: Views of the exterior and interior of the dwelling before restoration showing the condition of its structure.
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Rehabilitation works

The restoration of the traditional building included the maintenance of the original materials and conservation works using traditional materials (stone, adobes, timber, gypsum and lime mortars and plasters). Thus the whole structure was restored and conserved using traditional material and techniques and contemporary methods were used when this was essential. For the preparation of lime hydraulic mortars used as exterior plasters ceramic dust was added as a hydraulic additive in order to improve the properties of the mortars.

Adobes were prepared following the traditional techniques, For the conservation of adobe masonry walls timber elements were used in the corners in order to reinforce the structure.

Timber elements were also inserted at the upper part of the walls in order to improve the structural behaviour of the building. For the reconstruction of the roofs in order to improve the energy efficiency of the house insulation layers were used. In order to improve the structural stability of the central arch of the double space main room of the house a metal structure was inserted where the timber beams of the roofs were placed. For the new additions, lightweight materials such as glass and metal have been selected. More specifically two new structures were erected, one small corridor in order to connect two separate parts of the house and another small extension with a view towards the forest.

The restoration included the maintenance of the original typology of the house whereas the entrance semi-open space had been transmitted into a closed area with the use of glass surfaces.



Fig.9: Maintenance of the original traditional materials.
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Fig.10: Maintenance of the original traditional materials, and use of a metal structure above the main arch of dichoro. ©M. Philokyprou

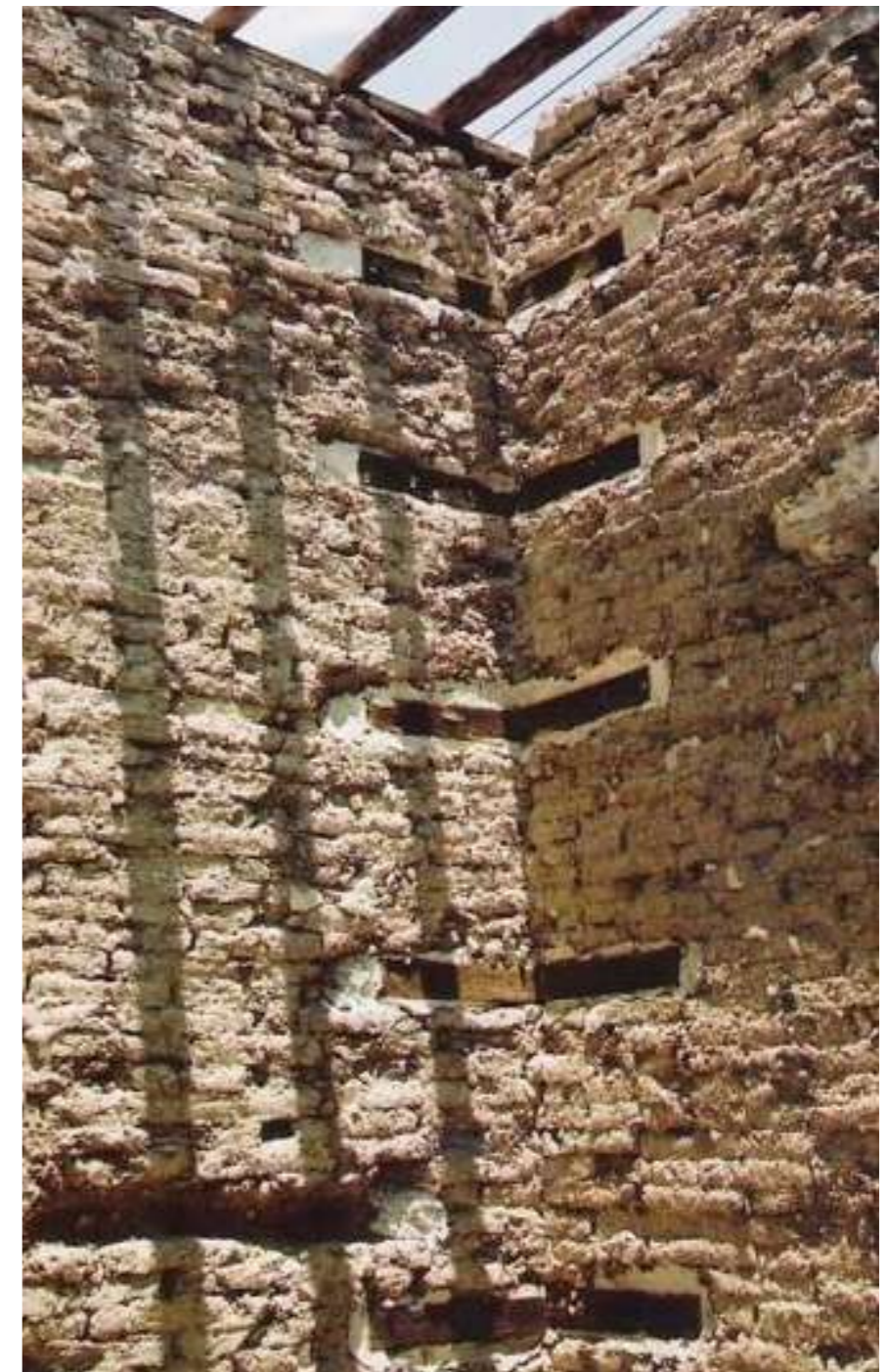


Fig.11-12: Restoration work of the central double space room and reinforcement of the adobe walls with the use of timber elements.
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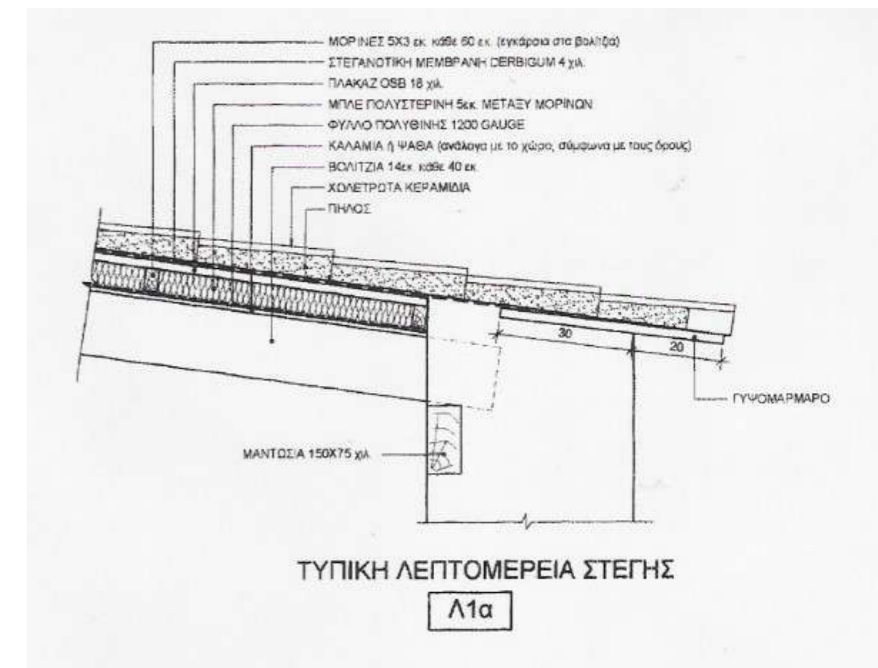


Fig.17-18: Timber roof details. © M. Philokyrou

Fig.13-16: Restoration of timber roofs with the use of traditional materials and techniques. © M. Philokyrou

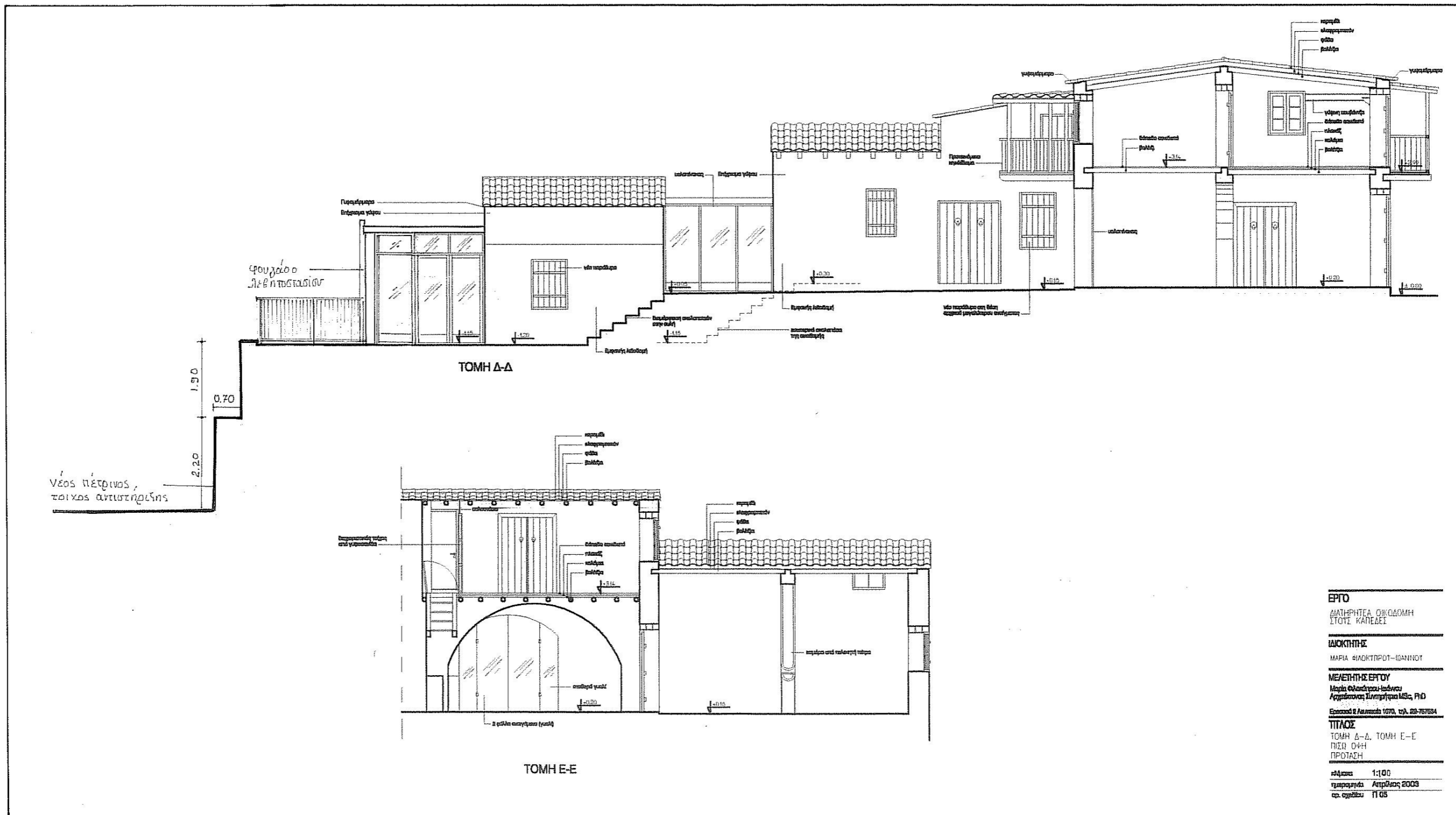


Fig.19: Proposed section of the vernacular dwelling showing the two contemporary additions. © M. Philokyprou



Fig.20-21: Erection of two lightweight contemporary structures with the use of glass surfaces. © M. Philokyprou



Fig.22-23: Erection of two lightweight contemporary structures with the use of glass surfaces. © M. Philokyprou



Fig.24-25: Interior and Exterior view of the dwelling after restoration. © M. Philokyprou



Fig.26: Views of the vernacular dwelling from the central yard after the restoration, showing the triangular balcony and the closing of the arch of the iliakos with frameless glass. © M. Philokyprou

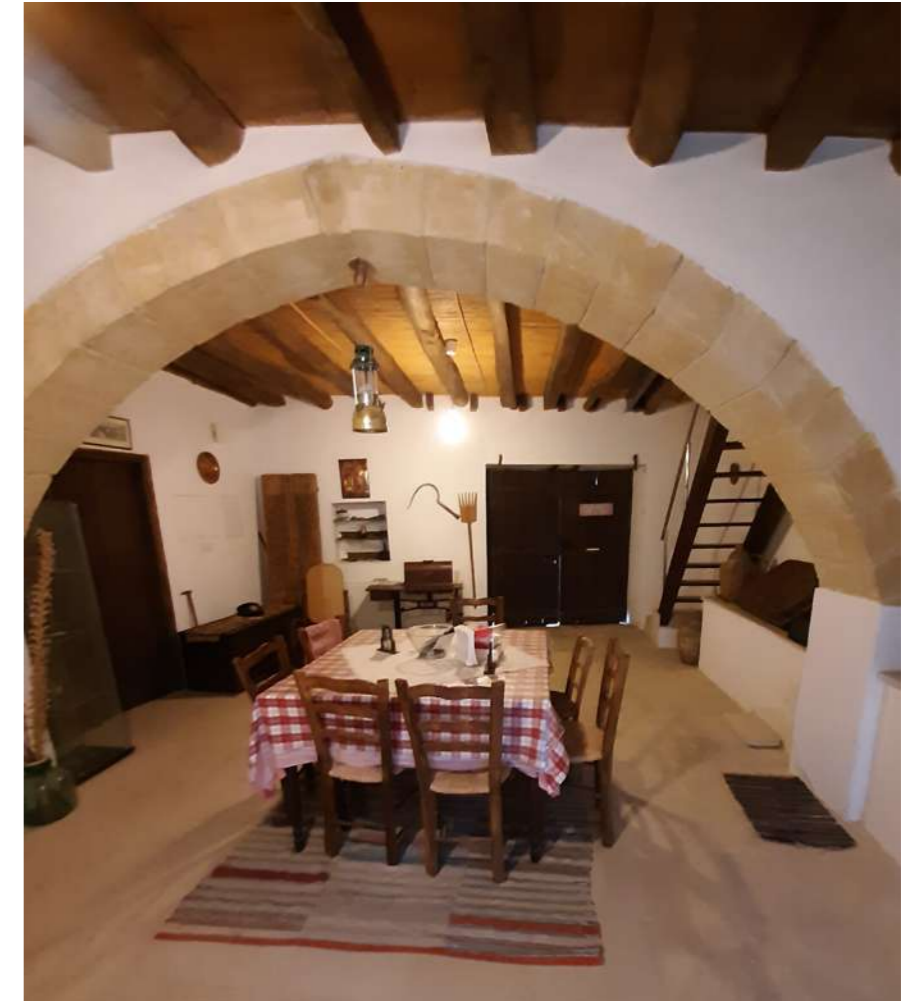


Fig.27: View of the semi-open space (iliakos) of the vernacular dwelling that was converted into an interior space with the use of a glass surface on the arch. © M. Philokyprou



Fig.28: Interior of the vernacular dwelling after restoration.
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Assessment of the results

The house after the completion of the restoration work preserves its original character and use and thus helps towards the revival of the traditional settlement of Kapedes.

The use of lightweight materials (metal and glass) for the extensions of the house that are distinguished from the original structure respects the authenticity of the vernacular dwelling.

At the same time the use of traditional materials and techniques during conservation helps towards the continuity of using traditional techniques today by the craftsmen.

The introduction of insulation layers in the reconstruction of the roofs improves the energy efficiency of the house.

The restoration works helped towards the maintenance of the passive environmental strategies incorporated in the dwelling (cross ventilation, high thermal mass of the structure etc).



Fig.29: Exterior of the vernacular dwelling and its neighbourhood after restoration. © M. Philokyprou



Fig.30: Aerial view of the vernacular dwelling and its neighbourhood after restoration. © M. Philokyprou



Fig.31: View of the main entrance after restoration.
© M. Philokyprou



Fig.32: View of the balcony towards the street after restoration.
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Fig.33-34: Views of the timber staircase after restoration. © M. Philokyprou



Fig.35: View of the timber staircase after restoration.
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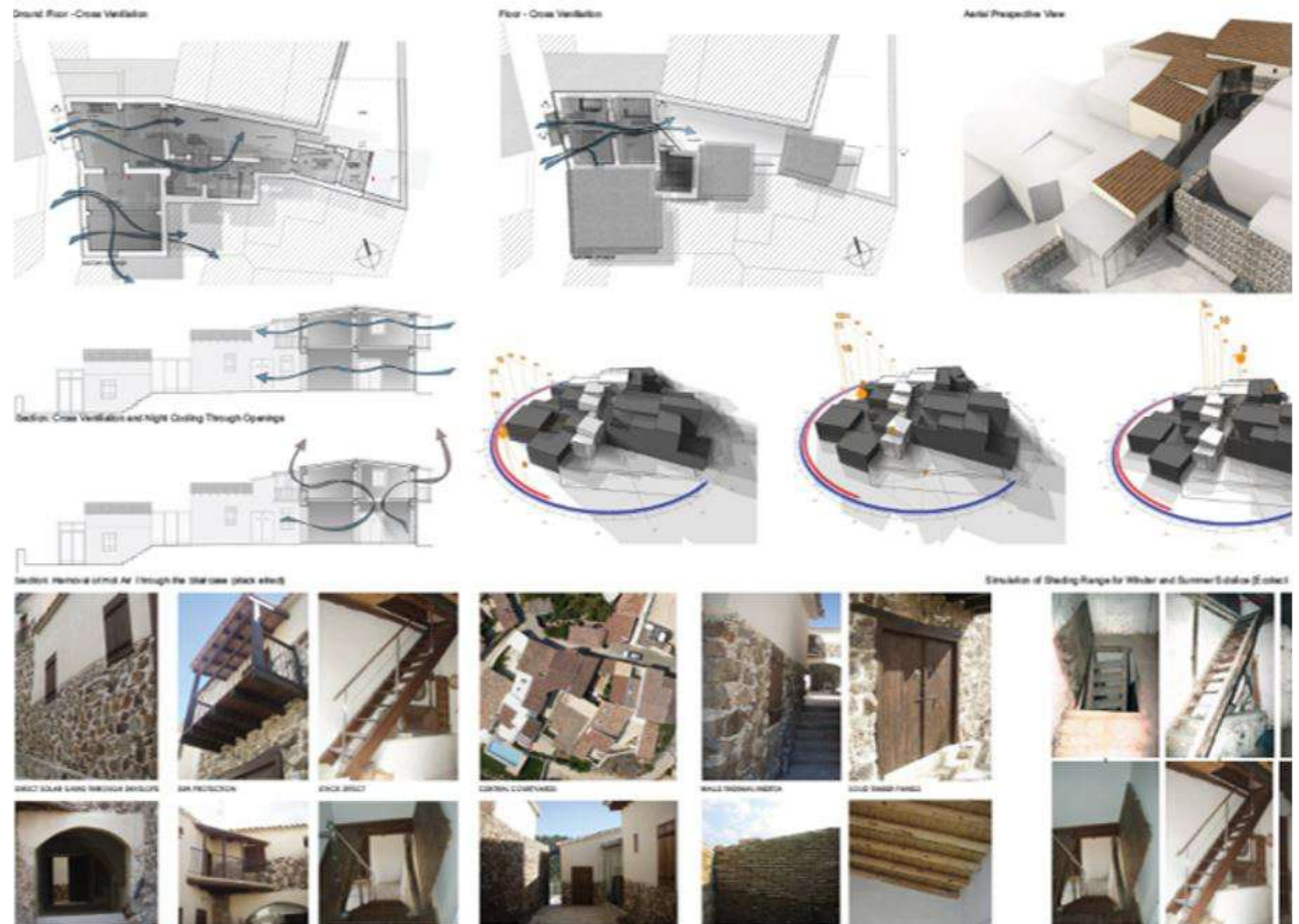


Fig.36: Passive environmental strategies incorporated in the dwelling. © M. Philokyprou

References

Michael, A., Demosthenous D. and Philokyprou, M. 2017, "Natural Ventilation for Cooling in Mediterranean Climate: A Case Study in Vernacular Architecture of Cyprus", Energy and Buildings (Elsevier) 144, pp.333-345 (DOI: 10.1016/j.enbuild.2017.03.040).

Michael, A., Philokyprou, M. and Argyrou, Chr. 2014 "Documentation and Evaluation of the Positive Contribution of Natural Ventilation in the Rural Vernacular Architecture of Cyprus", Proceedings of the International Conference on Cultural Heritage. Digital Heritage. Progress in Cultural Heritage Documentation, Preservation and Protection (Euromed 2014), Limassol, Cyprus, 3-8 November, pp.310-319.

Drawings and plans

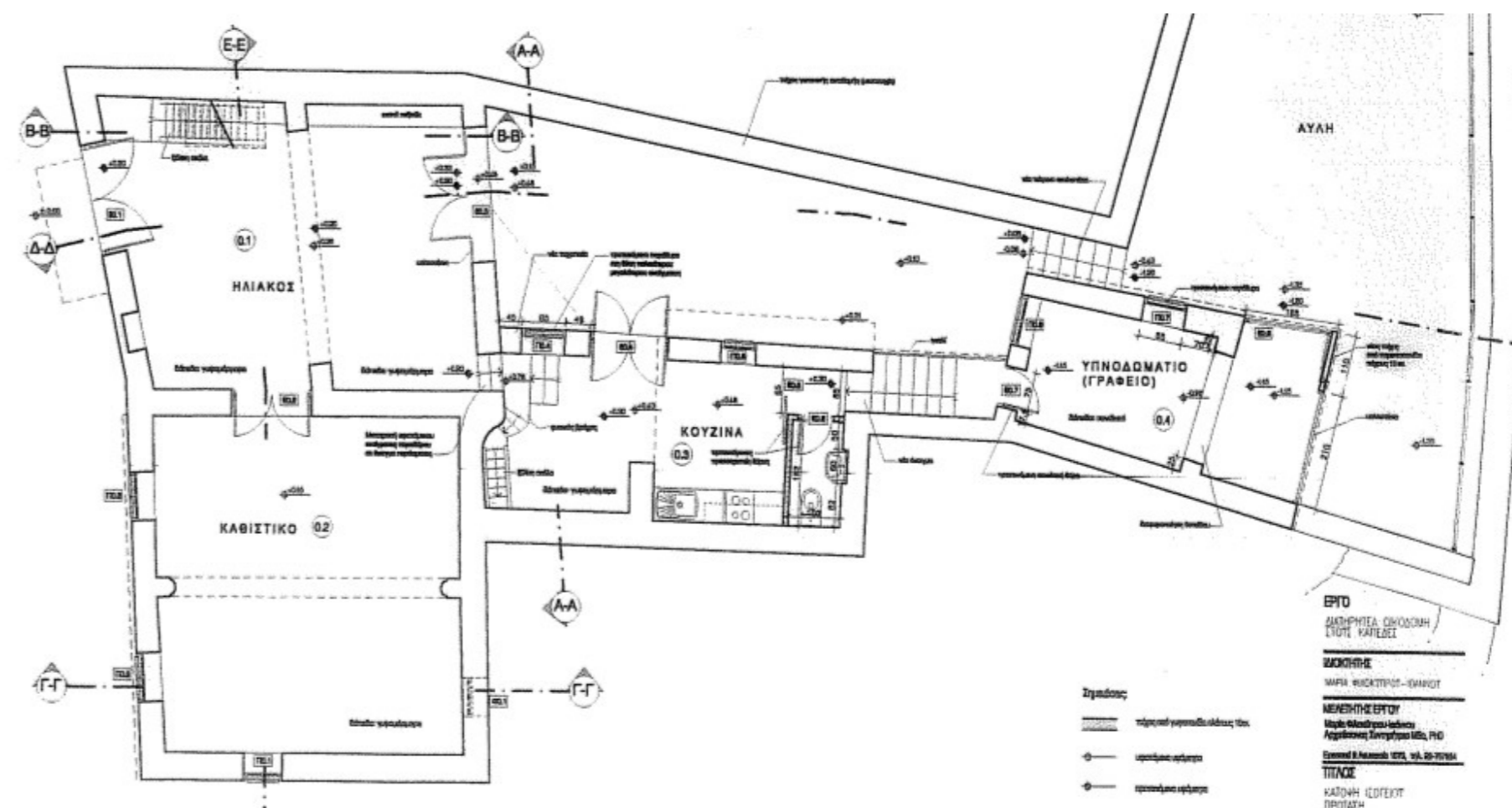


Fig.37: Plan of the ground floor of the vernacular dwelling – Proposal for the restoration and reuse. © M. Philokyprou

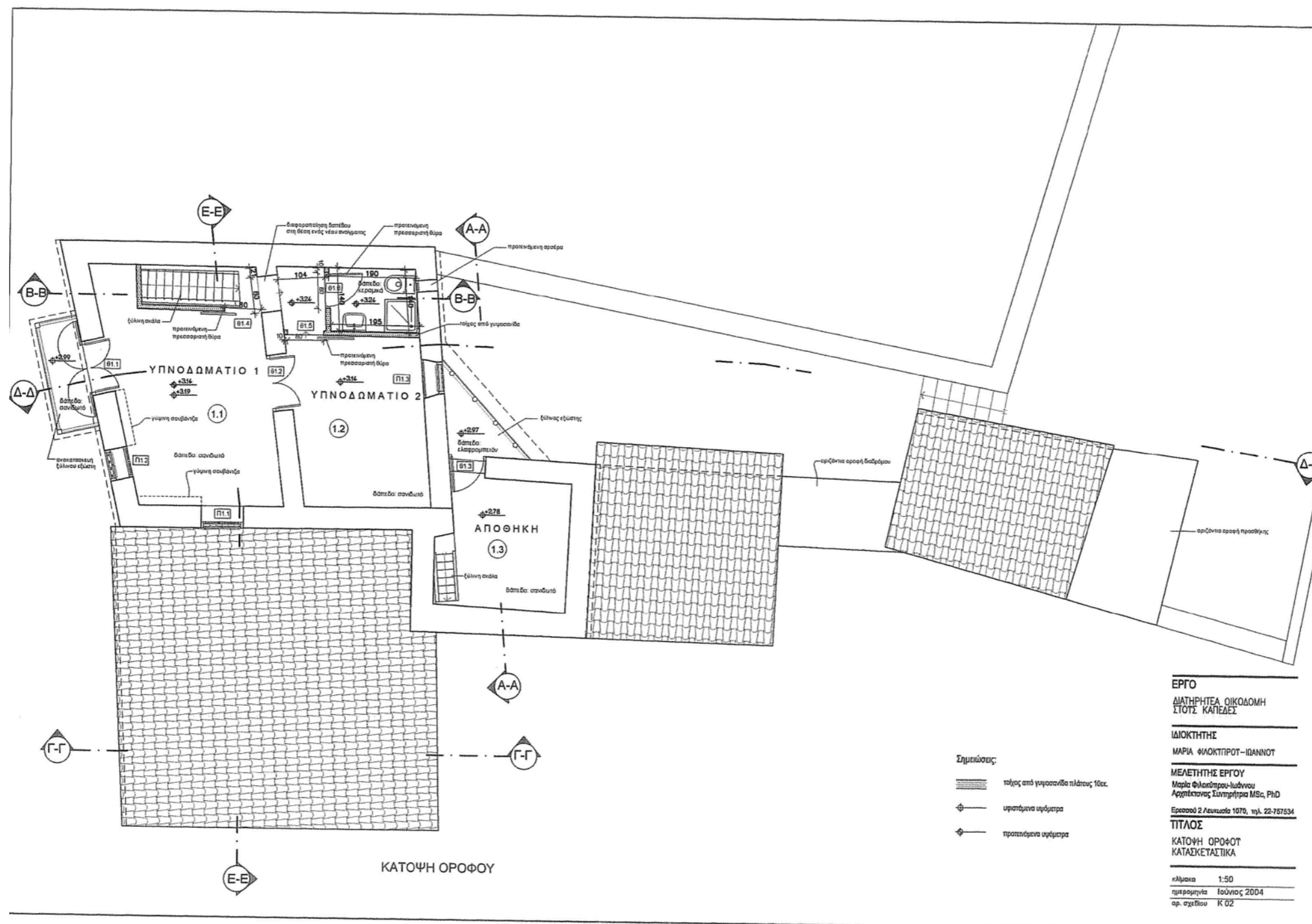


Fig.38: Plan of the first floor of the vernacular dwelling – Proposal for the restoration and reuse. © M. Philokyrou

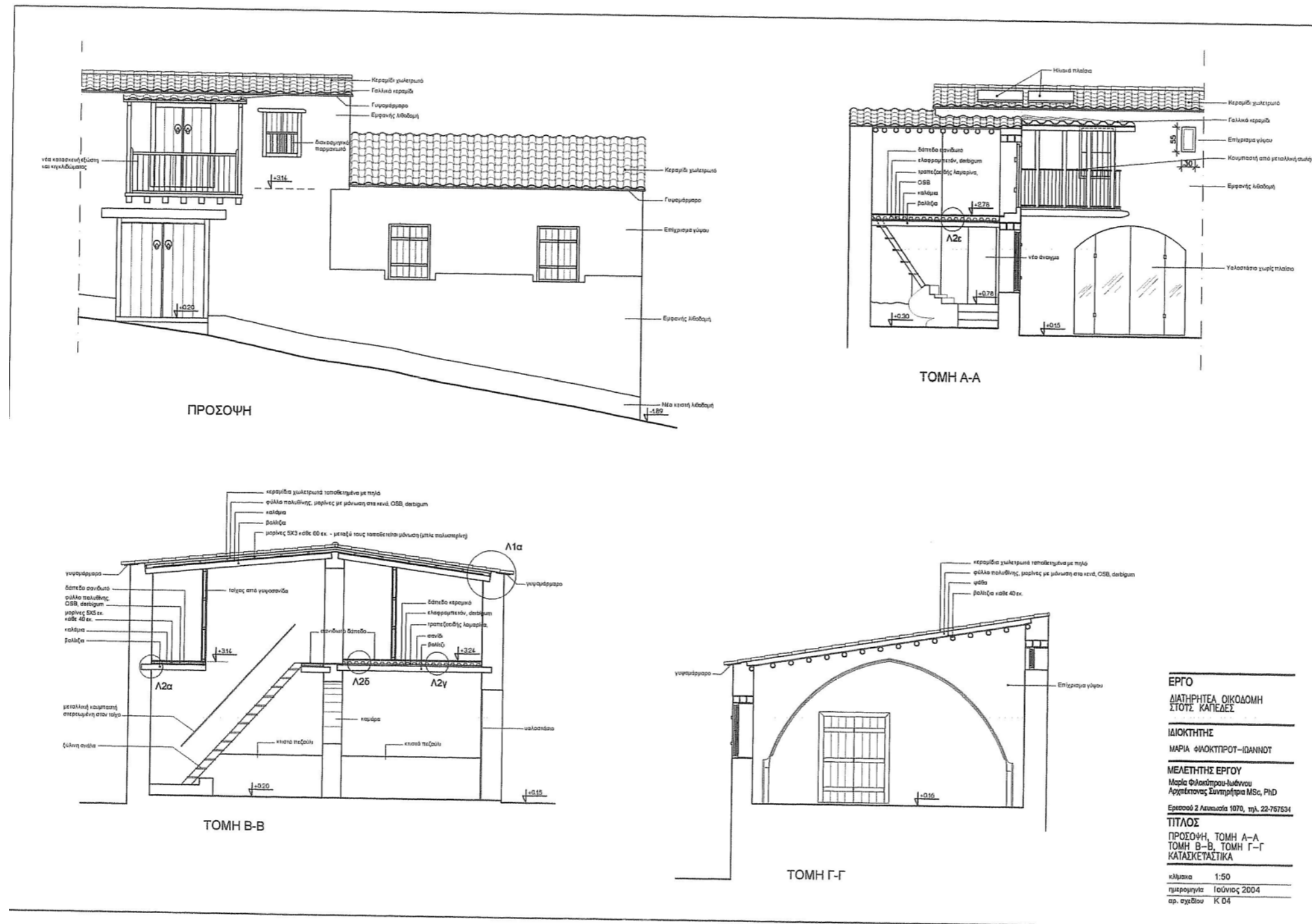


Fig.39: Main elevation and sections of the vernacular dwelling – Proposal for the restoration and reuse. © M. Philokyrou

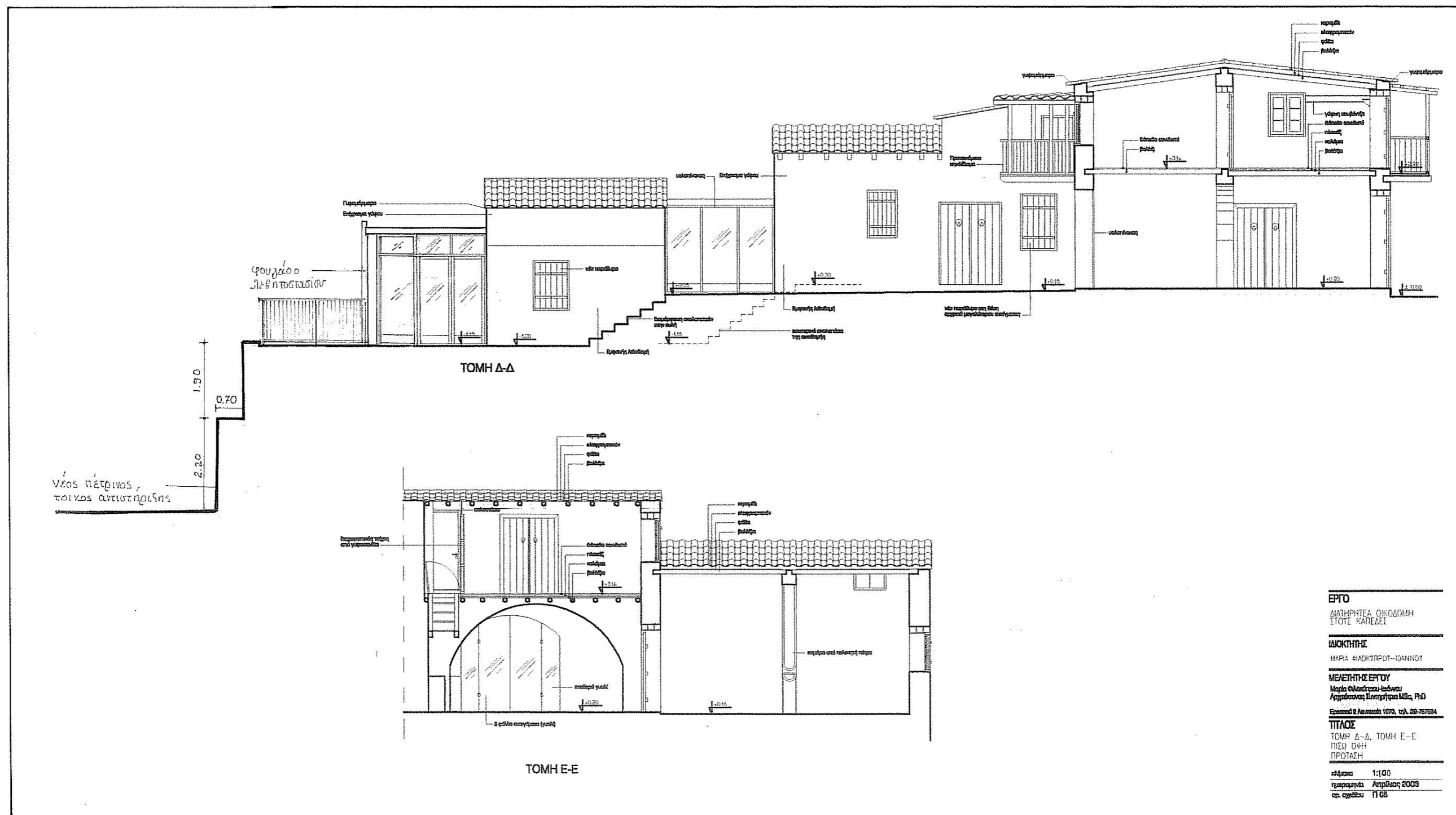


Fig.40: Main elevation and sections of the vernacular dwelling – Proposal for the restoration and reuse. © M. Philokyprou

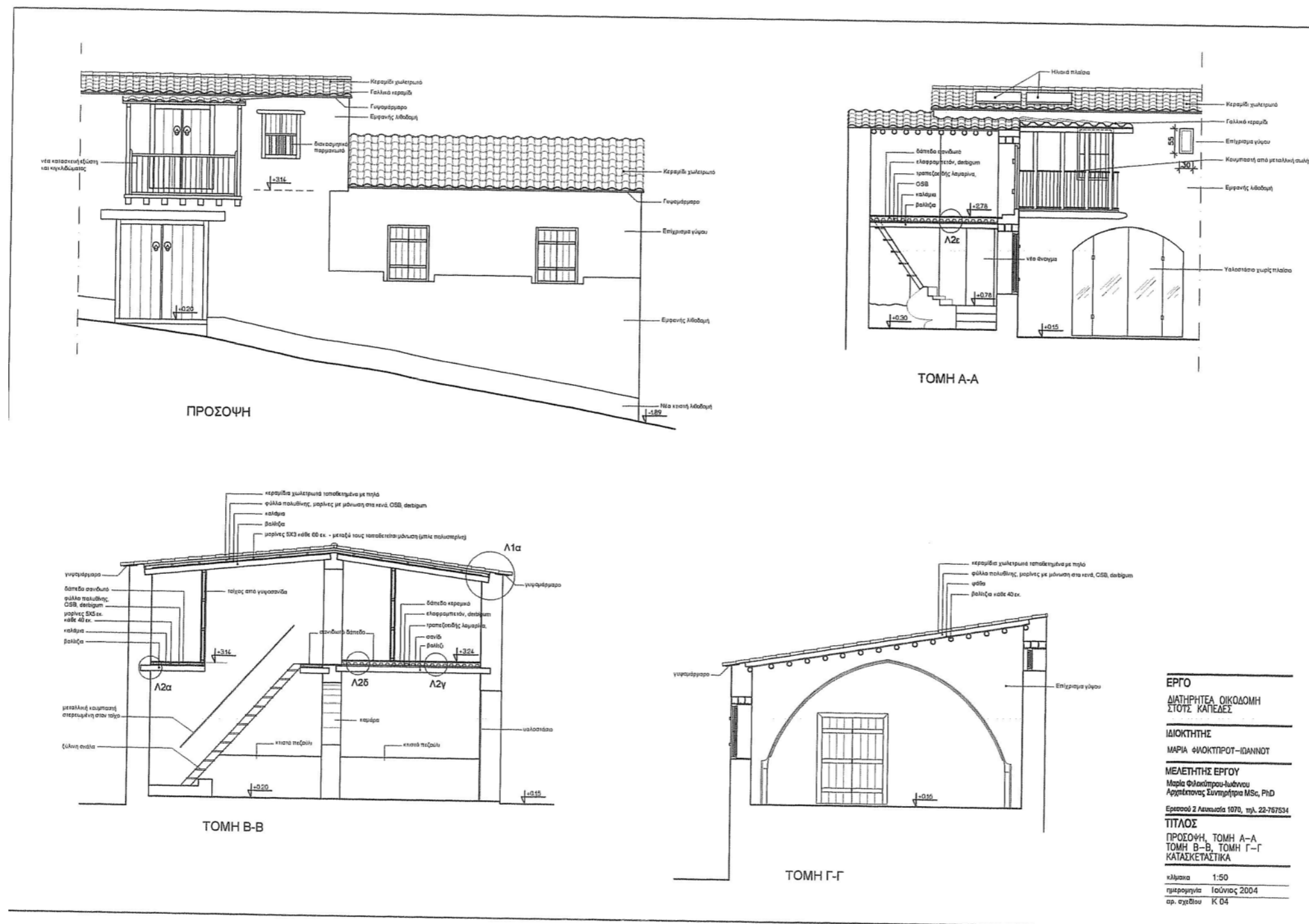


Fig.41: Main elevation and sections of the vernacular dwelling – Proposal for the restoration and reuse. © M. Philokyprou