The Algarve XVI-th century Rural House - intervention for survival

Jorge N. Bastos¹
¹ Technical University of Lisbon, School of Architecture, Lisbon, Portugal

1. The Algarve Roman Ruins of Milreu

1.1. Historical background

In the southern most part of Portugal is located the province of Algarve which has been a major region for important archaeological sites that have been recently studied with renewed interest by a great number of archaeologists of different parts of Europe (Portugal, Spain, Germany).

In the Algarve central region, near the capital Faro (the Roman city of Ossoonoba) is located, 10 kms north from the Atlantic Ocean coastline, on a gentle sloping hill, the archaeological site of Milreu. These ruins extending over the large 20.000 sq. m. area, are better known for the existing remains of a Roman Villa, with the surrounding buildings (the wine cellar, the servants dwellings) and, an unique IV-th century (A.D.) Roman Temple dedicated to the cult of Water, see Figs. 1 and 2.

In the late XIX-th century, this location was extensively excavated by a Portuguese archaeologist Sebastiao Philippe Estacio da Veiga that was able to report the first detailed survey (1887), which was published later in 1880. The survey showed all the main existing structures but some zones were left blank because of the existing farm storage spaces that were occupied. In 1910, with the onset of the Portuguese Republic, a new attitude towards national heritage historical sites and important artwork, allowed to classify the Roman Ruins of Milreu as a National Monument.

In 1965, Dr. Theodor Hauschild, an enthusiastic German archaeologist, defended his Ph.D. dissertation at The Technical University Berlin, with the subject [Parreira, 2004] “Der kultbau neben dem römischen Ruinenkomplex bei Estoi in der Provincia Lusitania”. After several decades of continuous neglect, a renewed interest arose after the 1880’s excavations by Estacio da Veiga. The extensive work carried out by The German Archaeological Institute, in Lisbon, the generous financial support through grants (ex. The Fritz - Thyssen Foundation, in Cologne and the Frankfurt University, Germany) and the research project -“The south of Lusitania Roman province rural space occupation”, was essential to get a better understanding of nearly 2.000 year occupation of
this location [Teichner, 2004]. Although this interest existed, the slow pace to rehabilitate this archaeological site was obvious, see Fig.3. The Portuguese writer Jose Saramago the 1998 Literature Nobel prize laureate, during his extensive trip through various Portuguese countryside regions, had a particular look towards the Roman ruins and the old Rural House sitting on top of them [Saramago, 1998]: «The Roman Villa ruins are nearby located. They are dirty and abandoned. However, due to what it remains through the ages, they are the most complete that you can find in this country. The traveller visited them under a fierce sunshine, he saw what he could understand, ut he misses someone that can identify the places, the dwellings, someone that is able to teach how to see these objects. However, the most difficult thing he was unable to understand was an old ruined country house sitting on the top of the hill: inside they were the cattle feeding boxes, and these cattle spaces were connected to the house spaces where humble people lived. Through which house opening entered the cattle? What could I say regarding the old tile panel on the top of the main façade depicting an old man, with the latin word Charitas, charity? Suddenly, the traveller feels melancholic. Is it due to the ruins set, or the hot weather, or because of his own lack of understanding. He decides to reach more inhabited settlements and descends to Faro, which is this region capital».

![The Rural House](image1.png)

**Fig.2 - The Milreu Roman Villa Archaeological site**

![The Water Temple](image2.png)

**Fig.3 - The existing Rural House (1990's)**
In the early 1990’s, the design team won a limited competition with a well planned proposal to rehabilitate the Milreu Rural House. Under the European Union supported programs, a master plan was developed to provide this Roman Archaeological site with a visitor’s center, the Water Temple foundations consolidation, the Rural House rehabilitation and a pedestrian circuit with adequate information pertaining the various buildings, functions, and decorative aspects (mosaics, frescoes, paintings).

More than one hundred years after the first excavations took place, the visitor’s center was inaugurated in 2001 and the Rural House rehabilitation process was initiated in Jan. 2002 and ended in Jun. 2003. However, final arrangements delayed the inauguration until the Fall of 2003.

2. The Rural House - the design methodology

2.1. The construction evolution

The important archaeological excavations and data research made it possible to understand the evolutionary construction sequence that occurred in this site, see Fig.4. Although some older remains existed previous to the Roman era, the Milreu Roman villa is supposed to be continuously inhabited from the Imperial period (I st. Cent. A.D.). In the following century, major modifications happened with an improved layout reflecting the importance of this site [Teichner, 2004]: (a) the pars urbana (the landlord house); (b) the pars rustica I (the olive oil tank and storage rooms); (c) the pars rustica II (two wine cellars); (c) the pars rustica III (the servants dwellings and the castellum aquae); (d) the pars rustica IV (the large warehouse); (e) memorial buildings; and, (f) the Sanctuary (IV-th. Cent. A.D.), later used as a Christian church. The magnificent Roman mosaics with original sea life singular details are used extensively and sometimes with humor, like the wide-eyed squid looking at us with a two thousand years time span, Fig.5 - b, c.

After the fall of the Roman Empire, this location was inhabited by the Arabs during the al-Andalus Islamic period with several kingdoms from the eastern Granada Spanish region to the west Silves Portuguese domain. Several arabic inscriptions were found on the Roman Milreu marble columns. It is assumed that these buildings have been continuously used in this farm region and, subsequently, abandoned during the wars between the North Christians and the Southern Kingdom of Algarve Moors.

In the XIII-th. Century, with the Moors departure from Algarve, a new construction period occurred over this location ruins [Ramalho, 2004]. From the XII-th century until the XVI-th century, occurred the medieval first phase construction due to the archaeological data collected from the excavations, coins, pottery, as well as, the strata data analysis performed both in the foundations wells and the overlying masonry walls [Teichner, 2004; Ramalho, 2004]. The last Rural House expansion took place, probably, during the XIX-th. Century The East façade has typical construction details - stone bordering frames along the doors and the windows opening edges, see Figs.3 and 6. One hollow conical-shaped turret is located at each corner of the building plan. This exotic construction detail was assumed to be an owner’s statement built during this last XIX-th century construction phase, [Ramalho, 2004]. Another important
Fig. 4 - The Roman Ruins of Milreu, the Rural House (left) and the Water Temple (right)

Fig. 5 - The Roman mosaics: a. one water tank; b. fish mosaic carpet; c. detail - the squid and clams

Fig. 6 - The Milreu Rural House - East façade - after the intervention (1998)
2.2. The intervention for survival - diagnosis

In the late 1990's, under the European Union (EU) support for touristic regions, the Roman Ruins of Milreu archaeological site was renovated with a well-detailed pedestrian circuit, the restoration of the XVI-th century Rural House, and a visitor’s interpretation center. The Rural House restoration process was also important and, in particular, the methodology and the design solutions being adopted. After winning the design competition, a three phase approach was proposed to the Government Agency, the “Instituto Portugues do Patrimonio Arquitectonico e Arqueologico” (IPPAR): (1) construction survey and diagnosis; (2) rehabilitation methodology; and, (3) long-term maintenance plan, [Bastos, 1994; Bastos, 2004; Parreira, 2004].

In the early 1980’s, the "Direcção-Geral dos Edifícios e Monumentos Nacionais" (DGEMN), the older Portuguese national heritage agency, replaced the ageing timber roof with clay tiles, by a brand new precast prestressed concrete roof covered with traditional clay roof tiles. The whole ensemble was cast monolithically with a reinforced concrete beam crowning the masonry walls, see Fig. 7-a. A preliminary estimate showed that the total roof dead load (DL) was dramatically increased by 4 to 5 times, from approx. 80 - 100 Kg/m² (0.8 - 1.0 kN/m²) up to 400 - 500 Kg/m² (4.0 - 5.0 kN/m²). Nevertheless, a more important menacing static load path change also occurred. Initially, the transverse masonry walls had variable height short masonry columns topping the 4.00m tall masonry walls. On the longitudinal direction would run several main timber beams that supported the roof wood purlins. These “smooth” static loads path distributed the dead loads thoroughly through the masonry walls.
top regions, see Figs.7-a and 8.

The 1980’s structural concrete roof was supported on the masonry walls on a different way. The building longitudinal mid-axis had the masonry walls raised until to the roof apex with clay hollow blocks and an interior longitudinal reinforced concrete (RC) beam was cast together with the precast concrete beams and the lower RC beam topping the exterior wall contour. This shallow roof with the transverse precast beams developing an horizontal thrust at the top of the 4.00m tall masonry walls that generated rotations and cracks over the wall surfaces. The existence of poorly contained archaeological excavations reaching in some zones 3.00m deep, was also a matter of concern regarding the masonry walls stability.

2.3. The intervention for survival - rehabilitation methodology

The adopted rehabilitation methodology was adjusted with the local IPPAR technicians: (1) global survey (topographic, archaeological, photographic,

Fig.8 - The Rural House survey (1992): a. roof plan and transverse cross section (North oriented); b. transverse cross section (South oriented) and ground plan with the underlying Roman ruins
Fig. 9 - The Rural House, after the intervention (1998): a. the North room timber ceiling with the stone masonry supports; b. the steel visitors platform

reports); (2) Roman mosaics and masonry walls protection with geotextiles, LECA (lightweight expanded clay aggregates) plastic bags to fill in the excavated spaces, wood floors and planks; (3) construction site drainage; (4) careful RC existing roof removal and contour beam; (5) foundation stabilization with clay bricks masonry contour walls; (6) temporary roofing assemblage and shoring; (7) careful existing mortar wall layers removal and data recording; (8) wall crack consolidation and placement of new lime based mortar admixtures on the wall surfaces; (9) assemblage of the timber roof, wood planks overlapping cover and clay roof tiles; (10) interior finishing (doors, windows, lighting, pavement tiles); (11) installation of the lightweight steel platforms and observation decks; (12) visitor’s information boards placement; (13) exterior access platform and staircase restoration or renewal; and, (14) restoration of the archaeological artifacts and new findings.

Particular care was taken on the removal of the 1980’s concrete roof and its replacement by a traditional timber roof structure with traditional local materials – clay tiles, wood assemblages and members. The existing masonry walls were fractured and unstable. Any excessive vibrations with electrical hammers could trigger a local wall collapse mode or, in a extreme condition an extensive wall collapse situation.

Although the construction deadlines were successively extended, the initial global construction cost estimate was under 250,000 euro limit, for a gross plan area of nearly 400 sq. m.

3. Final Observations
An unique Roman Archaeological site, located in the Algarve touristic region underwent a major renovation program, under the EU – Portuguese Government financial grant. Several major problems had to be solved to bring this public work to excellent results. Lack of experience of traditional construction
techniques (timber structures) and materials (lime mortars finishing), lengthy bureaucracy, cost control limitations and, the inevitable undetected construction changes, are a few examples. After a lengthy process the final result is praised by all the experts, the Government authorities, the taxpayers and the incoming visitors.

References