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The tin mine of Vale do Mouro (Coriscada, Portugal)

A preliminary study

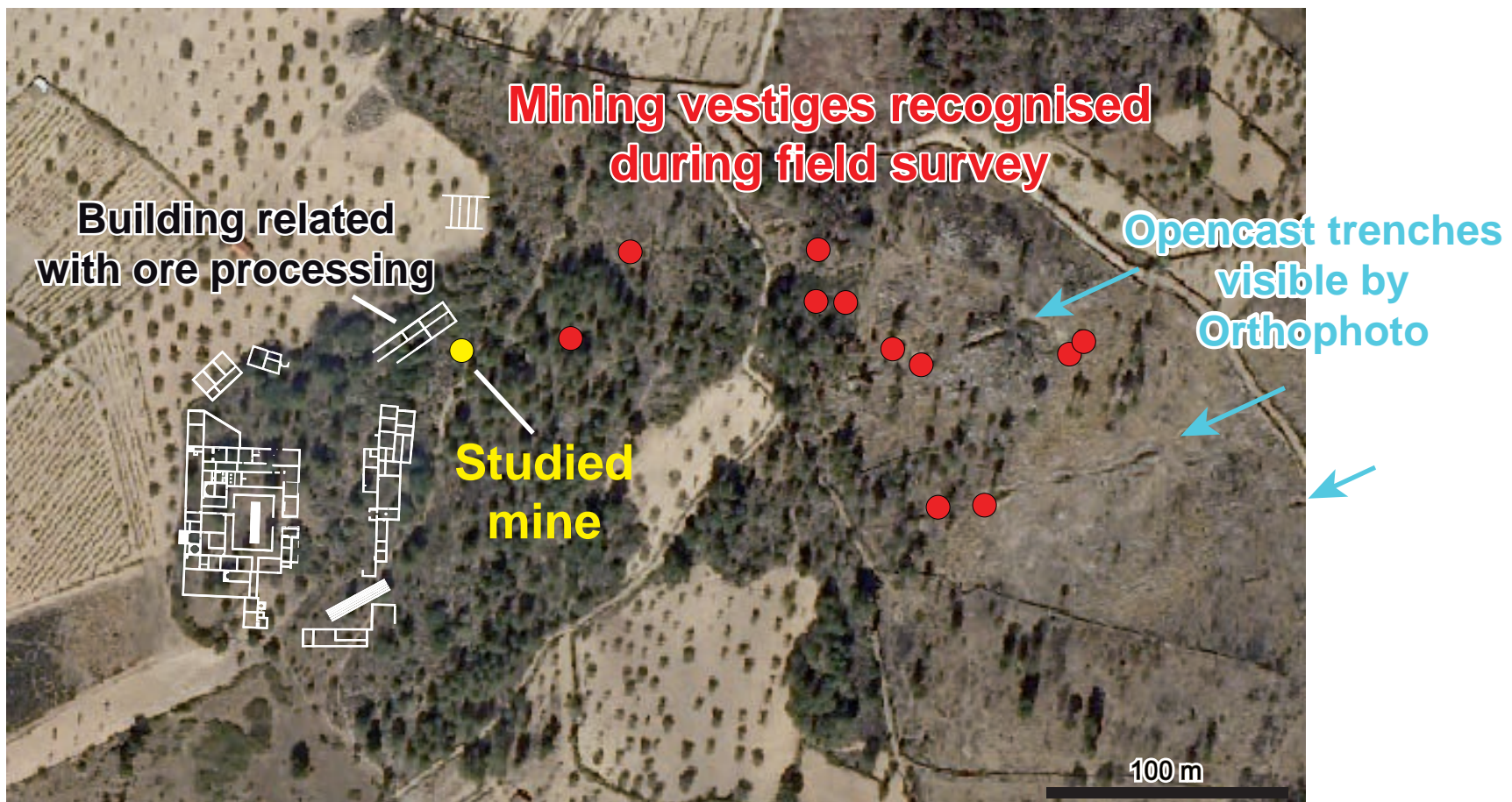
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Archaeological context

The mining vestiges of Vale do Mouro are located close to a Roman *villa*. Its excavation started in 2003 with a Franco-Portuguese team, directed by two of the authors. After 13 annual campaigns, the vestiges of the antique *villa* could be comprehended.

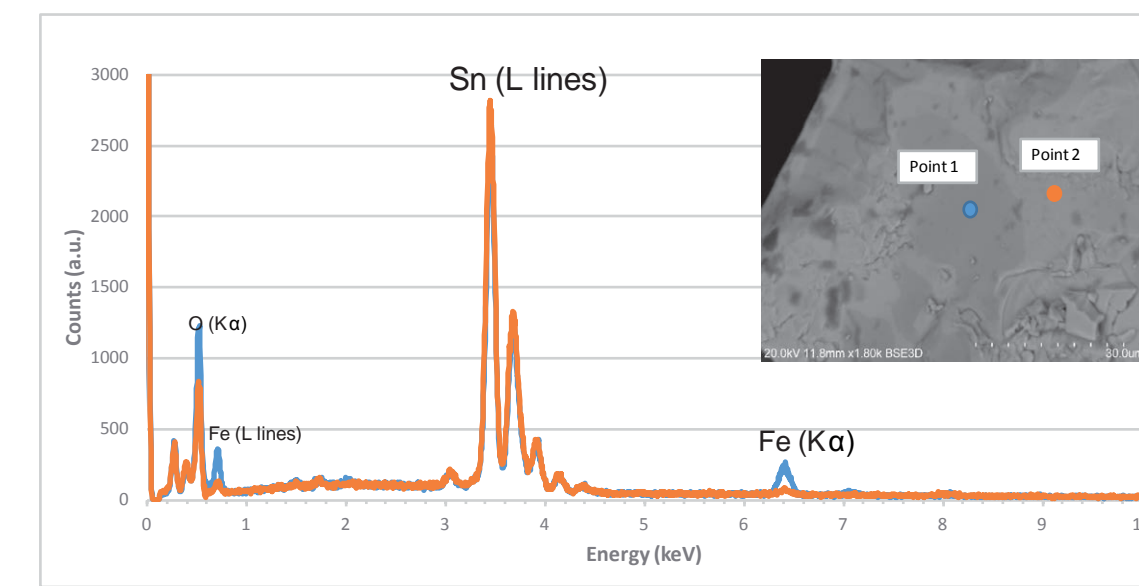
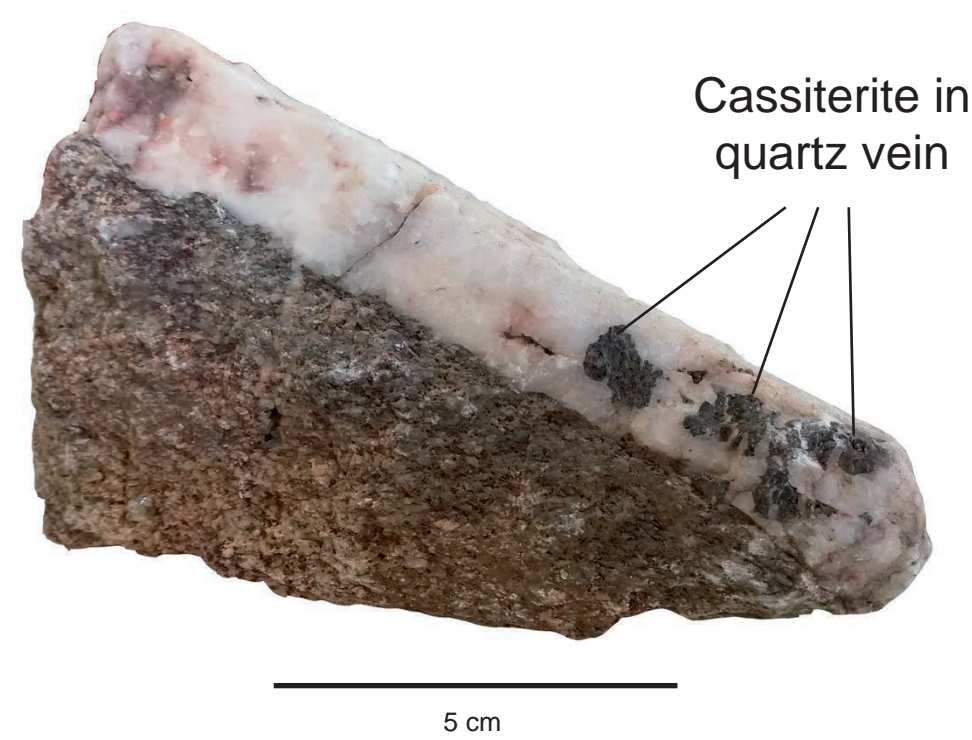


General map of the late *villa* and the mines (Orthophoto: WMS service of igeo.pt)

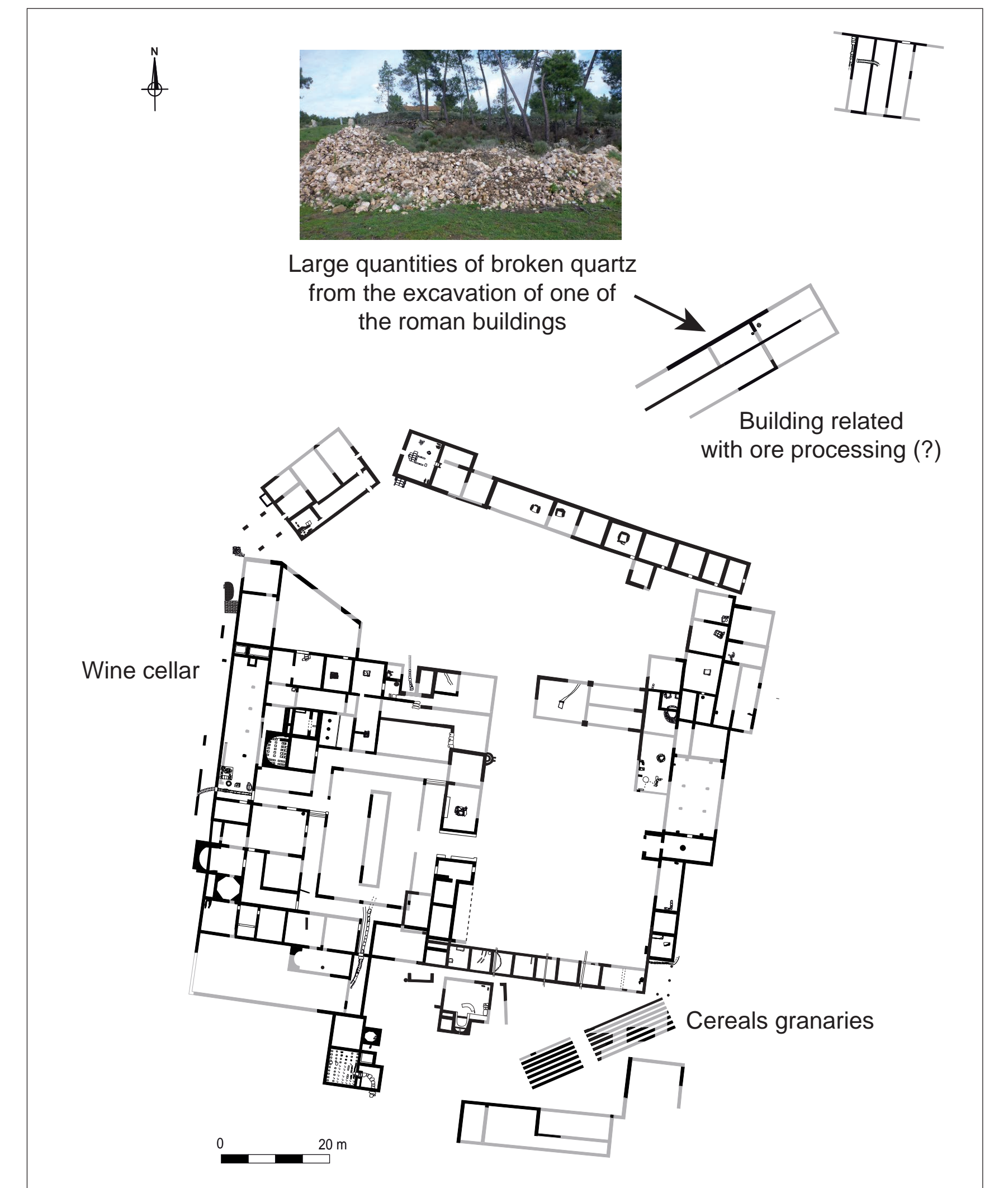
The best preserved vestiges are of the Late Antiquity phase, dated on the 4th c. AD. This period of “embellishment” follows other occupations, sometimes poorly recorded because of the recent buildings. Thus, the first presence on the site comes down to a few excavated structures or localised backfills dated on the 1st c. AD. At the beginning of the 2nd century, this first occupation turned into a *villa* whose *pars urbana* is organized around a central court surrounded by porticos. Wine production is recorded. Only at the beginning of the 4th century was the *villa* rebuilt and the residential part is embellished with mosaics, *thermae*, and a hypocaust system. The wine cellar is also transformed with a powerful press.

The *villa* was gradually abandoned during the 5th century but a population was still living in the site, outside the *pars urbana*. The latest vestige is a grave dated to the 6th century.

During the 2014 campaign, the excavation of a building north of the *villa* revealed the presence of numerous blocks of broken quartz, characteristics of ore processing. A short survey of mining vestiges was then undertaken in 2015. Analysis to a piece of quartz vein confirmed the presence of large cassiterite inclusions.



SEM-EDS point analysis to cassiterite (E. Figueiredo)



Vale do Mouro 2016 - The *villa* in the IVth c. AD (D.Tourgon, T. Silvino)

Mining vestiges

More than ten open-cast trenches are known east of the *villa*. Some of them are the result of recent small scale mining for tin and tungsten. The presence of pieces of broken quartz inside one of the Roman buildings indicates an older phase of mining, unsuspected so far.

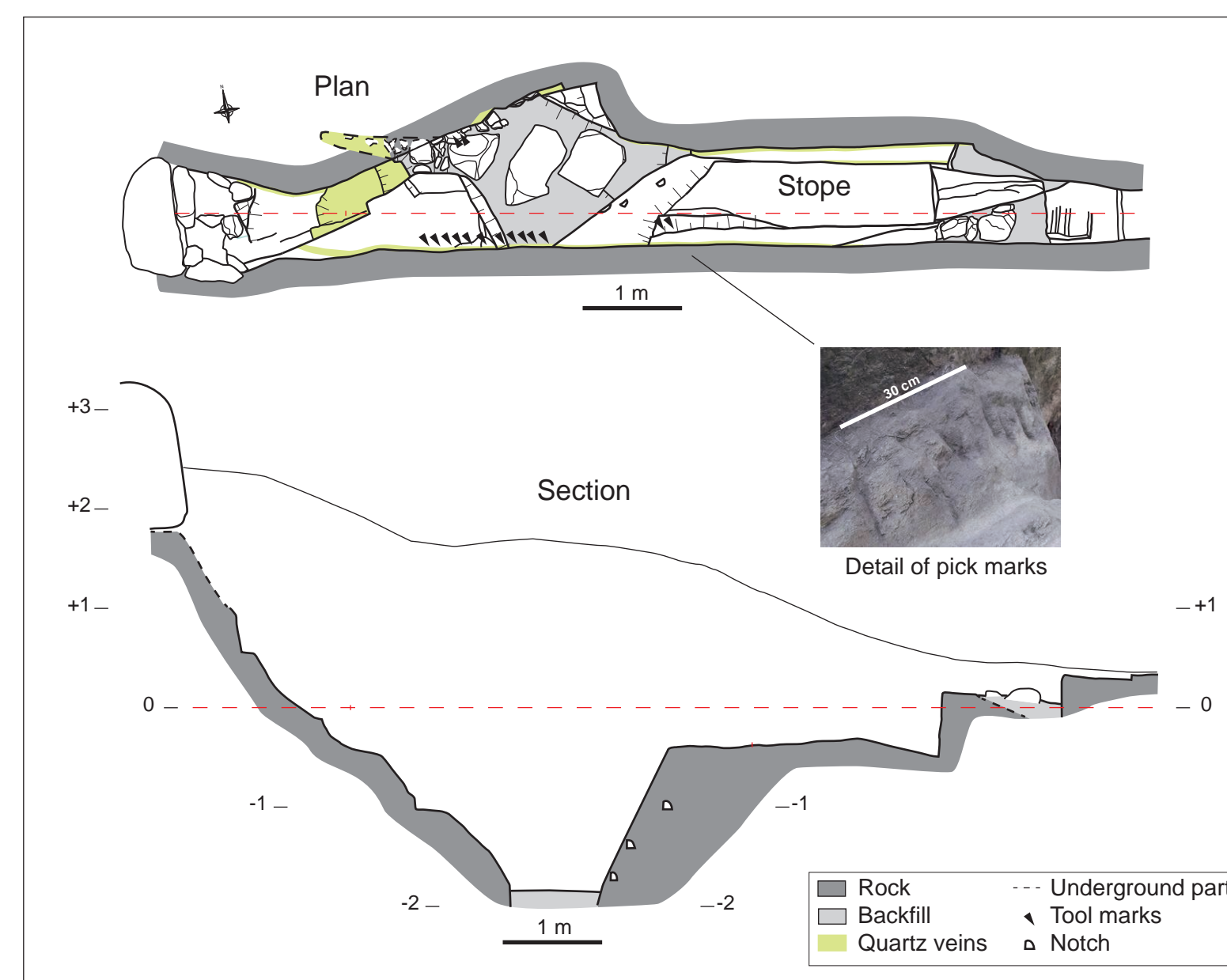


The mine after excavation, from east

A preliminary investigation to the upper part of the mine closest to the building allowed observations of the mining work, consistent with an antique exploitation.

The miners exploited some outcropping quartz veins in a granitic bedrock. The trench can be seen along more than 27 m but only a length of 9 m was surveyed. It is between 0,5 and 1,6 m width, following closely the veins. We stopped the survey at 4,25 m deep but mining works continue below.

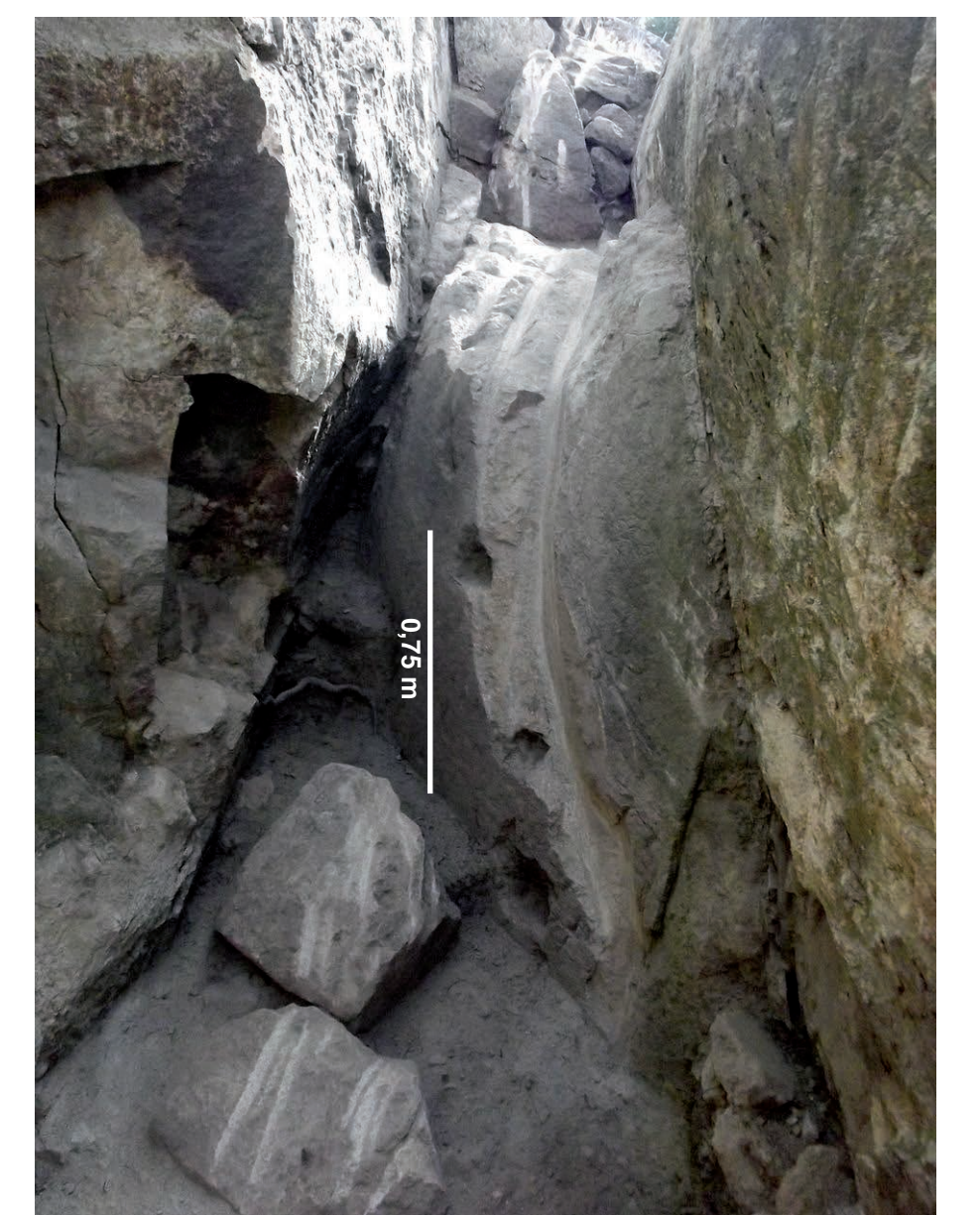
A large stope shows that the miners did not deepen the mine if the mineralisation was not rich enough.



Detail of the sounded opencast trench (E. Meunier, E. Figueiredo)

The walls of the trench are not very well preserved, because the granitic bedrock was altered. Even so, some tools marks indicate the use of picks to excavate the mine.

Three notches (12 x 14 cm) have been uncovered in the eastern wall below the stope. These notches could have been used to support a wooden structure or to help the miners climb out of the mine.



Notches in the wall below the stope

The products of the *villa*: wine, cereal, olive oil

The economic activities of both *villae*, based on the archaeological remains, were mainly wine production, cereals cultivation and, in a lesser extent, olive oil production.



Counterweight of the wine press

The wine production is registered during both occupations. The organisation of the first stage remains quite unclear, however, we do know that the cellar was situated in the western wing of the *pars urbana*. The wine was in all probability stored in ceramics vessels of *dolia* type. No trace of the first wine press is known to the date.

On the other hand, the records of the second stage of the wine production are richer, with the presence of a very strong lever press and a cellar with barrels. It can be compared in some aspects with the one of the *villa* of Torre de Palma (Alentejo). During this phase, a little bit of olive oil production is testified by the presence of a small granitic area.

Regarding the cereal production, two large granaries with raised floors certify this activity. However, the date of their erection remains unclear.



Aerial view of the southern part of the *villa*

Some metallurgical remains, mainly slags or furnace linings fragments, have been recorded during the excavations and are related to the different periods of occupation of the *villa*. But preliminary analysis suggest that they are related to small scale iron smithing and not with tin or bronze production.

Tin mining and the *villa* of Vale do Mouro: a secondary activity?

Only one Roman building revealed elements related to tin ore processing, which has to be considered as a very limited evidence of mining practice for this period. It is therefore possible that the tin production was only a secondary activity in this *villa*. Another possibility is that tin mining took place mainly in previous phases, for example during the occupation of the 1st century or even earlier. Only a resumption could have occurred during the main period of activity at the *villa* in this particular case.

References:
Sá Coixão, A., Silvino, T. 2010: 'The *Villa* of Vale do Mouro (Coriscada, Portugal)'. *Journal of Iberian Archeology* 13, p. 85-95.