

Introduction

During the survey of the territory under the jurisdiction of the National Museum in Kruševac, in 2020, archaeologists Dr. I. Bugarski from the Archaeological Institute in Belgrade, and M. Bugar from the National Museum in Kruševac, in the area between the villages of Braljina and Maćija (more precisely, about one kilometre northwest of the village) came across a huge commercial clay exploitation zone. After a brief intervention by the Institute for the Protection of Cultural Monuments in Niš, the exploitation was ceased and this newly discovered archaeological site was named Braljina (among the local population there are also toponyms for it, such as Lučina, Maćije and Smrdan). Our colleagues collected prehistoric pottery at the site and informed experts from the Institute for the Protection of Cultural Monuments in Niš and Dr. A. Kapuran from the Institute of Archaeology, Belgrade, who roughly dated this site to the Early Bronze Age. This assumption was also confirmed by Dr. A. Bulatović from the Institute of Archaeology who, in the meantime, for the requirements of his monographs on the Early Bronze and Middle Bronze Age in Serbia, obtained an absolute date from an animal bone taken during the first visit to the site by the experts from the Institute of Archaeology in Belgrade (Bulatović 2025). It should be noted that this site did not exist in archaeological records, in the records of the Museum in Niš, which is responsible for this area, nor in the records of the Museum in Kruševac.

In his PhD thesis, Dr. P. Milojević, of the Institute of Archaeology, located and described in detail the prehistoric sites that are located in the same region (Milojević 2023, 144–147). Here, he identifies the sites of Glavičar, Maćija and the Braljinska Crkva Sv. Sava/Velika Mlaka, from which he also has finds of pottery from the Late Bronze Age and the Early Iron Age. Directly in front of the Maćija site, discovered on the local road in front of the village of Mađare in 1958, a devastated necropolis of cremated deceased of the Paraćin culture (Tasić 1965), that is, from the end of the Bronze Age, 14th-12th century BC, was discovered. This necropolis has been known since the 1930s (Marković 1936, 15), but after a revision of the survey of the terrain by the curator of the Museum in Kruševac in the 1950s, the conclusion was reached that it would be necessary to uncover the rest of the remaining graves in the necropolis. On that occasion, an area of 88 m² was investigated, from which only 2 urns with cremated human remains and bronze objects were uncovered. It was also concluded that over time the water course of the Ražanjska river destroyed the largest part of the necropolis (Tasić 1965a, 187).

Two years after the cessation of clay exploitation on the site and the subsequent negotiations with the owners of

the company that exploited the clay at Braljina, in 2024, rescue archaeological investigations began, and lasted for approximately 45 days. Further exploitation of the area is planned for the future, so researchers have taken LIDAR and thermal imaging of the entire area, all of which has formed the basis for planning further archaeological investigations of a protective nature. The results of these investigations are presented in the present monograph, but it is possible that the protection of the archaeological sites will be maintained in the future.

1.1. Geography of Braljina and its surroundings

The geomorphology of today's Republic of Serbia is characterised by several separate geomorphological areas and ecological systems, of which the most important are the lowlands (plains) of Vojvodina, which form the southern fringe of the Carpathian Basin, the Dinaric Mountain Region and the transitional hilly zone that stretches south of the Sava and Danube rivers (Map 1).

The transitional hilly area stretches from the south of the Pannonian Plain or the right banks of the Sava and Danube, to the Cer mountain in the west and the Šumadija region to the east. The mountainous part of Serbia is divided into the eastern, western, and southern portions. This region, besides being rich in forests, also yielded deposits of tin and copper. The eastern mountainous region is characterised by large deposits of copper, iron, and gold ores. Rudna Glava-dnevni kop, which represents the oldest copper mine in Europe, from 5,000 BC, was also discovered in eastern Serbia (Borić 2009). The river courses of the Great and South Morava divide Serbia into the eastern and western regions. The Iron Gates gorge, in the middle course of the Danube river between the Republics of Serbia and Romania, is the largest tectonic origin gorge in Europe.

Braljina is located in the central part of Serbia at the confluence of the West and South Morava rivers (Map 1; Map 2). The more precise location of Maćija and Braljina is in the area of the Poslon hills and the lower Ražanjska river, on the Ražanj-Stalać road (about 9 km west of Ražanj) (Fig. 1). These villages represent traditional animal husbandry and scattered rural farming type settlements. The environment is known for its abundance of hunting game and, among the other resources, there are significant deposits of clay, which, among other things, led to the discovery, as well as to the devastation, of a part of the prehistoric settlement. In addition to deposits of high-quality clay at the locations of Smrdan and the Smrdanski stream, there were sources of sulphur water, the mud of which was used by herders in ancient times to treat skin diseases in cattle.



Map 1. Geomorphological division of the Republic of Serbia.



Map 2. Position of the Braljina site in western and central Balkans.



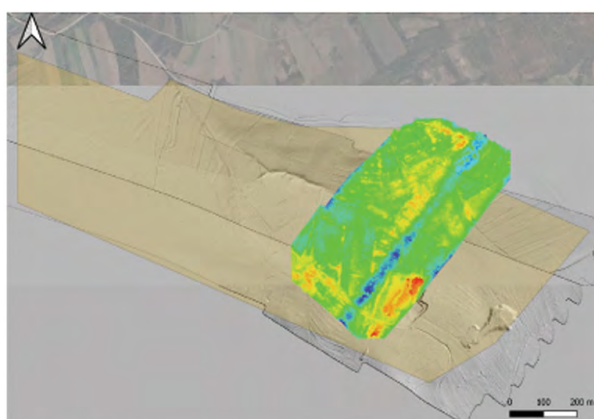
Figure 1. Braljina site (photo-documentation of the Institute of the Cultural Monuments Protection, Niš).

1.2. Archaeological prospection and methodology

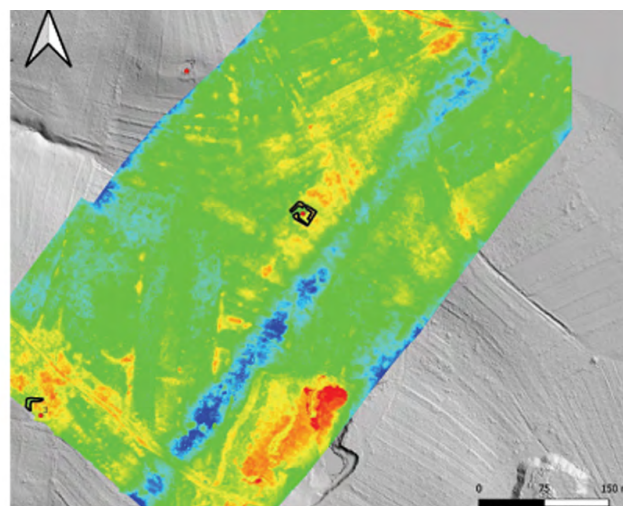
After the denial of further exploitation of clay sediments on the site, the situation was documented and experts from the Archaeological Institute collected a certain amount of finds on the devastated parts of the site for further cultural identification, with the aim of obtaining absolute dates using the C14 radiocarbon method (Bulatović 2025, Table 1/10). The narrower area of the site is estimated at some 20 hectares. A considerable number of visible anomalies in the vegetation were observed by reviewing the satellite images. A further review of satellite images of the last 10 years revealed that the anomalies do not move and do not change in size. This almost certainly excludes the possibility that it is a biological reason, but most likely that it is due to anthropogenic changes that condition the different humidity of the sediment (Fig. 3). The zone where these anomalies occur covered some 15 hectares. Since it was planned to further expand the zone of clay exploitation for brick production to the west and north, the

Institute for the Protection of Cultural Monuments from Niš divided the site into zones of successive exploitation in order to carry out combined non-invasive prospecting methods on an area of 2.1 and 4.1 hectares, which were to be archaeologically investigated. For this reason, the site was divided into 3 zones, of which zone 1 represented the part that was already destroyed by the exploitation of clay (Fig. 2/d). As a basic tool for planning, organizing and monitoring archaeological research, a GIS model was created within the QGIS application for Android and Windows operating systems. In order to detect archaeological contexts, a geomagnetic prospection of the entire zone of priority clay exploitation was carried out.

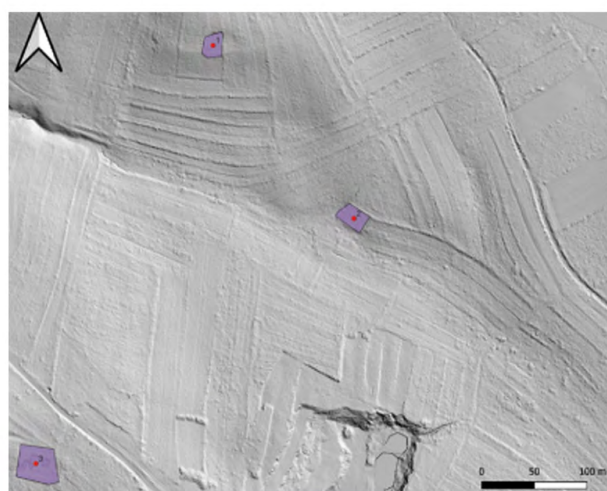
After LIDAR scanning (Fig. 2/c), thermoluminescence prospection (Fig. 2/a,b) and geomagnetic prospection (Fig. 4) were carried out, it was concluded that the terrain is prone to erosion, and further observation of the condition on the terrain shows that the cultural layer is about 0.8–1 m thick. The stratigraphy of the locality is quite simple;



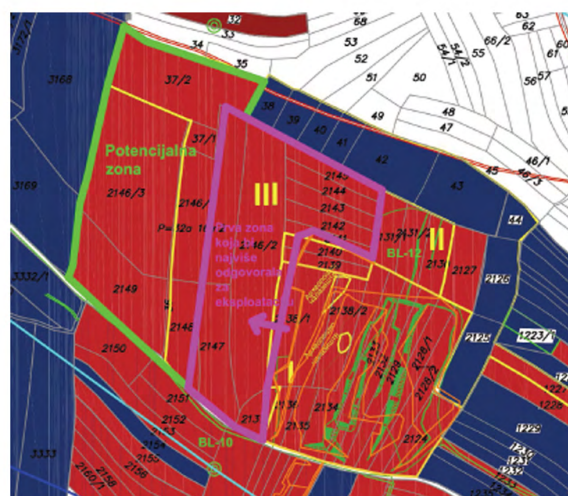
a



b



c



d

Figure 2. Braljina site. a) Thermoluminescence projection; b) Thermoluminescence and LIDAR scan; c) LIDAR scan; d) Cadastral plots and sectors of the site investigations.



a



b

Figure 3. Braljina site. a) Braljina site before devastation (image 4/2019) (Map data ©2025 Google, Imagery ©2025 Maxar Technologies; annotations by the authors); b) Braljina site after devastation (image 9/2020) (Map data ©2025 Google, Imagery ©2025 Maxar Technologies; annotations by the authors).

below the humus layer there is a layer of black clayey and compact pitch soil (vertisol) in which all the archaeological artefacts were found. Below this layer is virgin soil in the form of yellow or grey clay. The zone of future clay exploitation is divided into squares of 20 x 20 m, on the vertices of which micro-geo-drilling was carried out (Figs. 39–40), in order to check the sediment and determine the existence and distribution of the cultural layer on the site and to obtain certain archaeological indicators for planning the research dynamics (Plane 1).

After obtaining preliminary results with zones where certain archaeological units could be expected, the surface

layer of humus (thickness from 0.02 to 0.2 m) was removed by machine over the entirety of the site (Fig. 36). With these combined methods, a picture was obtained in which potential archaeological contexts were separated, which spread over about 24,000 m², while the area explored by archaeological excavations (by hand and machine) was 11,000 m² (Fig. 2/d). About 1.2 tons of pottery finds, stone and animal bones were collected during protective research.

It is important to mention that rescue archaeological excavations were completely funded by the “IGM Mladost” Company from Leskovac.



Plane 1. Braljina site, plane of the rescue excavations area.

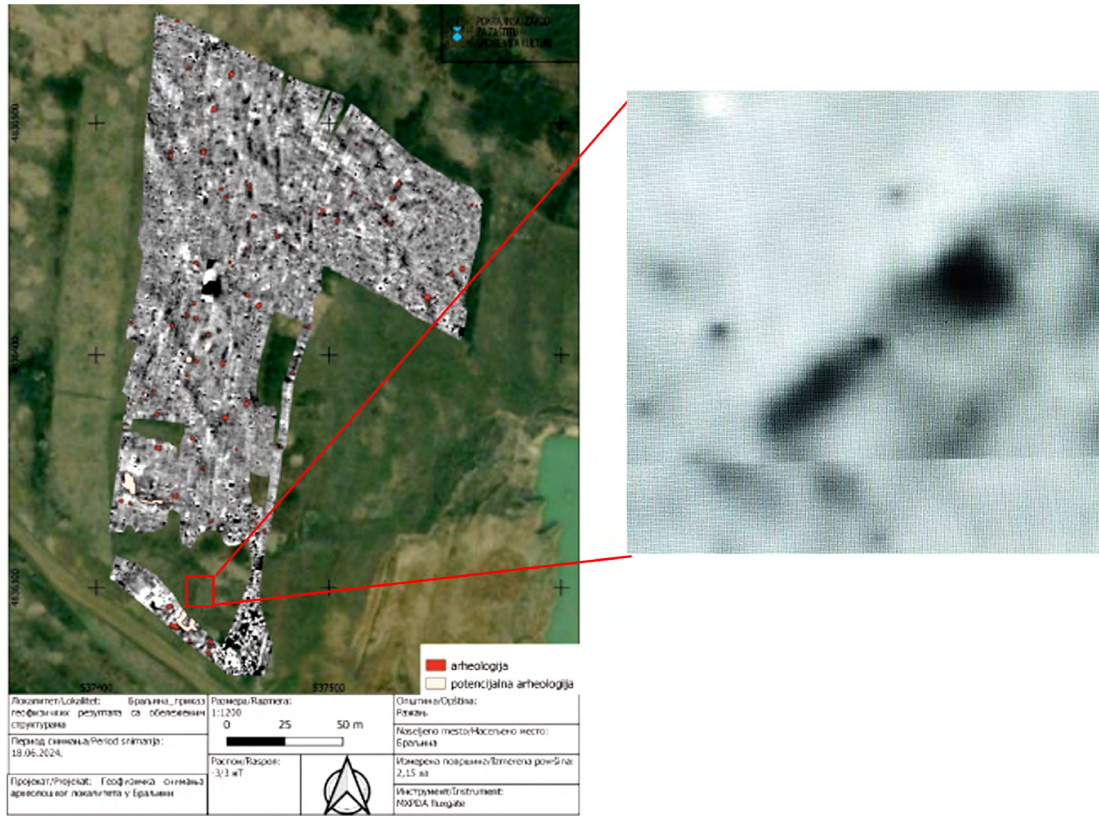


Figure 4. Geomagnetic prospection of the Braljina site and AC 27 (above-ground house) (documentation of the Institute for the Cultural Monuments Protection, Niš).