

## PRELIMINARY ARCHAEOLOGICAL DOCUMENTATION

### Part One: Tasks, Opportunities and Methods

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*In the first part of our planned two-part article, we are presenting an outline of the system of preliminary archaeological documentation (PAD<sup>1</sup>) that must be prepared<sup>2</sup> in the case of large investment projects, the process of its preparation and the site diagnostic methods employed. The PAD is a method for discovering archaeological sites that has been in use for nearly a decade in Hungary. Through its employment, it is possible to get an idea of the archaeological considerations related to the development area for an investment project while still in the planning period. With the aid of a PAD, it is not only possible to gain more precise information about sites that are already known, but by employing its various methods it can determine the type and age of archaeological phenomena that can be expected in areas that are not yet confirmed.*

#### THE “TASK”

In conjunction with the increase in the magnitude of the preventive archaeological excavations connected with investment projects, an increasingly marked demand has appeared on the part of investors and contractors for an ability to precisely plan for the demands of time and expenses necessary for the archaeological tasks. This is an entirely understandable and acceptable demand, since every investor calculates an expense budget and schedule ahead of time, which can be easily upset by an archaeological site that pops up unexpectedly, accompanied by extra expenses and delays due to the excavation. Due to this, the precise identification of archaeological sites or parts of sites endangered by a project's earth-moving work has recently become a task of outstanding importance, determining the concerns to the precision of a square meter.

The question may arise to many – not just laypeople, but even archaeologists with several decades of experience – of why this represents a problem. Since we know the location and extents of the sites, we just need to project this onto the project site, and the rest is just arithmetic. However, the situation is not this simple at all. The locations of a significant number of archaeological sites is not known, and while the number of sites can be estimated to be 100-150 thousand (JANKOVICH-NAGY 2004, 98; WOLLÁK 2009; REMÉNYI-STIBRÁNYI 2011A; REMÉNYI-STIBRÁNYI 2011B; STIBRÁNYI ET AL. 2012, 9; REMÉNYI 2017), the public site registry only contains nearly 70 thousand items (Fig. 1). In other words, this is the maximum number of archaeological sites whose geographic position is known. In addition, to determine the methods of the necessary preventive excavation (an excavation or archaeological observation over the entire area and the earthwork performed in this context) and a precise expense estimate, knowledge of the location of the archaeological site is not sufficient. In addition, the extent, character, intensity and relationship between the strata of the affected section of the site must be precisely determined. Alongside this, it is of fundamental importance to clarify whether the earth-moving work will endanger heritage elements

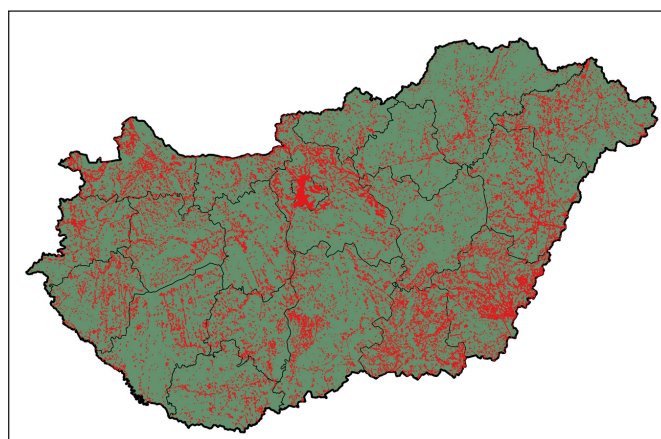


Fig. 1: Registered archaeological sites in Hungary  
(as of October 2018)

<sup>1</sup> The concept of the PAD is contained in section 7, point 3 of Act LXIV of 2001 on the Preservation of Cultural Heritage (Cultural Heritage Act). The definition of what can be considered a large investment is set forth in section 7, point 20 of the Cultural Heritage Act.

<sup>2</sup> Section 23/C, paragraph (1) of the Cultural Heritage Act.

that are to be maintained in-situ, which may even require a re-planning of the project. In the case of these remains, it is not sufficient just to locate the element of built heritage that is at risk, but data is also needed in connection with its condition. This information can only be collected through the complex application of varied methods of research that build upon one another (collection of archival archaeological and cartographic data, field walks, detection of archaeological sites and finds with sensing equipment and test excavations). It is not only information of an archaeological character that is needed to select the proper methods, plan the complex research, and then analyze the heritage preservation impact and determine the further tasks to be performed. The conditions of the area affected by the earth-moving work and the technical parameters of this work within the planned project must also be known. In terms of planning the research and determining the extent, expenses and time demands of the methods for the later preventive excavation, it is quite significant whether one is talking about a 50 cm wide public utility line, a downtown building that includes an underground parking garage of several levels or a wood-framed warehouse to be placed on pile foundations.

### THE PROCESS OF PREPARING THE PAD AND THE METHODS EMPLOYED

Taking the above considerations into account, as well as on the basis of the experience gained in preparing heritage preservation impact analysis statements, the Forster Center<sup>3</sup> worked out the preliminary archaeological documentation (PAD) system in 2015, which is comprised of the main work phases set out below.

The work begins with the processing of the planning and other data that arrives from the contractor. On the basis of the planning documentation and the technical description received, the colleagues of the Archaeological Department of the Várkapitányság Nonprofit Zrt. examine the condition of the area in question, including the geographic circumstances and the previous and current land use (level of development, cultivation, vegetation, etc.), as well as the technical parameters of the planned project, including the size of the area affected by the earth-moving work, the depth of the foundation work, the technology, etc. The next step is the collection of the available archaeological and cartographic data and information. In terms of the archaeological data, the starting point is the collection of data from the public registry of archaeological sites and the site's cartographic depiction. Following this, the collected data is collated with the museums with archaeological collections that have territorial jurisdiction. Then, the planning of the archaeological research related to the actual investment is begun on the basis of the data related to the areas to be assessed, the investment project and the affected archaeological sites.

In every case when the conditions of the area to be examined allow (development, vegetation, etc.), a field walk is performed on the site. The field walk is always performed with the use of hand-held GPS devices, which record the route taken and the location of every collected surface find. The recording of the route taken is important from the perspective of the precise demarcation of the examined area, and through the marking of the find materials it is possible to assess the intensity of distribution of surface finds (Fig. 2).

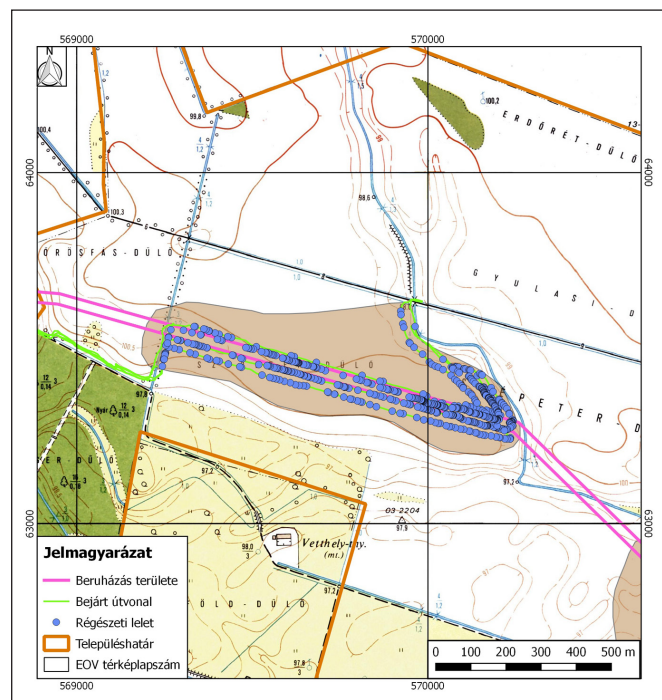


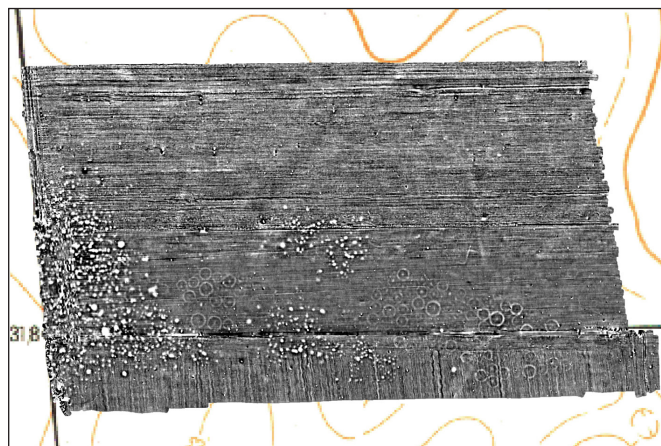
Fig. 2: Recording of data with a hand-held GPS device during a field walk (excavation leader: Bettina Bittner)

<sup>3</sup> The Act on Cultural Heritage prescribed the obligation to prepare a PAD. At first the county museums prepared them, then the task fell to the Hungarian National Museum-National Heritage Center and then to the Forster Center. Following the dissolution of the latter, the Act on Cultural Heritage entrusted the “heritage preservation body indicated in the law”, the Budavári Nonprofit Kft. with the preparation of PADs. The current organization performing the task is the Várkapitányság Nonprofit Zrt.

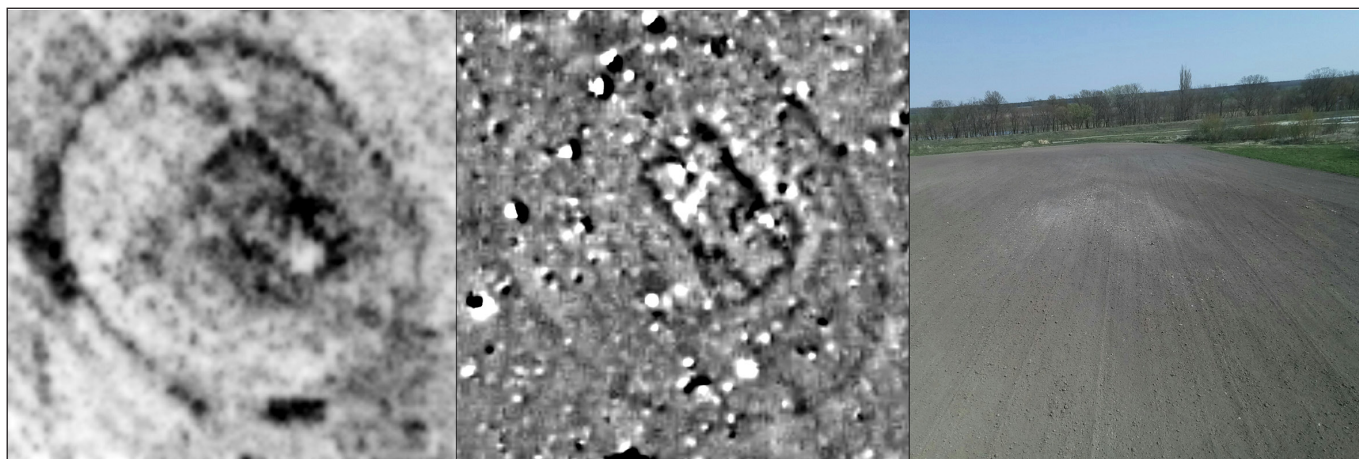
Field walks are one of the most effective methods for discovering archaeological sites, but their limitations absolutely must be taken into account when evaluating the results. The method is only able to identify cemeteries in rare cases and is also only effective if the layers of soil covering the site have been disturbed enough so that the find materials can make their way to the surface (STIBRÁNYI-MESTERHÁZY-PADÁNYI-GULYÁS 2012, 15; MESTERHÁZY 2013).

The next potential research phase is the detection of archaeological sites and finds with sensing equipment. This includes aerial imaging, which has a long history and is also an effective way to discover sites. However, the limitations of this method make its general employment during the preparation of a PAD problematic. Aerial archeological sensing can only be effectively used during certain seasons. The signs in the landscape, vegetation and snow can only be detected in specific seasons, and the weather at the time as well as the time of day are also important factors (MIKLÓS 2011). Therefore, effective aerial archaeological sensing can only be performed over longer periods of time covering several vegetation cycles, time that is rarely available in the case of PADs that are commissioned with a deadline of a few weeks. One of our prominent tasks in the coming period is to more fully integrate this method into the complex system, exploiting money-saving drone technology that is becoming more widespread.

Less problematic are the various methods of geophysical surveying (HEILIG-KOVÁCS-PATTNYTÚS 2011; STIBRÁNYI-MESTERHÁZY-PADÁNYI-GULYÁS 2012, 21-22; STIBRÁNYI 2016), which are therefore used in daily practice during the preparation of PADs, with the exception of projects comprising only a narrow path. The most commonly employed method is magnetic (magnetometer) surveying, which can be used in a cost-effective manner for the surveying of large undeveloped areas (*Fig. 3*). At the same time, the utilization of this method is made difficult due to several factors. Magnetic surveying is primarily suitable for soil with a high clay content, while in the case of sandy soils its results are unreliable and development or contamination of the soil with metal represent impediments to it. Another problem is represented by skeletal burials, where the magnetic characteristics of the refilled soil do not differ from the surroundings. Ground-penetrating radar and instruments for measuring electrical resistance of the soil are used primarily for researching built heritage elements. Through the joint utilization of these two methods, it is possible to gain a ground plan of the buildings with a precision that was previously only possible to determine based on excavation results (*Fig. 4*).



*Fig. 3: Settlement phenomena and burials with circular ditches from a magnetometer survey on a 15 hectare development site (survey: Salisbury Kft., processing and analysis: Mihály Pethe, visualization: Gábor Mesterházy)*



*Fig. 4: Research on an Árpád-period church: ground-penetrating radar and magnetometer surveys as well as aerial photography (survey: Várkapitányság Nonprofit Zrt. Archaeological Site Diagnostic group, processing: Zsombor Klembala; visualization: László Nagy)*

The most expensive method in the toolbox of site-diagnostic examinations is the test excavation. In addition, in contrast to the methods presented above, this is an invasive method of investigation that is accompanied by the destruction of the feature examined, causing a permanent change in the condition of the archaeological site. Due to this, test excavations are only performed when justified. In cases where its use can be avoided in accordance with the laws in force, a so-called simplified PAD is prepared without the use of a test excavation. On the one hand, this is sometimes the case if the magnitude of the earth-moving work does not justify a test excavation (interventions with a path that is narrower than 3.5 meters and affecting less than 1,000 m<sup>2</sup>), or if the methods and expenses to perform the additional necessary archaeological tasks can be precisely determined on the basis of other data (examinations using instrumentation or previous excavations performed in the immediate vicinity of the earth-moving work).

However, in many cases a test excavation cannot be avoided. On the one hand, non-invasive methods may not be able to be employed on certain areas, for example due to previous disturbances or ground cover, and on the other hand, it may only be possible to obtain precise information related to the stratigraphic relationships, character and age of the archaeological site through a test excavation. When possible, efforts are made to minimize the size of the area to be investigated by combining the test excavation with geophysical surveying.

Following the performance of site-diagnostic examinations, a heritage preservation impact assessment is performed. During this, the area and depth of the earth-moving work for the planned project that will endanger the elements of archaeological heritage is assessed on the basis of the archaeological information and technical data, as well as the character of further necessary measures. The first task is to identify and demarcate the heritage elements that are to be retained in situ, and in this case it is recommended to avoid these remains that are to be protected. According to the current laws in force, if it comes to light during the impact assessment that the planned earth-moving work will endanger the elements of archaeological heritage, a preventive excavation on the section of the site affected must be performed down to the greatest depth of this work. The method for this may be an excavation over the entire area or may be archaeological observation, in the context of which archaeological digs may also be performed. The latter is recommended in cases defined in the law,<sup>4</sup> such as when the planned earth-moving work will not affect the elements of archaeological heritage or will do so only to a minor degree, when the incidence of the archaeological phenomena is expected to be scattered, or when the depth of the earth-moving work related to the project will not reach the depth where the elements of archaeological heritage will appear. The situation is the same when the area of the registered archaeological site affected by the project has been disturbed by previous earth-moving work or when the archaeological tasks cannot be performed in any other way due to the technical character of the investment project. When determining the costs of the excavation, the starting point on the one hand is the official unit prices,<sup>5</sup> and on the other hand, the size of the area to be excavated, while also taking into account the expected number of strata for archaeological sites that have multiple strata. In the area of historic city centers, the selection of the proper official unit price occurs on the basis of the expected intensity of the features.

In the last four and a half years the Várkapitányság Nonprofit Zrt. and its legal predecessors (the Forster Center, the Budavári Nonprofit Kft.) have aided in the planning and smooth implementation of several hundred investment projects through the preparation of PADs, the certified identification of archaeological sites and the determination of the demands of money and time for excavations. This is done while always keeping in mind the principles of heritage preservation and the laws in force. The results, the successes and failures, as well as the factors that make the work more difficult will be covered in the next section of this article.

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<sup>4</sup> Section 22, paragraph (3) of the Act on Cultural Heritage

<sup>5</sup> Appendix no. 8 of Governmental Decree 68/2018 (IV.9) on Regulations Related to the Preservation of Cultural Heritage.

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