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ARCHAEOLOGICAL POTENTIAL OF THE EARLY BRONZE AGE BARROW BURIAL GROUND IN SZCZEPANKOWICE: A GEOPHYSICAL SURVEY AND FIELD EVALUATION

Abstract: The site of Szczepankowice, situated 24 kilometres southwest of Wrocław is considered to be one of the most important for studies of the Early Bronze Age in Central Europe. In this paper we present a new assessment of the archaeological potential of the Szczepankowice (sites 1–4) and the surrounding area, based on research including metal detecting, field walking, excavations and geophysical prospection undertaken in 2012. The purpose of the evaluation was to determine the presence or absence, extent, condition, character, quality and date of archaeological deposits within the area. Earlier discoveries including large quantities of boulders still found on the surface, potentially indicated presence of funerary monuments such as barrows at Szczepankowice.

Key words: Early Bronze Age, pre-Roman period, barrow burial, geophysical survey

1. INTRODUCTION

The site Szczepankowice 1 was discovered at the beginning of the 20th century, during sand extraction by a local brickyard (photographic archives in the Archaeological Museum in Wrocław; Sarnowska 1962, 61; AP file 661, Sarnowska 1969, 292; Gralak 2011, 213). Grave inventories uncovered before the 1930's seems to indicate mainly Neolithic and Early Bronze Age human activity. Szczepankowice site no.1, with an area of approximately 22 ha was linked specifically to a large Early Bronze Age barrow burial ground with an adjacent flat cemetery; while Szczepankowice site 4 (ca. 27 ha) located less than 2 km NW is associated with large Iron Age settlement. In the 1930's the barrows in Szczepankowice were legally protected as ancient monument, although incorrectly described as remains of a medieval *motte-and-bailey* (Sarnowska 1962, 63).

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In the early 1960's the central part of Szczepankowice 1 and barrows IA/IB had been excavated by the Archaeological Museum in Wrocław (Sarnowska 1963; 1969).

During excavations in 1961, the remains of four individuals were retrieved from these tombs, which formed one massive hill (Pokutta & Frei 2011). Hundreds of stones and slabs were used as building material for the stone chambers in the older barrow IA, surrounding the interment of an adult male (Pokutta 2013, Allentoft *et al.* 2015). Among the stones forming the walls of the tomb, excavators discovered thirty grinding stones, some of which were non-local and of significant size and weight. This is the only known case of worked stone being used as building materials in the princely graves of the Early Bronze Age Europe. Presumably these objects could play a role in a belief system and were seen as a physical manifestation of household wealth and stability (Pokutta & Frei 2011). The upper barrow (IB) contained the remains of

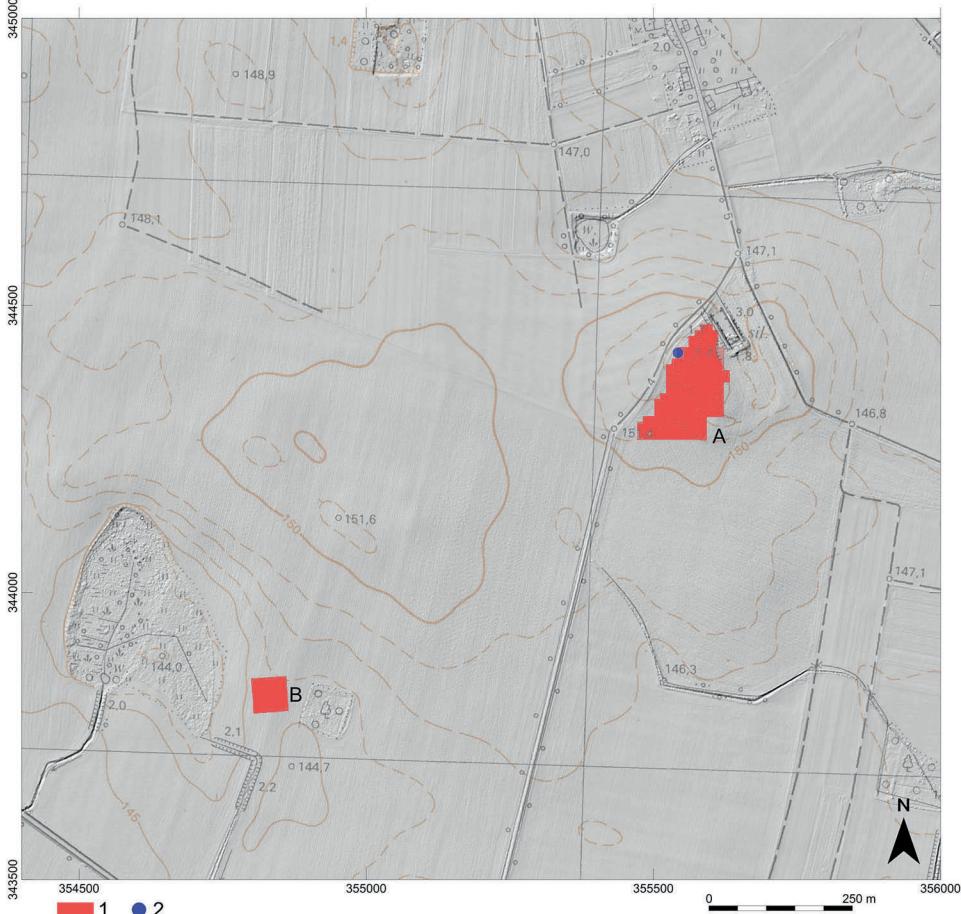


Fig. 1. Szczepankowice, Kobierzyce County, Silesia. Site location and survey coverage: A – Szczepankowice site no. 1; B – Szczepankowice site no. 4, the so-called Luke Marshes; 1- geophysical survey; 2- location of barrows according to archival maps. Graphics by M. Furmanek

a child and a female. Both tombs were associated with the Únětice culture (2200–1750 BC) and radiocarbon dated to 3559 ± 24 BP (IA) and 3522 ± 24 BP (IB) (Pokutta 2013, 218–224). Another crematory grave of non-adult has been identified in 2010 and dated to 2207 ± 36 BP (Pokutta 2013, 64), linking the existing Early Bronze Age barrows with the adjacent Iron Age settlement located at Szczepankowice 4.

It seems feasible that Úněticean princely graves were re-used as places of burial in later times, and may have been searched and robbed, probably by Celtic inhabitants of prehistoric Silesia. Barrows in Szczepankowice site 1 were elevated above the surrounding landscape being sited on top of plateau which in pre-war archives is known as Kubitzkyberg or Kubitzkeberg. Some elements of the landscape indicate that the plateau might have been steeper and higher in prehistoric times (Fig. 1). In 1987 the whole area was surveyed again by Andrzej Kosicki and registered on maps of the Polish Archaeological Record (AZP, site 1 with new location site 92 AZP 83–28). Szczepankowice site 4 (on older maps marked as ‘Luke Marshes’) is situated on a slope of mild plateau 1.5 km NW (Fig. 1). Due to the uneven land formation the central part of the site has turned into a natural sinkhole, seasonally waterlogged and covered with marshland vegetation. Surface finds indicate the presence of a large Iron Age settlement, interlinked to other adjacent multi-period sites: Szczepankowice sites 2, 5, 6 and 7 (dating back to the Neolithic, especially the Funnel Beaker and Corded Ware cultures); Szczepankowice sites 6 and 7 (Late Bronze Age); Szczepankowice sites 5–6 (Iron Age) and early medieval (Szczepankowice 7). Centuries of intensive farming and sand mining has altered the landscape significantly. Archaeological sites in the Szczepankowice region are located on very fertile soils, rich brown cambisols with patches of calcic chernozems, which developed from periglacial loess. For Szczepankowice 1 the typical depth of topsoil and subsoils was 0.40 m, while at the so-called Luke Marshes (site 4) the overall depth of capping humic layers exceeded 0.80 m.

2. METHODS

Previous archaeological investigations in the area have identified substantial remains of Bronze Age and Iron Age date, in addition to remains of the Neolithic, medieval and post-medieval periods. The project targeted two sites (Szczepankowice 1 and 4) for detailed survey using a Bartington 601-2 dual sensor gradiometer system. Additionally field walking, metal detecting and excavations have been undertaken to verify the results of geophysical prospection. The geophysical investigation at Szczepankowice 1 covered an area of 1.87 ha and 0.36 ha at Szczepankowice 4 (Luke Marshes).

The magnetic data was acquired using a Bartington Dual Sensor Gradiometer System. This instrument has two sensor assemblies fixed horizontally 1m apart, allowing two traverses to be recorded simultaneously. Each sensor contains two Each fluxgate sensor contains two magnetometers with a 1m vertical separation, and measures the vertical magnetic gradient between the total magnetic field at each fluxgate magnetometer. This arrangement of magnetometers suppresses any diurnal or low frequency

effects. The magnetometers have a resolution of 0.1nT and measurements are logged at intervals of 0.25 m along traverses spaced 1m apart (zig-zag). All of the data were stored on an integrated data logger for subsequent post-processing and analysis. Scanning surveys consisted of recording transects of data within 10 m square grid. The data was depicted using a greyscale plan to indicate the relative strength of the signal at each measurement point. The magnetic data collected during the reconnaissance was processed using TerraSurveyor software (version 3.0.28.1 by DW Consulting).

3. RESULTS

3.1. Metal detecting

Metal detecting revealed high concentration of metal objects (mainly metal scrap, wires etc.) in the NE corner of site 1. This sector is contaminated with layers of modern rubbish, dumped and compressed in the ground. During the survey a lead bullet was found, which may have been used in early modern firearms (17th-18th centuries). According to archival data, in World War II the Early Bronze Age barrow in Szczepankowice was used as an anti-aircraft artillery stand by both the Soviet and German armies, which explains significant volume of metal items buried in this place. In the early 1960's, when the barrow was excavated

W. Sarnowska discovered a 33-meter long defensive trenches, also located in the northern part of the site (Sarnowska 1969).

3.2. Field walking

Field walking (site 1) revealed large boulders scattered across the site (possible the remains of underground stone structures), a single shred of IA pottery, iron slag, flints and disarticulated burnt human bone. At Szczepankowice 4 in the vicinity and around the marshes, significant quantities of pottery have been uncovered (Fig. 2). Surface finds of ceramic materials associated with the Lusatian culture and dated to BA Period V and Hallstatt C prevailed. Pottery associated with La Tène period has been found, including graphitized ceramics (Fig. 3). So far no ceramics associated with later Iron Age have been found (that is clearly associated with the Przeworsk culture) which may indicate that settlement at Luke Marshes pre-dates the LTB₂-LTC₁ periods. Certain groups of finds can be linked to the Migration Period, early Medieval and Modern

Szczepankowice 4		
Ceramics	Collected (kg/430 m ²)	Estimated (kg/27ha)
Surface	6.7	4207
Topsoil & Subsoil	0.5	12621
Total	7.2	16828

Fig. 2. Archaeological potential of Szczepankowice site 4: ceramics. Graphic by D. Pokutta



Fig. 3. Szczepankowice site 4, surface finds. The Lusatian Culture: A – coarse ware; B-C – graphitic ware. La Tène period: D – fine ware; E – graphitic ware; F – handmade ware; G-H – smoothen ware. Photo by T. Gralak

Ages (Fig. 4). Iron slag found on site seems to be linked to local smelting workshops, possibly La Tène period or later.

3.3. Geomagnetic prospection

The detailed gradiometer surveys were successful in identifying anomalies of anthropogenic origin at both sites, with the results presented in Figs. 5–6 and Fig. 7–8. Current interpretation of the datasets highlights the presence of archaeological features, ferrous/burnt or fired objects, and areas of general increased magnetic

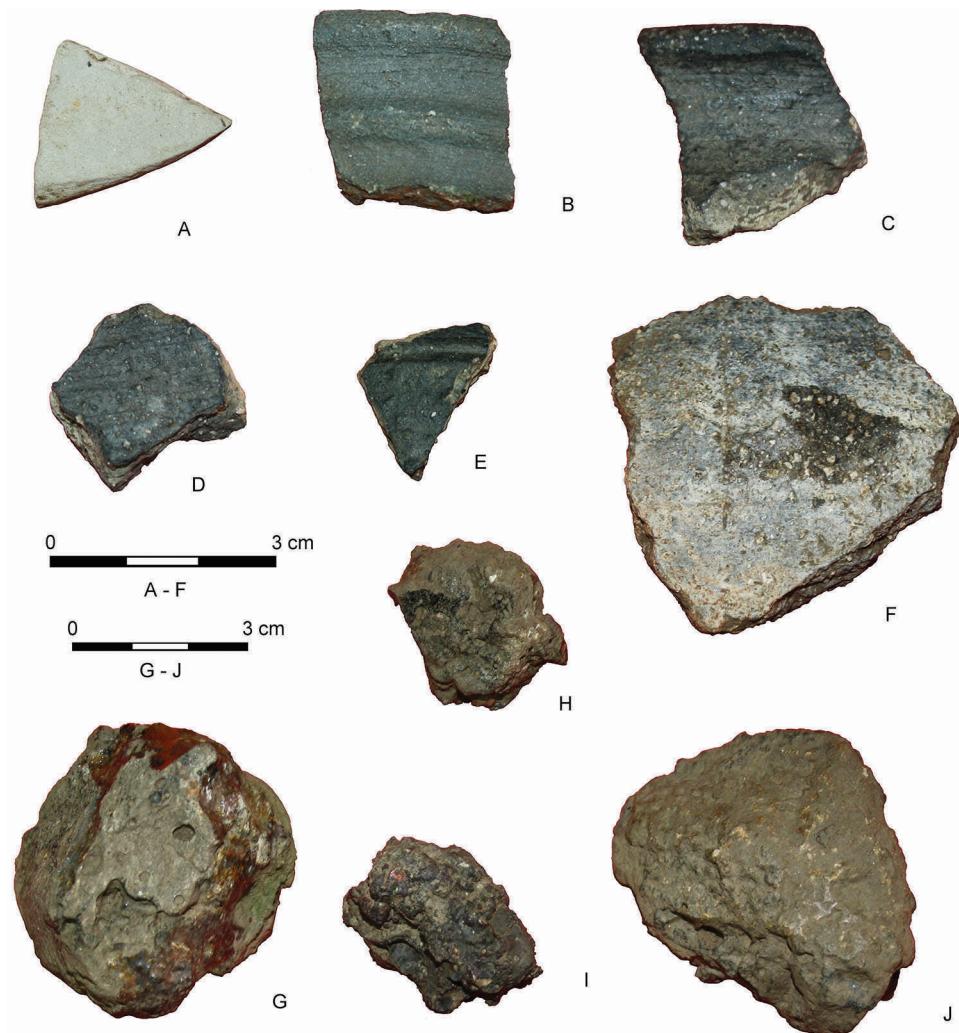


Fig. 4. Szczepankowice site 4, surface finds. Migration Period: A – fine ware; B-E – coarse ware; F – sherds of storage vessels; G-J – Iron slag. Photo by T. Gralak

response. In Szczepankowice 1 analyses covered the area of 1.87 ha (Fig. 5). Surveys revealed significant number of dipole anomalies distributed throughout the site. The majority of dipole anomalies seem to concentrate along the modern road running approximately NE-SW. It is expected that the mentioned area is contaminated with modern building materials such as bricks, stones and metal objects. Survey confirmed another accumulation of ferrous and burnt materials in the northern sector of the site, probably associated with military activities or disposal of rubbish in abandoned sand mill (Fig. 6 a-b).

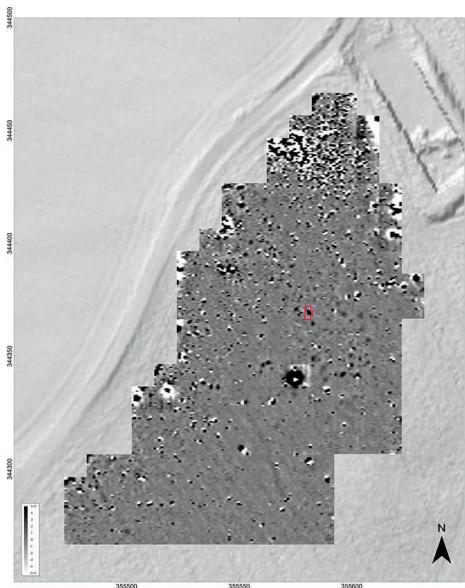


Fig. 5. Szczepankowice site 1, Kobierzyce County, Silesia. Geophysical prospection and greyscale plot with location of the trench 1. Graphics by M. Furmanek

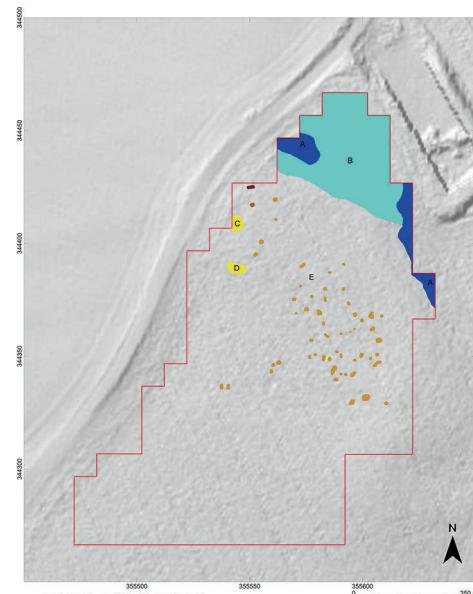


Fig. 6. Szczepankowice site 1, Kobierzyce County, Silesia. Archaeological interpretation: 1 – Increased magnetic response (sand mill?); 2 – Decreased magnetic response; 3 – concentrations of dipole anomalies (stone structures?); 4 – anomalies exceeding 50 nT; 5 – anomalies in between 11\$1–\$249 nT; 6 – anomalies in between 1\$1–\$210 nT

Anomalies considered to be of archaeological origin on site 1 are located in central and NW sectors. Data indicate stone structures as potential sources of increased magnetic signals (Fig. 6c-d). One of these anomalies may represent the magnetic halo of the Uneticean barrow IA/B excavated in the 1960's. Another area of increased magnetic response located approx. 15m to the south indicates the existence of a large probably stone structure in the central part of the site. The exact interpretation in this case remains inconclusive; however this discovery corresponds with archival data suggesting the existence of another heavily destroyed EBA barrow on site (Fig. 6D). Weaker positive anomalies (≤ 5 nT) have been recorded as well. These form oval concentration of features (running SE-NW) and are considered to be of high archaeological potential (Fig. 6E). Similar patterns do not occur in the other sectors of the surveyed area, excluding the SW part where anomalies associated with archaeological features form a single row running approximately W-E (Fig. 5).

Geophysical prospection at Szczepankowice 4 covered 0.36 ha (Fig. 7). Survey revealed magnetic anomalies associated with modern agriculture and surrounding geological bedrock. Anomalies considered to be of archaeological origin in the area comprised three anomalies located in northern part of surveyed area (Fig. 8).

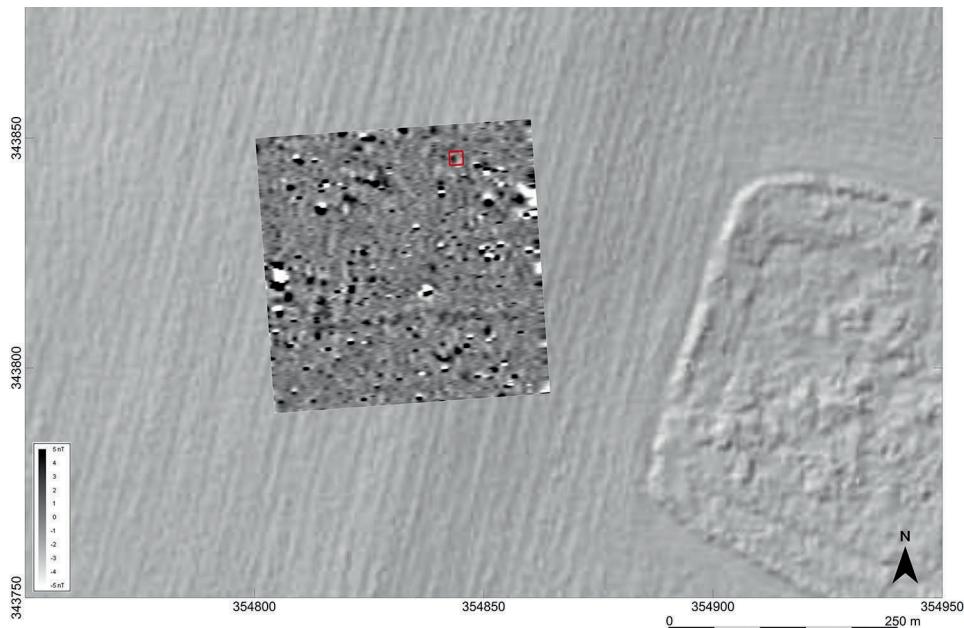


Fig. 7. Szczepankowice site 4 (Luke Marshes), Kobierzyce County, Silesia. Geophysical prospection and greyscale plot with location of the trench 2. Graphics by M. Furmanek

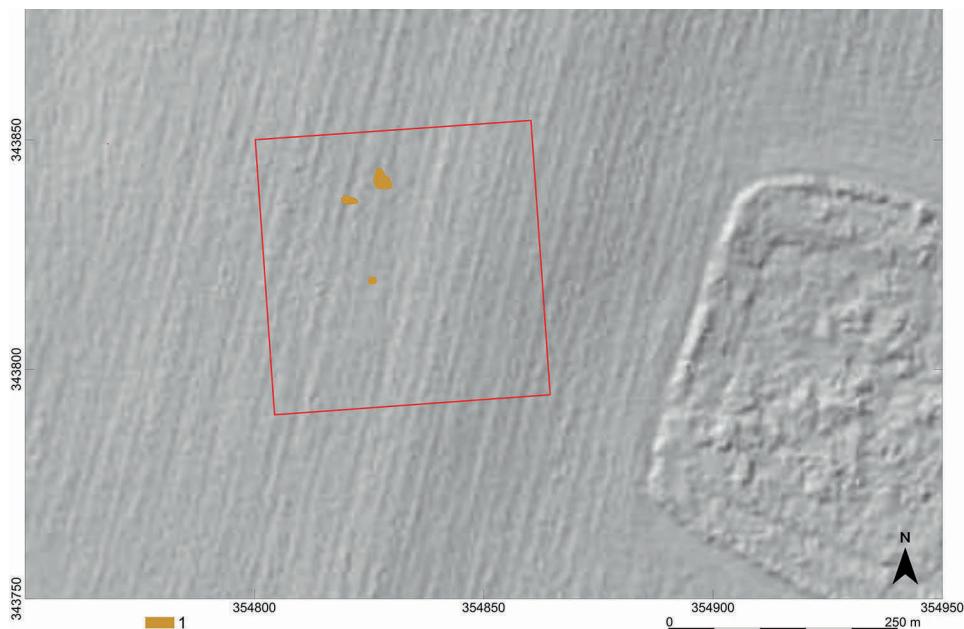


Fig. 8. Szczepankowice site 4 (Luke Marshes), Kobierzyce County, Silesia: 1 – anomalies in between 1\$1–\$210 nT. Graphics by M. Furmanek

3.4. Excavations

The location of two trenches opened in 2012 in Szczepankowice 1 and Szczepankowice 4 was determined by the results of the geophysical survey. In trench 1 (Szczepankowice 1) surrounding natural comprised postglacial greyish yellow sand covered by a dark brown humic layer (0.40 m). Plough scars have been recorded at the bottom of a trench. Excavations uncovered the remains of a lime kiln (feature 1). It is likely that the construction and use of this oven or kiln was linked to the pit (feature 2) with animal bone deposits (feature 3) located nearby.

In plan the lime kiln was an elongated oval feature (1.60×3.40 m) with total depth of 0.75 m. The feature was cut by a modern pit with some stones (depth of 0.20 m) in the central part of the section. The internal chamber of the oven was filled by brownish sandy clay with lime patches at the base (Fig. 9, 10). Significant quantities

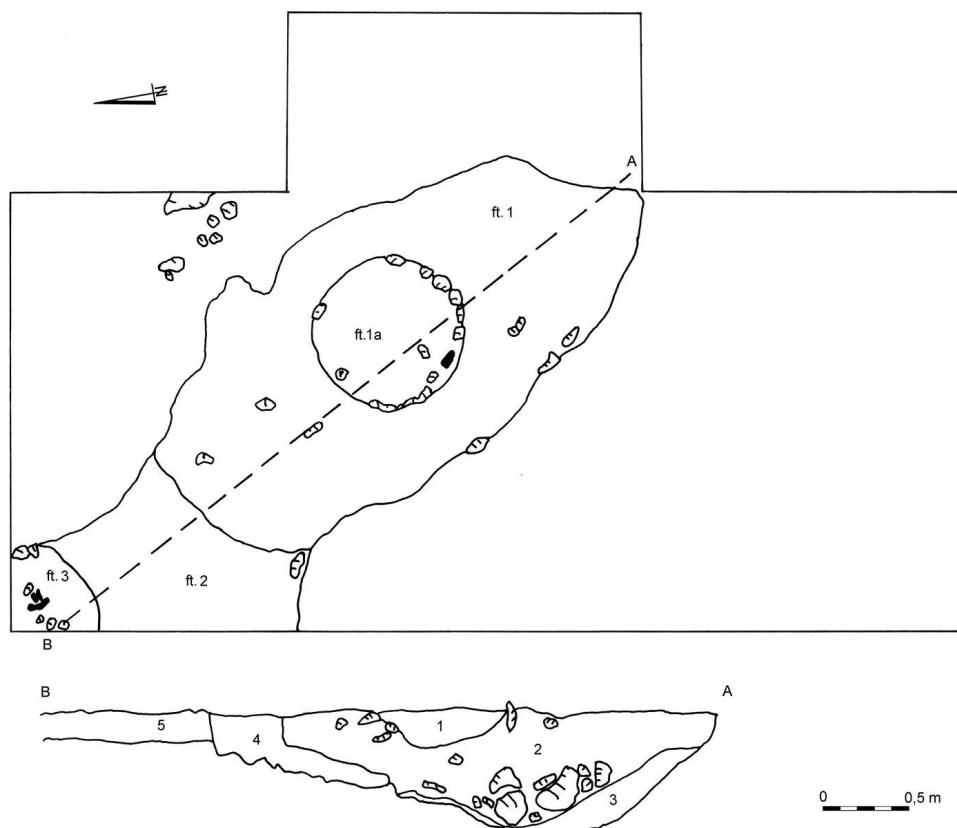


Fig. 9. Szczepankowice site 1; trench 1 and features 1, 2 and 3. In section: 1 – Greyish brown and sandy humus; 2 – brownish sandy clay; 3 – light brownish sand; 4 – dark brown solid clay; 5 – grey sandy humic layer. Drawing by D. Pokutta



Fig. 10. Szczepankowice site 1, feature 1: SW facing section of IA kiln. Photo by T. Gralak

of greyish green slate were found, which originally covered the structure from the inside. Some evidence, such as thermal halo and burnt bones and ceramics indicate high temperature of burning and conflagration. Based on formal dating evidence, feature 1 was dated to pre-Roman Iron Age and possibly associated with the Przeworsk culture. The chronology of the bone deposit found on site (remains of piglet *Sus scrofa f. domestica*, feature 3) was based on pottery dating to La Tène period (Fig. 11). In Silesia, similar kilns as those discovered at Szczepankowice can be found in Grębocice, County Polkowice, where comparable structures were dated to the late La Tène period and linked to the Przeworsk or the Jastorf cultures (Dymek 1988).

Excavations at Szczepankowice 4 (trench 2, 4×4m) were targeted on a strong set of geophysical anomalies, but sondages dug through subsoil revealed features of low archaeological significance. The local natural comprised of heavy yellow silty clay, topped by a thick layer (0.75–0.80 m) of blackish and poorly drained mineral soils, typical for wetlands and marshes. At the bottom of the trench LBA Lusatian pottery was found (several shreds) and burnt granite cobbles. It seems feasible that the mentioned findspot belonged to the broader belt of diluvium surrounding adjacent pond located within a seasonally flooded agricultural undulation. Both pottery and stones indicate possibly destroyed fire pits and were transported by gravitational movement of water and soil on the slope.

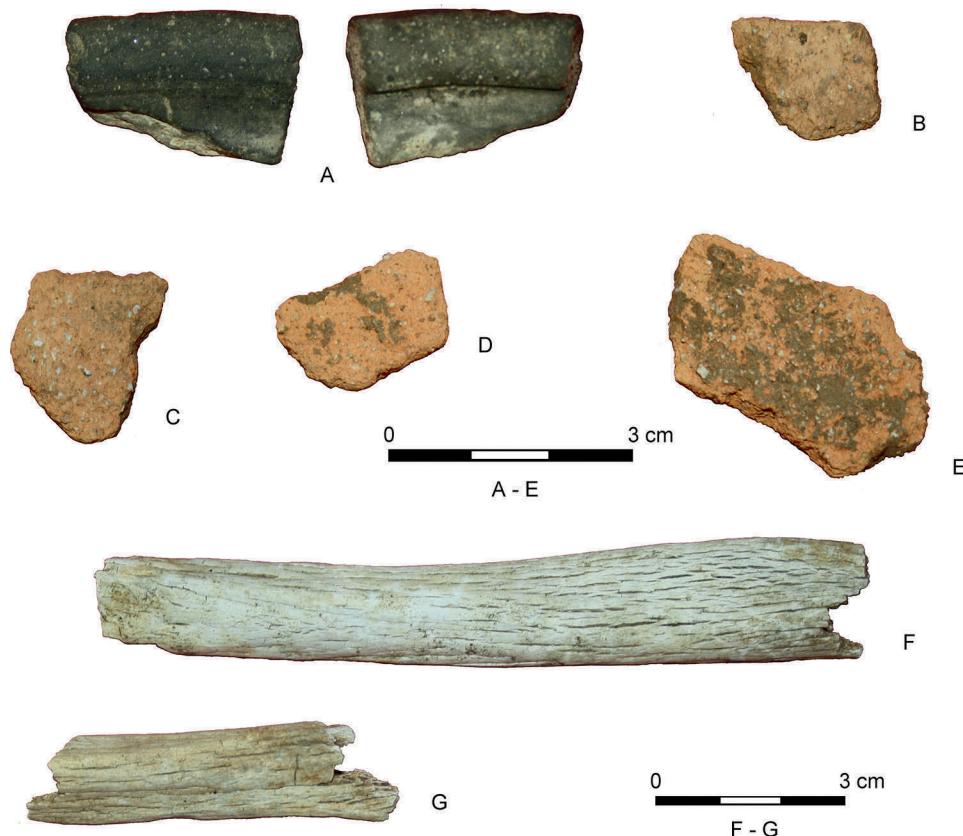


Fig. 11. Szczepankowice site 1; La Tène period: feature 1; B, E – smoothen ware; F-G – burnt bones; feature 3; A – fine ware; C, D – smoothen ware. Photo by T. Gralak

4. CONCLUSIONS

The archaeological evaluation and geophysical work undertaken by the authors have been largely successful in meeting the aims set out in the project design. In addition to establishing the nature of the archaeological remains, it has also been possible to characterise certain number of the features identified, and provide a rough idea of the archaeological periods represented on the site. It is clear from the evaluation that the preservation of these remains is generally good, with some of the archaeological features excavated sealed beneath diluvial subsoils. Unfortunately, given the unexpected scale of the archaeological remains exposed (esp. at Szczepankowice 4), it was not possible to establish the full extents of the site, nor was it possible to fully characterise the archaeological remains. However, the identification of such large sites, spanning from the Neolithic to early Middle Ages and relatively undisturbed

by later settlement is significant both in a regional and a national context. Gathered data sheds light on the nature, date range and scale of prehistoric human activity at Szczepankowice. It was possible to confirm the exact location of the Early Bronze Age barrows excavated in the 1960's by the Archaeological Museum of Wrocław and associated with the Unetice culture (2200–1700 B.C.). The so-called princely graves belonging to that culture are very rare and can be only found in few other places in Europe (Germany, Czech Republic). In Poland only five similar barrows were excavated since 1945, therefore new geophysical data from Szczepankowice 1 indicating new unexplored barrows is extremely important. It has been suggested already by Wanda Sarnowska and her team that destroyed tombs may be present on site 1, and our initial data seems to confirm that potential. It seems feasible that the discussed barrows were part of a larger Uneticean barrow burial ground. One should highlight that this particular region, surrounding Szczepankowice shows a very dense pattern of EBA settlements and cemeteries, with many sites being located no more than 2 km from each other (Gralak *et al.* 2006; 2009; Pokutta *et al.* 2015). Therefore, both barrows and spatially organised sacred landscape may have had some chronological relationship to the surrounding EBA settlements and cemeteries.

The magnetic survey and excavations have identified a plethora of anomalies associated with a settlement dated to the Iron Age as well. The lime kiln at Szczepankowice 1 and substantial quantities of ceramics from Luke Marshes seem to indicate the existence of a large and prosperous village that can be possibly linked to the Lusatian culture. It seems feasible that in later periods EBA barrows were re-used as burial places (IA crematory grave dated to ca. 280 BC, Pokutta 2013, 64) and probably also plundered by inhabitants of the surrounding settlements. Uneticean barrows at Szczepankowice were robbed in antiquity and IA ceramic materials have been found inside the tombs (Sarnowska 1969, Fig. 128:g-j).

The pottery assemblage is worthy of further analysis in order to refine the preliminary dating, in particular to distinguish between possible Late Bronze Age, Iron Age and the Migration Period at Szczepankowice 4. Initial data clearly indicates a large settlement originally associated with the Lusatian culture from BA Period V–Hallstatt C. Pottery found on the surface also suggests long-term use of the site in the following La Tène period (C-D). Currently there is no data to confirm the existence of a cemetery. Significant volume of archaeological remains, including organics may be deposited in waterlogged sectors on the site, with settlement structures located on a slope above it. One of the problems in establishing the chronology of the site has been in the similarity of the undiagnostic body sherds of pottery dated to the Bronze Age or Iron Age.

It seems possible that Szczepankowice site 4 comprise of two prehistoric settlements stratigraphically overlapping each other. The first settlement may have been associated with the LBA/IA Lusatian culture, and the second was probably linked to Celtic inhabitants of Silesia from the La Tène period. Celtic settlements from the period LTCD are rare in Silesia (Gralak 2012, 157; Zipser 2008, Figs. 1–4). The origins

and nature of this settlement are unclear as too little has been excavated to indicate with confidence how extensive the settlement was at different periods.

There is little evidence for activity on the site in the later medieval or post-medieval periods. A lead bullet found on site 1 may be linked to Modern Age military conflicts (e.g. Thirty Years' War 1618–1648), when according to the archives Bronze Age barrows served as artillery stands (AP, file 661). The sheer volume of metal scrap from World War II also indicates intensive military operations. In 2012 during the field walking the authors found a “20 mortar shell in the adjacent fields and according to historical data the EBA barrow on site 1 was hit by a missile in the winter of 1944 (remains of the projectile were found in 1961 during excavations). It seems feasible that the overall destruction of archaeology and specifically the Bronze Age barrows in this part of Silesia significantly accelerated during the war. The excavations have revealed that archaeological remains on both sites are well preserved, and that in some areas thick layers of diluvial subsoils have protected the archaeological features from more recent ploughing. In the light of the potential significance of the archaeological remains identified at Szczepankowice it is recommended that geophysical survey and the trial trenching should continue.

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