11TH INTERNATIONAL SCIENTIFIC CONFERENCE

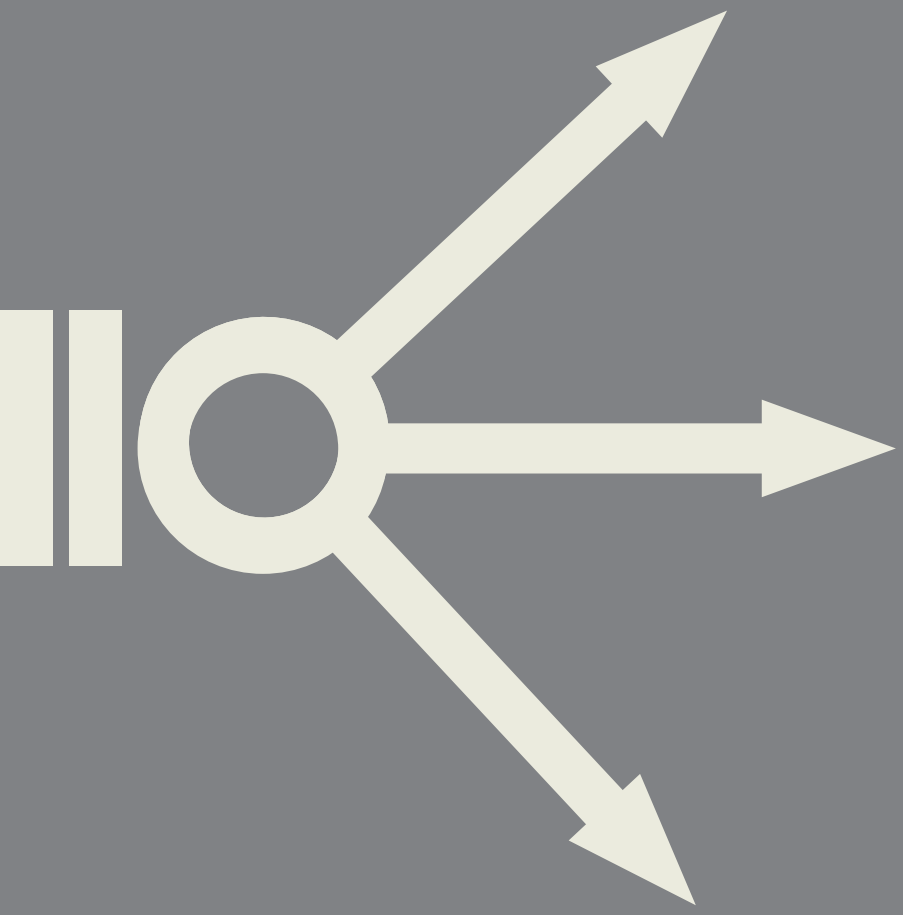
METHODOLOGY & ARCHAEOMETRY

Zagreb, 7th – 8th December 2023

12TH INTERNATIONAL SCIENTIFIC CONFERENCE

METHODOLOGY & ARCHAEOMETRY

Zagreb, 28th November 2024



PROCEEDINGS

FROM THE 11TH AND 12TH SCIENTIFIC CONFERENCE METHODOLOGY AND ARCHAEOMETRY

ISSN 2718-2916

IMPRESSUM

PUBLISHER
Faculty of Humanities and Social Sciences, University of Zagreb

FOR THE PUBLISHER
Domagoj Tončinić

EDITOR
Ina Miloglav
Faculty of Humanities and Social Sciences, University of Zagreb

EDITORIAL BOARD
Predrag Novaković
Faculty of Arts, University of Ljubljana, Slovenia
Dimitrij Mlekuž
Faculty of Arts, University of Ljubljana, Slovenia
Michela Spataro
The British Museum, London, United Kingdom
Duska Urem-Kotsou
Democritus University of Thrace, Komotini, Greece
Jasna Vuković
Faculty of Philosophy, University of Belgrade, Serbia
Rajna Šošić Klindžić
Faculty of Humanities and Social Sciences, University of Zagreb, Croatia
Jacqueline Balen
Archaeological Museum in Zagreb, Croatia
Michael Doneus
Department of Prehistoric and Historical Archaeology, University of Vienna,
& LBI for Archaeological Prospection and Virtual Archaeology, Vienna, Austria
Marta Čović Mileusnić
Faculty of Mining, Geology and Petroleum Engineering, University of Zagreb, Croatia

DESIGN & DTP
Srećko Škrinjarić

All papers were reviewed in a double-blind peer review process in which the identity of both reviewers and authors, as well as their institutions, are respectfully concealed from both parties.

DOI
https://doi.org/10.17234/METARH.2025

ISSN 2718-2916
Faculty of Humanities and Social Sciences of the University of Zagreb

URL
https://openbooks.ffzg.unizg.hr/index.php/FFpress/catalog/series/MetArh
https://metarh.ffzg.unizg.hr/

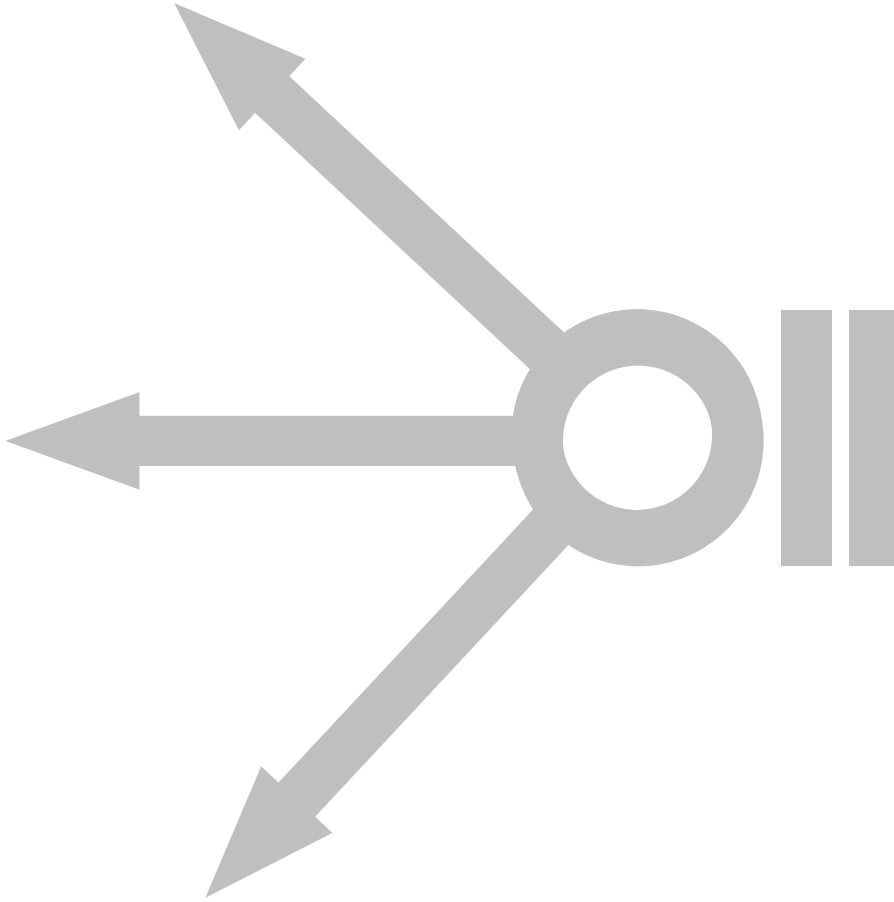
Publishing of this e-book is supported by
Faculty of Humanities and Social Sciences of the University of Zagreb
Ministry of Science, Education and Youth of the Republic of Croatia

This publication is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International licence (https://creativecommons.org/licenses/by-nc-nd/4.0/) which allows others to share, copy and redistribute the publication in any medium or format, as long as they give appropriate credit, provide a link to the license, and indicate if changes were made. The content of this publication may not be used for commercial purposes. If the publication is remixed, transformed, or built upon, the modified material may not be distributed.

Copyright © 2025 Authors

11TH INTERNATIONAL SCIENTIFIC CONFERENCE
METHODOLOGY & ARCHAEOMETRY
Zagreb, 7th – 8th December 2023

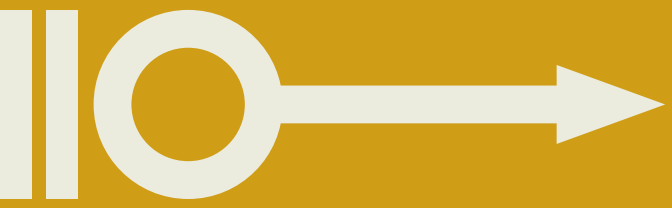
12TH INTERNATIONAL SCIENTIFIC CONFERENCE
METHODOLOGY & ARCHAEOMETRY
Zagreb, 28th November 2024



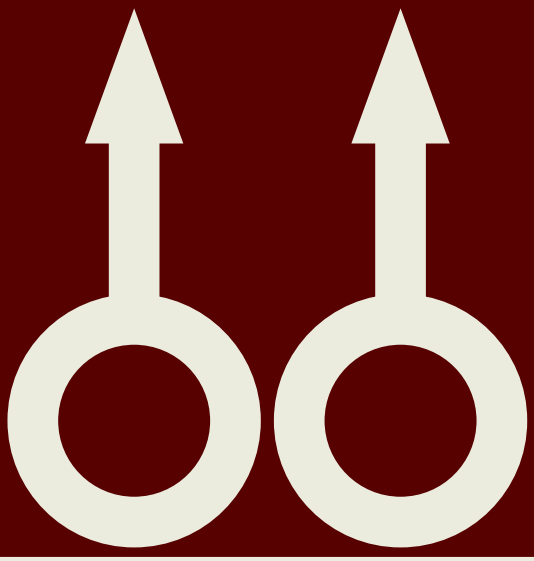
PROCEEDINGS

FROM THE 11TH AND 12TH SCIENTIFIC CONFERENCE METHODOLOGY AND ARCHAEOMETRY

Zagreb, 2025



Content



This publication is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International licence (https://creativecommons.org/licenses/by-nc-nd/4.0/) which allows others to share, copy and redistribute the publication in any medium or format, as long as they give appropriate credit, provide a link to the license, and indicate if changes were made. The content of this publication may not be used for commercial purposes. If the publication is remixed, transformed, or built upon, the modified material may not be distributed.

Copyright © 2025 Authors

Long time, no siege: non-invasive archaeological methods in the research of Cesargrad castle

Andrej Janeš, Tomislav Zojčeski

https://doi.org/10.17234/METARH.2025.8

Andrej Janeš
Croatian Conservation Institute
Division for Archaeological Heritage
Department of Archaeology
Kožarska 5, Zagreb, Croatia
ajanes@hrz.hr

Tomislav Zojčeski
Ruina Ltd.
Paška Zjačića 10, Šibenik, Croatia
arheo@ruina.hr

The remains of the Cesargrad castle are located on a hill, on the left bank of the Sutla River gorge, overlooking the market town of Klanjec. The most famous historical event connected to it was the siege in 1573, during the Great Peasant Uprising. The archaeological research of the castle was centered around the core of the castle, where the standing structures are still visible above ground. In two excavation campaigns (2008 and 2010), the western tower and the palace were partially researched. During the 2018 campaign, the analysis of the standing structures was conducted through the application of the archaeology of standing structures. The results partially coincide with the known written documents, but also indicate an older date for the construction of the castle. The castle is composed of the inner core and the outer ward. Most of the structures of the presumed outer ward are partially recognizable in the terrain morphology. To trace these remains in 2021, a LiDAR survey was conducted. Lidar data were later processed and classified to obtain a precise and detailed DTM of a wider area around the castle, which was then visualized and interpreted for archaeological remains. The newly found archaeological features can be interpreted as possible military installations or siege positions erected during a strife.

Keywords: *Cesargrad, castle studies, archaeology of architecture, LiDAR survey, siege, conflict archaeology*

OPEN ACCESS

Introduction

The remains of the Cesargrad castle are situated on the western slope of the Cesargrad hill, above a narrow ridge of the Sutla river called Zelenjak, northwest of Klanjec. The spot was the site of a well-fortified castle centre, while a moat served as additional protection of the valley in the east. At the top, the architectural remains span east of the moat and, combined with the two far-west peaks of the Cesargrad hill, make up this complex castle. The whole position of this castle used to be surrounded by a defence wall which was reinforced by towers on the most protruding parts. The castle extends in the direction of southeast-northwest and is 225 m long (Janeš 2014a: 313).

Cesargrad Castle was mentioned for the first time in 1399 when King Sigismund of Luxembourg gave a big part of today's north-west Croatia to Hermann II, Count of Cilli (Laszowski 1902: 81; Klaić 1910: 134; Szabo 1912: 209; Adamček 1970: 88). Three royal charters made Counts of Cilli the lords and hereditary Counts of Zagorje. They owned the entire Zagorje region with parts of Lower Styria, Carniola and Carinthia until 1456, when the murder of Hermann's grandson Ulrich II in Belgrade on 9th November 1456 led to the extinction of the family (Janeš 2014a: 314). Disputes over the ownership of Cesargrad Castle, between different Styrian noblemen, lasted for several decades. In 1521, Tamás Bakócz from the Erdödy family, who later became archbishop of Esztergom, was finally registered as the owner of Cesargrad Castle. After the archbishop's death, his entire estate was inherited by his nephew Peter Erdödy, and Cesargrad Castle finally became property of a single family, one of the most powerful at that time.

Archaeological research was undertaken in 2008 and 2010, encompassing the excavation of tower H with its immediate surroundings and the southern wing of the palace complex. These excavations yielded the remains of a putative tile stove base located on the first floor of tower H (Fig. 8: tower 3), together with an architectural structure appended to the tower's northern wall (Madiraca & Čimin 2009: 225-226). Within the southern wing of the palace, remnants of a hypothesized wooden plank floor, dated to the mid-15th century, were documented (Janeš 2011: 259-260; 2014b: 44).

In 2018, a structural survey has been conducted on the standing structures of the castle. The survey comprised the remains of the castle's core and some parts of the outer yard and ramparts, visible above ground (Janeš 2019: 265-267).

A LiDAR survey of the castle's area was performed in December 2021, covering the Cesargrad castle and the surrounding area of the Cesarsko hill.

The aforementioned chronology of operations demonstrates that, owing primarily to limited financial resources, diverse methodological approaches have been utilized in investigating this medieval castle. The aim is to assess the applicability of non-destructive archaeological methods at Cesargrad and to demonstrate the resultant data these methods can yield, as well as their impact on potential reinterpretations of the site. The application of the archaeology of architecture has enabled the determination of constructional phases in the fortification's development, thereby providing a more comprehensive developmental sequence. Through the analysis of LiDAR data of the outer courtyard and proximate environs of the fortification, coupled with GIS analysis, efforts were made to identify possible structural features within the courtyard and surrounding area that remain undocumented in previous research.

Methods

Three methods were utilized in the application of non-destructive techniques to the remains of the Cesargrad castle.

Method 1. The archaeological research of architecture preserved in elevation is based on the stratigraphic analysis that enables the researchers to identify certain periods of construction and demolition as well as, the relationships of the past, present, and future. During the analysis, architectural remains are broken down and the method of recording interface units subordinate to the stratigraphic unit of the wall is used (Harris 2003: 11). This method implies putting the identified stratigraphic units in a chronological sequence by using the so-called Harris matrix (Harris 1989: 109-113) (Fig. 3). The use of the matrix yields a relative chronology and links the obtained results to other sources, primarily the writen ones; legal acts and graphic historical sources, as well as the results of archaeological excavations and archaeometry analyses with the goal of ascertaining the absolute chronology (Brogiolo & Cagnana 2017: 25).

Method 2. A close-range LiDAR survey of the castle's area was conducted in December of 2021 by company Ruina

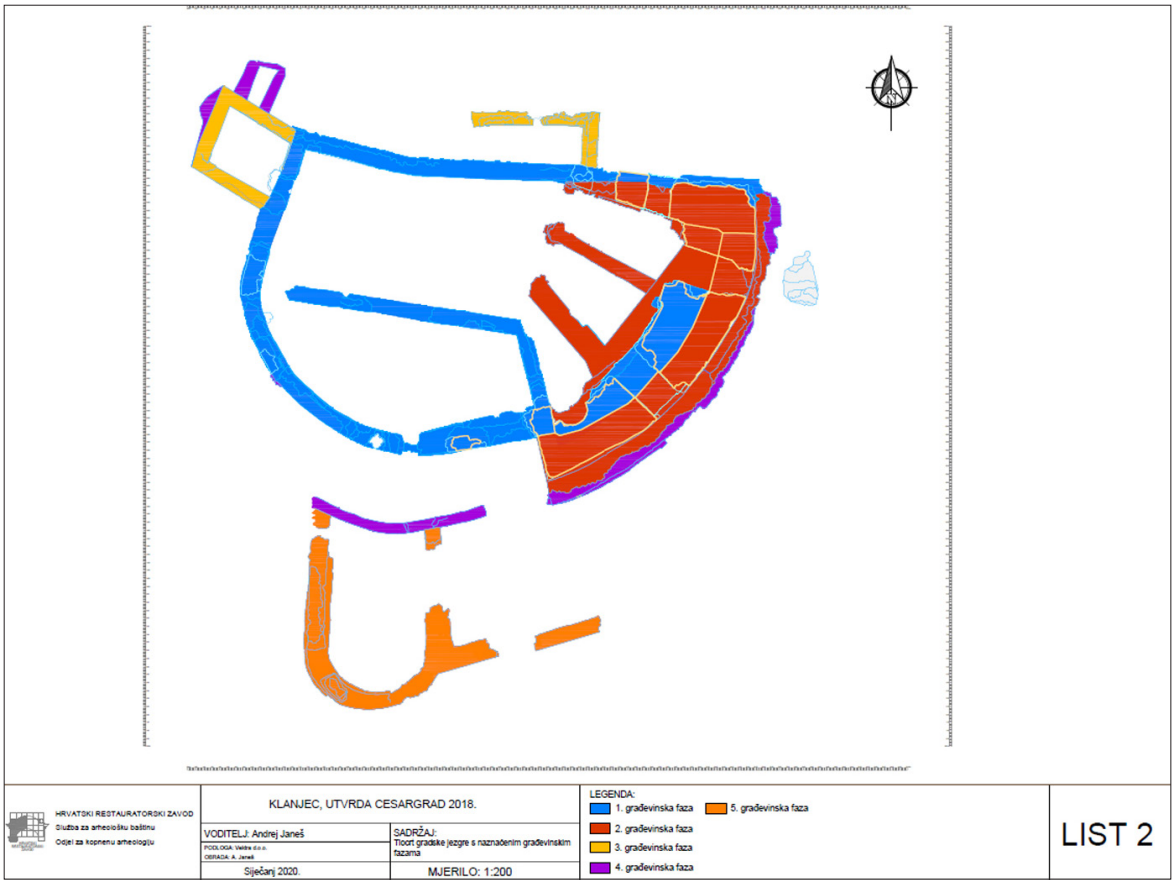


Figure 1. Cesargrad ground plan with construction phases (plan by: Vektra Ltd, edited by: A. Janeš).

Ltd., covering the Cesargrad castle and the surrounding area of the Cesarsko hill. The survey was carried out using an UAV system with LiDAR sensor which was flown at 70 m altitude in a double acquisition grid pattern for a more denser and accurate point cloud. The flights were operated during December to obtain more ground points, because during this period, there was less undergrowth and foliage in the trees. The survey area included 35 hectares of forested landscape covered mostly by lower shrub and oak trees that were bare during this period. The resulting data acquired included both high resolution ortho-photomosaic and a digital elevation model. Classification was done to include ground data as well as standing features, which were of archaeological interest and subsequently created a DFM. After processing, classification and filtering, a high-resolution DFM (0.1 m) was generated. The point cloud was then exported as a raster which was visualized and interpreted for archaeological remains. Visualization of the data was done by using the Relief visualization toolbox – RVT (Kokalj & Hesse 2017), while all the interpretation, mapping and spatial analysis was completed in GIS software.

Method 3. By using the GIS-based viewshed analysis in theory, it would be possible to confirm or eliminate the potential siege positions. After determining the input information needed, the first step was to create a binary viewshed visibility map for each of the Cesargrad towers (Čučković 2016). All information about each position and range of weapon had to be considered, so the analysis could show siege potential of suspected locations but also uncover any possible positions obscured from the Cesargrad towers that might have been used during the siege. Additionally, after discovering the siege positions, a visibility map for the besieging side was created to show the attacking possibilities of these locations.

Results and Discussion

3.1. Analysis of the standing structures

Five phases can be identified in the construction and architectural development of the castle. All of them are visible in the castle's centre (Fig. 1). The first construction phase is identified by the remains of a smaller castle around the rectangular court with a palace on the south-

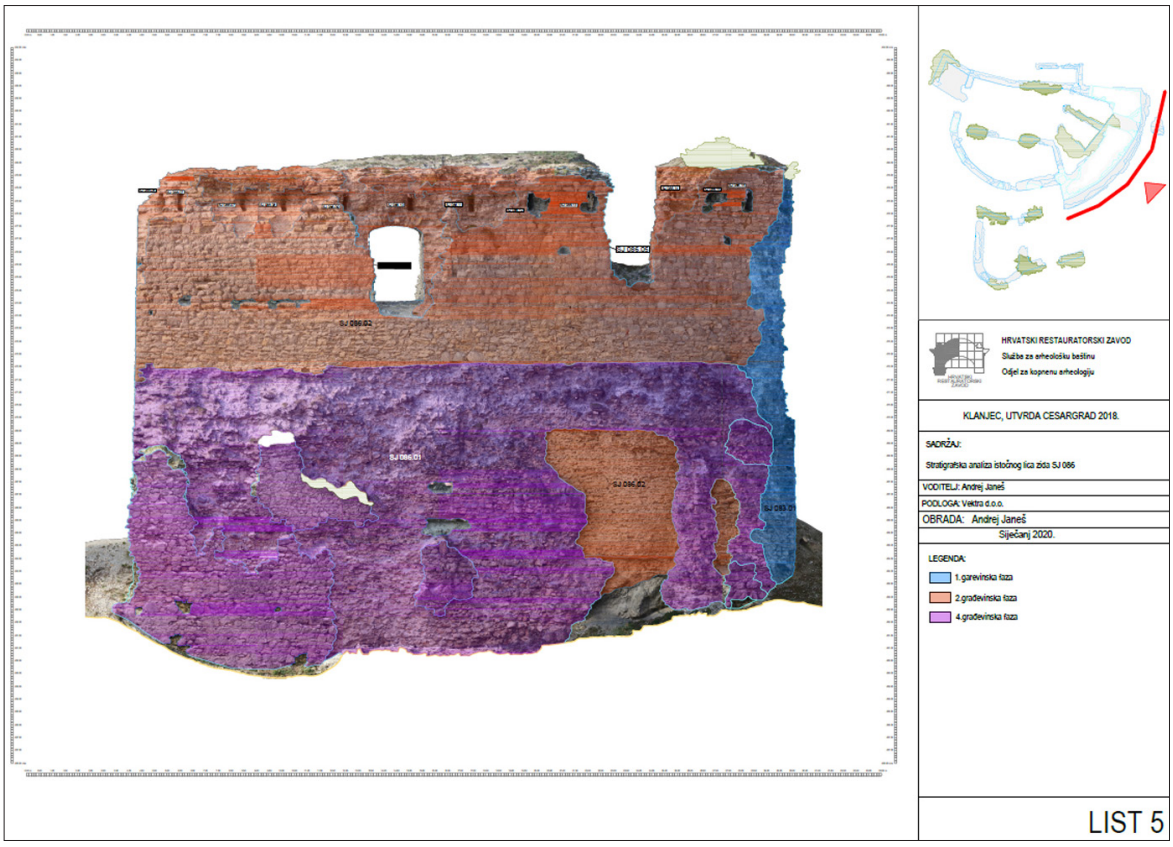


Figure 2. Stratigraphic sequencing of the eastern wall (Schildmauer) of Cesargrad's core (plan by: Vektra Ltd., edited by: A. Janeš).

ern side. It was constructed during the 14th or maybe even the late 13th century.

The core of the castle was constructed using irregular rows of rubble stone, with the gaps filled in with smaller and finer stone fragments. The choice of location also suggests that the original construction of the fortress core predates the first written mention of it in the late 14th century. Examples of castles built on the lower of two hilltops can be found at the Tuščak Castle in the Žumberak Mountains, constructed during the 12th century (Lapajne & Mahović 2007: 77), and Stupčanica on the slopes of Papuk, whose construction is dated to the 13th or the very beginning of the 14th century (Horvat 2007: 38). In later phases, both castles were expanded onto the adjacent, higher hilltop. A ground plan similar to that of the Cesargrad core is found at Borl Castle in Slovenia, which was first mentioned in 1255 (Stopar 1977: 100-102).

The second construction phase is said to include the reconstruction of the eastern portion of the castle. At that time, the eastern wing of the palas and the eastern defence wall were reinforced, resulting in the formation of the so-called *Schildmauer* or shield wall. The construction of such structures is characteristic of German regions in the 13th and 14th centuries (Antonow 1977). The inner side of the wall has two rooms. Above them, on the upper floor, were two other rooms. Above the northern room was the castle chapel, of which a polygonal-ended sanctuary has been preserved. The chapel was vaulted with a ribbed cross vault and was lit by windows on the northern side. Interventions in that part can be dated to the 15th century (Horvat 1999: 183, 194). The only preserved stylistic element in the chapel is a section of a rib with a single groove. Openings for massive beams are still visible at the top today, believed to have been part of a large wooden structure of a defensive gallery (Horvat 2006: 152) (Fig. 2).

During the third construction phase, the entrance in the northern wall was relocated eastward and reinforced with a tower. A square tower was added to the northwestern corner of the castle. The second and third phases can be dated to the time when the castle was owned by the Counts of Celje (1399-1456).

In the fourth construction phase, the centre of the castle was reinforced in the east and the south, while the semi-circular artillery tower on the southern side of the

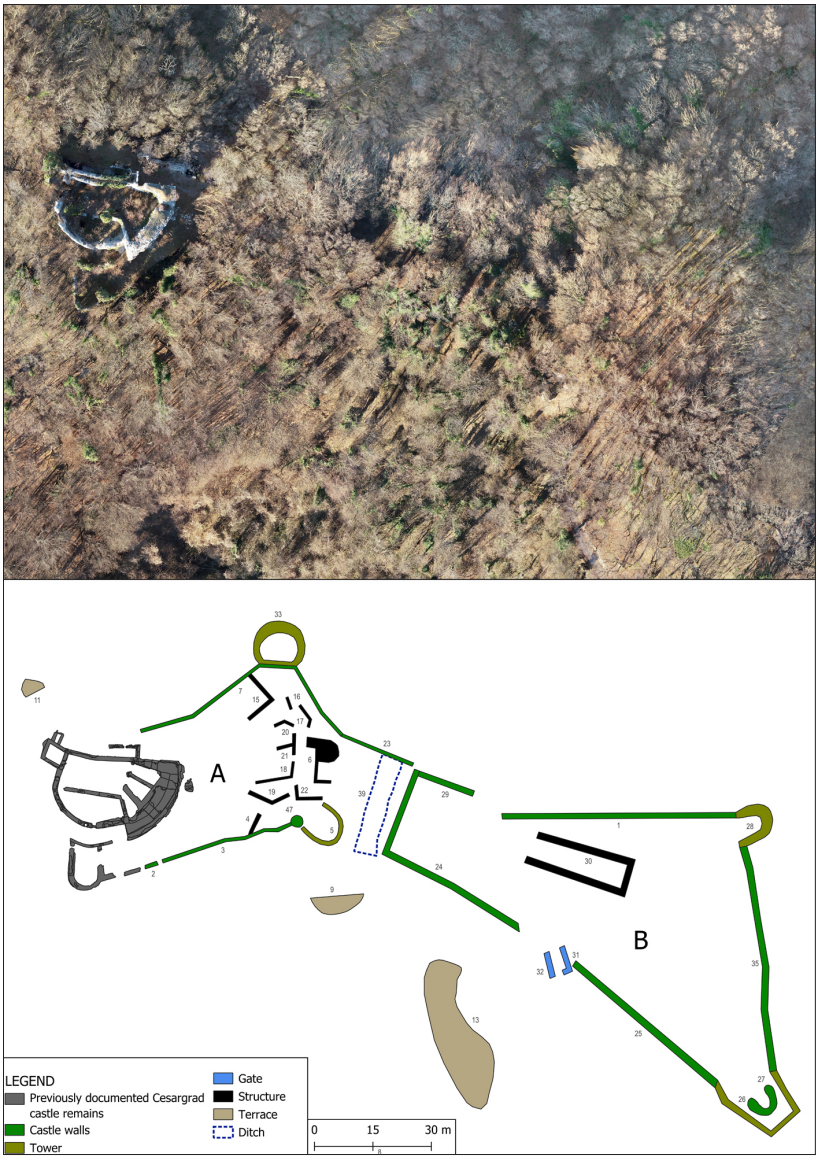


Figure 3. Areal photo and ground plan of Cesargrad castle (photo and map by: T. Zojčeski).

centre was added in the fifth phase. During archaeological excavations in 2008, a rectangular masonry structure perpendicular to the north-west tower was discovered to the north of it (Madiraca & Čimin 2009: 226). So far, it has been established that the outer wall from the third construction phase abuts this structure, which makes it older than the early 16th century, when that wall was built. Finds from the layers covering this structure date its likely demolition to the mid-16th century.

In the fifth phase on the southern side of the castle, a large artillery tower has been constructed, and a wall that encompassed the area to the east of the castle core. This area was additionally defended by a ditch. The artillery tower, equipped for housing cannons, has parallels in several medieval fortifications in the Zagorje region, all of which were built during the first half of the 16th century.

These phases are dated after 1521, when the castle was owned by the Erdődy Family (Janeš 2020: 87-88).

In the area between the defensive ditch and the castle, the remains of a round tower are still preserved above ground. The tower is positioned on the southern edge of the ditch. On the northern side of this area, the remains of a rectangular building are still visible above ground.

Additional structures could be recognized in the morphology of the terrain in the area between the castle core and the ditch, but also in the area east of the defensive ditch.

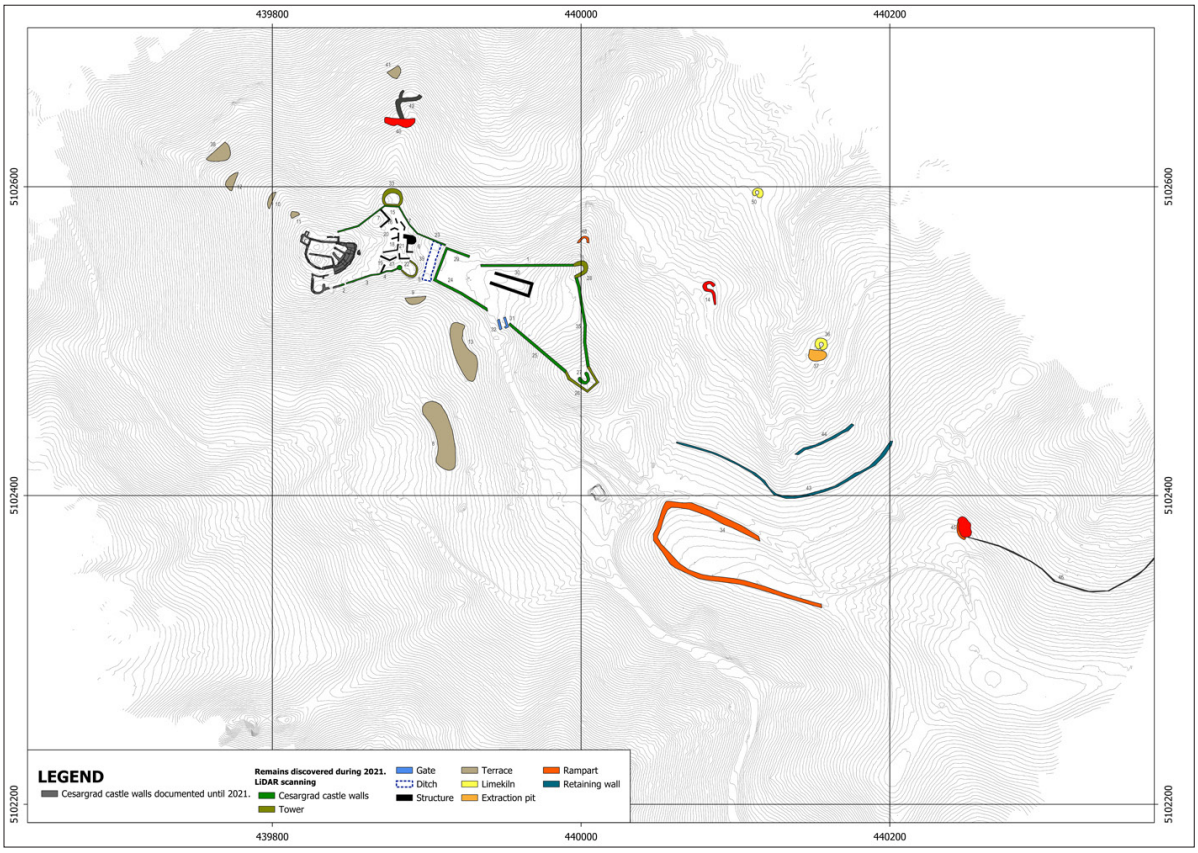


Figure 4. Ground plan of Cesargrad castle with main features (plan by: T. Zojčeski).

3.2. LiDAR survey of the castle

The data obtained by the ALS survey provided new information about the Cesargrad castle itself and its surroundings, but also helped discover some new locations around the castle, which were previously completely unknown.

Besides the aforementioned part of the castle core (A), which was extensively documented prior to this campaign, other parts of the castle brought to light were completely unknown before or only speculated about, and never documented (Fig. 3).

East of the *Schildmauer* wall, a new section of the castle was discovered. Traces of collapsed walls are preserved today as lower banks and are visible in the morphology of the terrain. ALS data show remains of different structures (4, 6, 15 - 22) enclosed by a curtain wall on northern and southern sides (2, 3, 7) connecting two additional semicircular towers (5, 33) with the castle core. In the outlines of collapsed walls, multiple rooms or objects can be distinguished and one of them, semicircular in shape (6), is positioned next to and looking at the defensive ditch (39) (Fig. 4).

All of the structures are positioned on the edge of the ditch with no other protective wall guarding the entrance to the castle area A from the ditch. It can be suggested that the semicircular building (6) with nearby structure (22) were actually a part of the defensive wall towards the ditch and connected to semicircular tower 1 (5). On the northern part of the ditch, the situation is even less straightforward, with a curtain wall (23) which is connected to the northern semicircular tower 2 (33), closing the northern edge of the ditch by joining the enclosing walls of the castle area B.

To the east of the ditch, the remains of another larger castle area B was identified. The remains of curtain walls (29, 24, 1, 35, 25) can be traced on the whole area of this younger part of the Cesargrad castle. Its irregular polygonal shape is widening to the east and ending with two towers looking to the east and southeast (28, 26). The northern semicircular tower (tower 5) is looking towards the east, while the southern one (tower 6) has outer walls of polygonal shape looking to the southeast. Inside the walls of this tower a rounded earthwork can be identified.

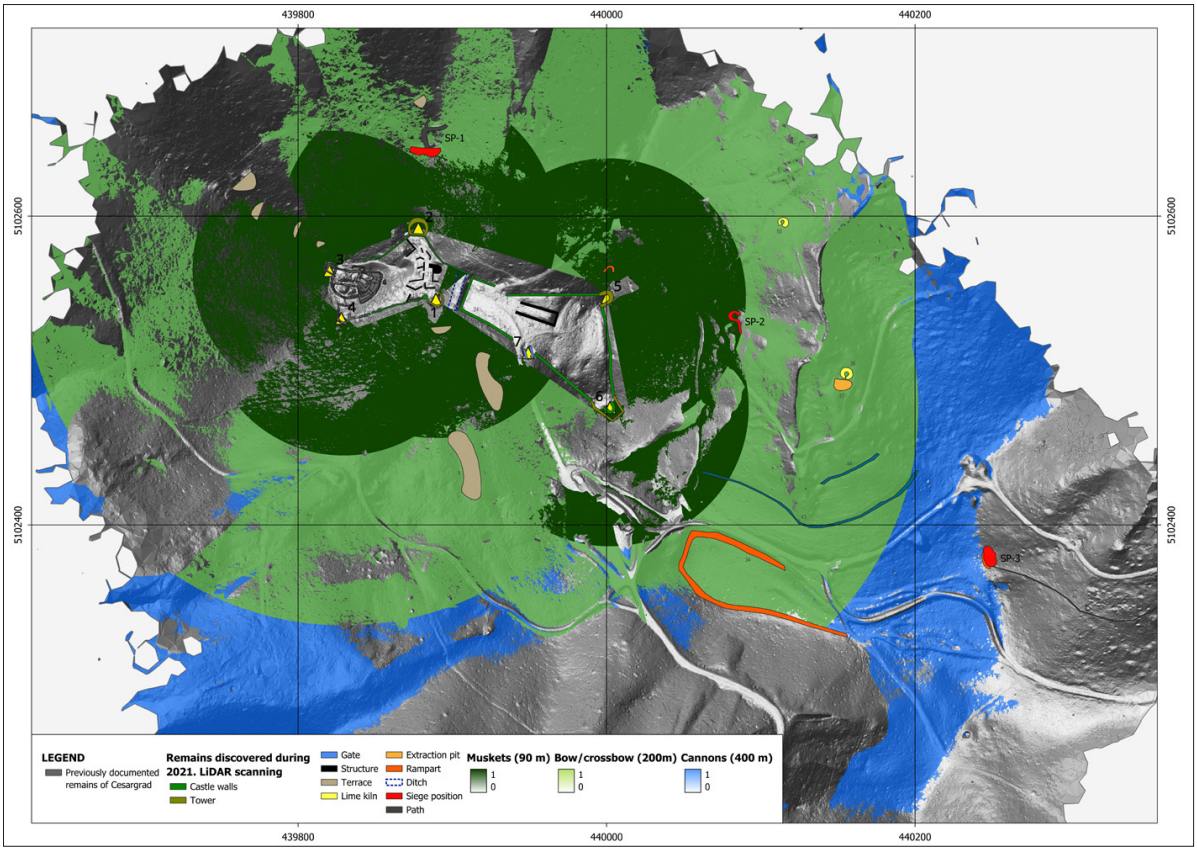


Figure 5. Range coverage of cannons, muskets and bows/crossbows from Ceasargrad's towers (map by: T. Zojčeski).

In the middle part of the southern wall (24, 25), remains of the squared gate tower (31, 32) can be recognized, positioned unaligned to the wall and orientated to the south. The only feature visible inside the perimeter of castle B is an elongated, dug-out feature in the middle part, with banks on all three sides. The feature is 26 meters long and 8 meters wide.

Different features were recognized around the castle as well. Remains of limekilns (36, 50) with extraction pits can be seen to the east of the castle, probably belonging to the same period since no other building remains were found in the vicinity. Mortar was required for building and maintenance of buildings in the castle and other needs during everyday life. (Zlatunić 2010: 303.) Larger enclosure (34) with earthen rampart can be identified on a nearby hill with ramparts positioned on northern, southern and western sides and an entrance area to the east.

As can be seen by analysing ALS data of Cesargrad castle and neighbouring hills, a new layout map of the castle was created, and different positions around the castle were discovered and mapped. That included remains that can be interpreted as defensive positions directed towards the castle itself. Thus, the new information collected during the lidar survey campaign of 2021. provided us with a chance to try and reconstruct the famous siege of Cesargrad castle on the night between 27th and 28th January 1573. When the Croatian Great Peasant Revolt started. (Janeš 2014b: 36.) The primary locations that had remains of said characteristics were enclosure (34) and different trench-like features (40/42, 14, 45/46). Before any conclusion could be made, the viewshed visibility map needed to be created. Different parameters were taken into account based on the data about the Cesargrad castle original design and information about the warfare in the 16th century, primarily focused on sieges. (i) The height of the towers, which could theoretically hold artillery, needed to be recreated and were approximated at seven meters from today's ground level. (ii) The azimuth angle for each tower was calculated, so the viewshed analysis covered the maximum possible area that artillery could cover from every tower. (iii) Range of projectile weapons used during 16th-century warfare and possibly appearing during the 1573 siege needed to be taken into account. Even though the range of all projectile weapons used during the 16th century varied greatly, which is especially true

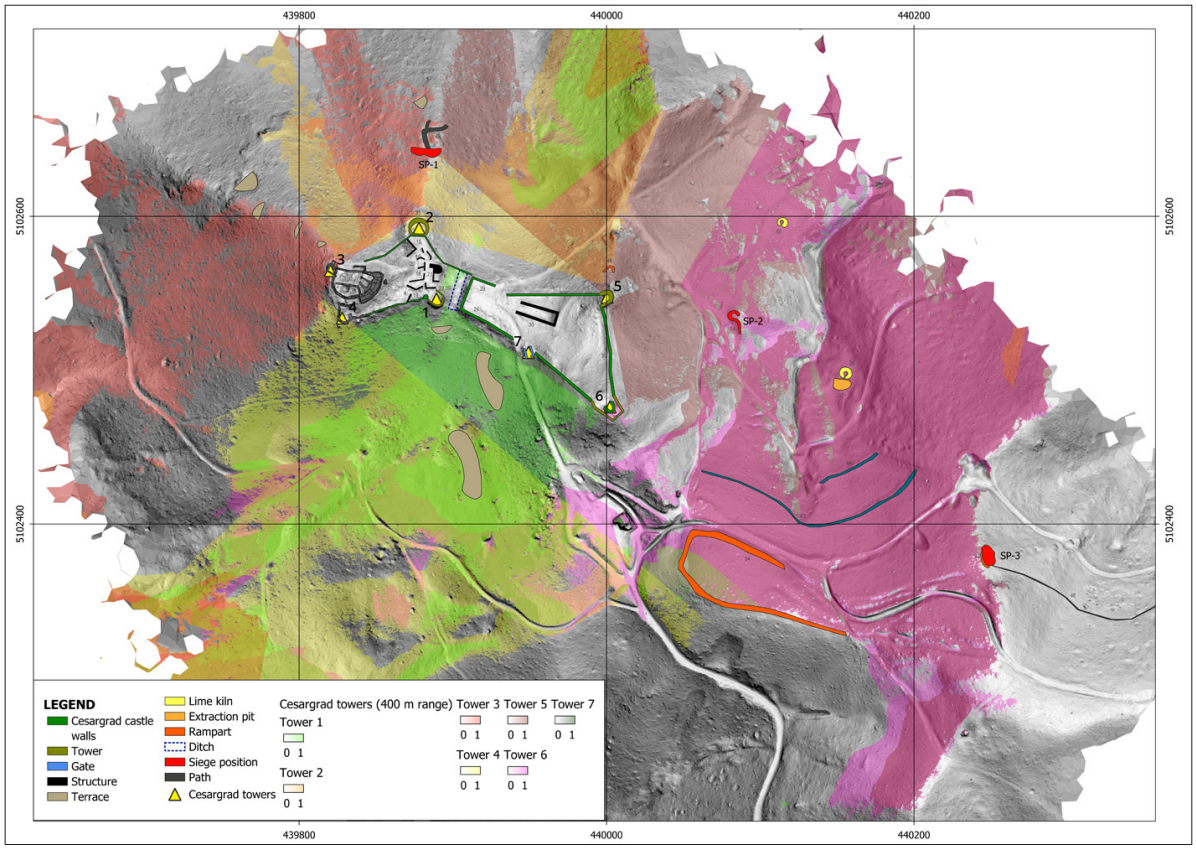


Figure 6. Areas covered from each of the towers of Cesargrad (map by: T. Zojčeski).

with cannons and muskets, the effective range of cannons used for the viewshed analysis was defined at 400 meters, 90 meters for muskets and 200 m in the case of bows and crossbows. (Strzyż 2012: 7; Loades 2018: 74) (Fig. 5). It is known from written sources that the rebels' goal was to take the castle "so, that they could get the cannons and ammunition, so, they could take other castles" (Čičko 2018: 31). It is a direct proof that the castle's defenses were equipped with cannons.

Further, there are other limitations of the described method that need to be considered before any conclusion is made, such as the state of vegetation around the castle, which is missing from historic data, and would influence the visibility, but also the exact information about the number and caliber of cannons Cesargrad castle held during or before the siege.

3.3. Viewshed Analysis Results

The results show that siege positions SP-1 and SP-2, although not ideal for the besieging side, could have been used in the siege, but also uncover the location of SP-3. First location (SP-1) is situated at the northern slopes of the hill and was probably used during the final phase of the Cesargrad siege. That is expected because although protected from the view of Cesargrad towers, it only offers good visibility of castle core entrance and the easternmost part of area B (Fig. 6).

Next siege position (SP-2) located to the east of the castle area B is somewhat protected from direct view from the towers and offers a direct attack trajectory at towers 5 and 6. This position has protective elements, such as a rounded position surrounded by an earthwork or rampart, which then continues in a straight line for 8.5 meters and could've offered some protection during the siege. Last siege position (SP-3) is located further to the east of the castle areas and is composed of a rounded depression in the ground with an earthwork facing toward the castle. The location of the rampart (34) was entirely exposed to the attacks from the castle, and even though ramparts did potentially offer some protection, it most likely predates and wasn't used during the 1573 siege (Fig. 7).

The siege positions discovered need to be archaeologically surveyed in the future, but at this point, they show the general direction in which the Cesargrad castle attack happened. Most likely, the attacking forces came from the east and began the siege from SP-3 and SP-2 by

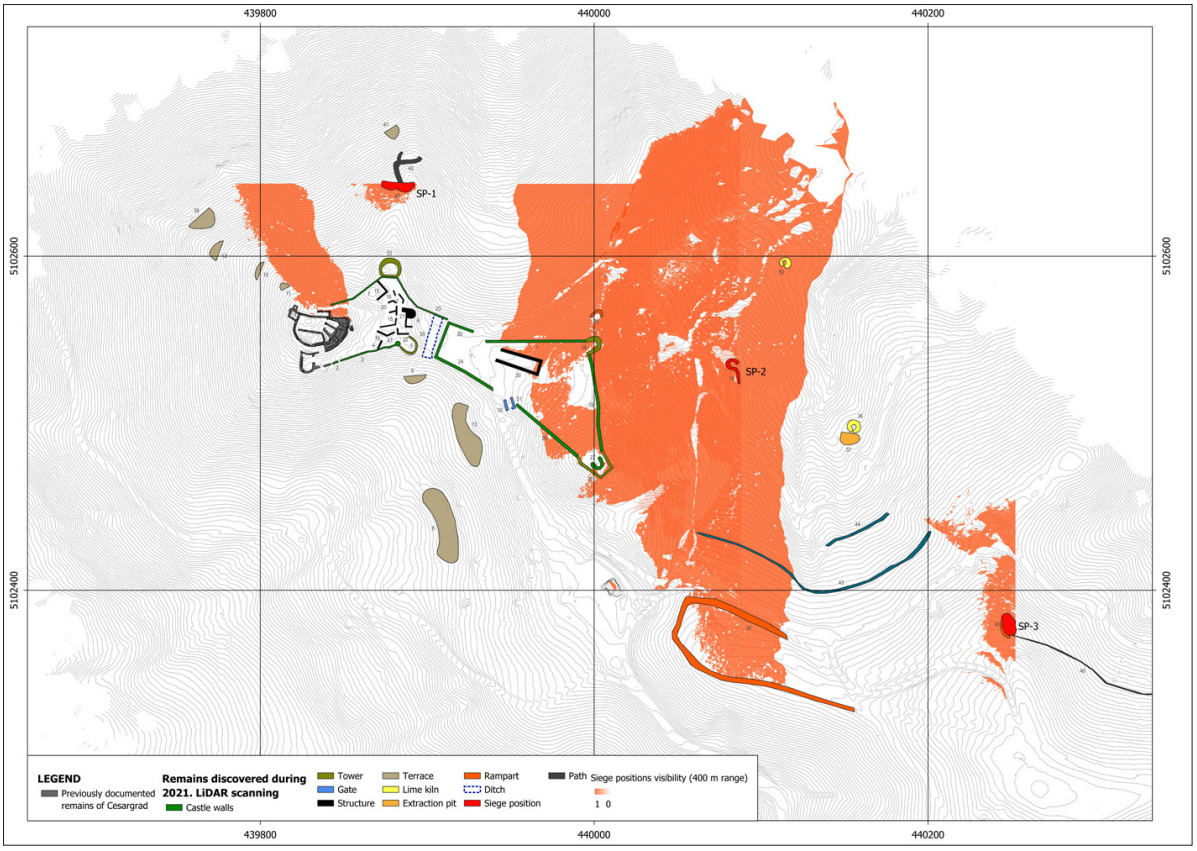


Figure 7. Viewshed from siege positions around Cesargrad castle (map by: T. Zojčeski).

attacking and disabling the towers of castle area B. After that, only SP-1 was used as a support while storming the castle entrance on the northern side. Two positions (SP-2 and SP-3) hold remains of defensive earthwork orientated towards the castle, so some preparation of positions before the siege did happen, as was recorded in other examples where siege remains were discovered. (Mazáčková et al. 2023: 68.) By analyzing the visibility capabilities of different locations in and around the Cesargrad castle, what can be noticed is the strategic advantage of tower 6 (Fig. 8).

The position of this tower is actually the only spot higher in elevation than the Cesargrad castle core and from where a siege attack could seriously threaten the castle. By examining the layout of the complete castle areas, it is immediately noticeable that the elongated shape of castle area B with wider eastern part. It is most likely that the complete Cesargrad area B was constructed in the first place to occupy the tower 6 position and disable the besiegers from using it. Furthermore, it's also a possibility that an older siege of the castle happened before 1573, in which this location played a pivotal role, so by expanding the castle builders removed the most dangerous position. As was mentioned earlier, the rampart on a nearby hill was almost completely exposed and vulnerable to attacks from Cesargrad towers, especially tower 6, so it's arguable that this rampart was constructed and used during an earlier siege before the expansion of the castle. It is also unlikely that the attacking side in the 1573 siege had time to prepare positions with elaborate defensive capabilities before the attack started.

Conslusion

With the use of non-invasive archaeological methods for the archaeology of standing structures and LiDAR-acquired data, it was possible to get new insights into the historical development of a medieval castle. Applying the archaeology of standing structures, combined with written data, it was possible to reconstruct the construction history of Cesargrad castle, spanning from the 13th to the 16th centuries. This way, plans for future systematic archaeological excavations and conservation works can be made.

New data was acquired with the LiDAR scan of the castle and its surroundings, which brought to light possible new structures on the outer courts of the castle. Also,

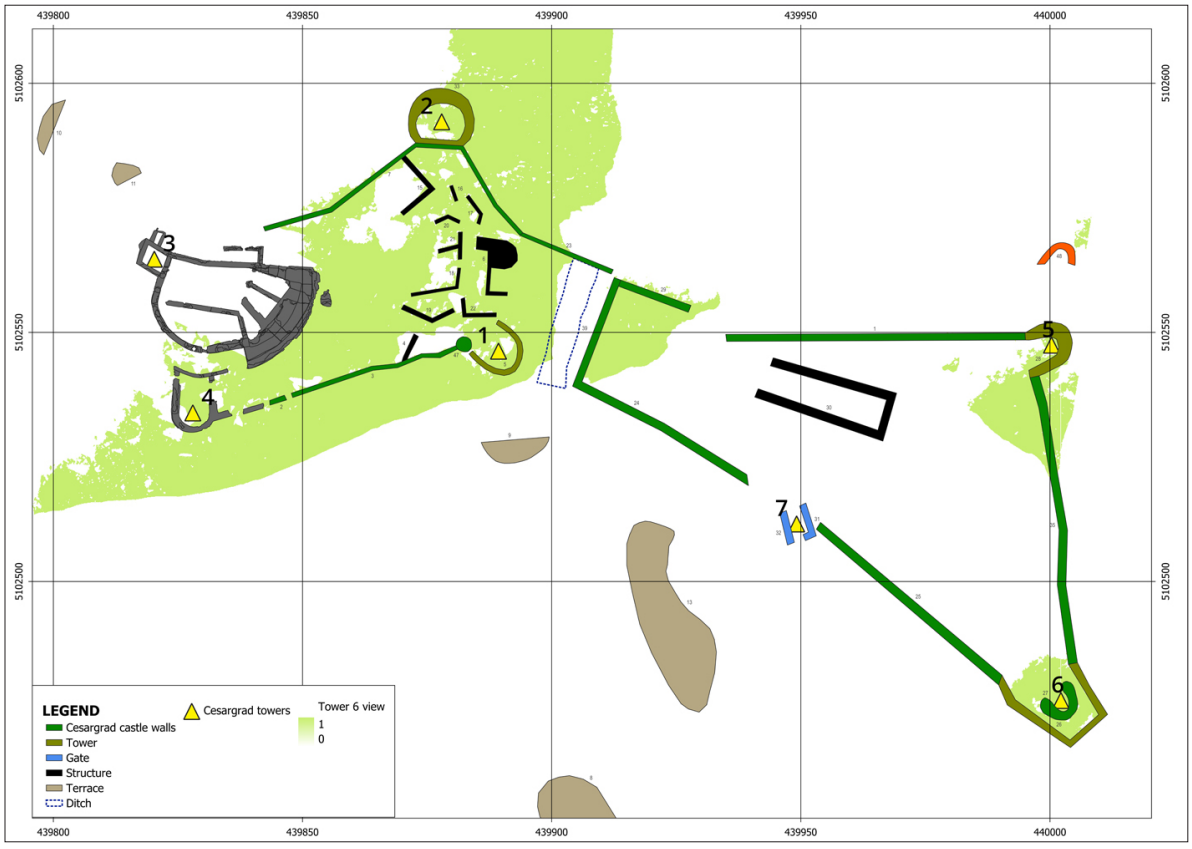


Figure 8. Areas of the castle visible from tower 6 (map by: T. Zojčeski).

new features visible in the terrain morphology have been documented in the immediate surroundings of the castle. New features have been documented in the area close to the castle's core, confirming the existence of auxiliary structures or buildings in the castle. Similar features have been detected in the outer court. The most innovative result of the LiDAR data analysis is the identification of potential siege positions around Cesargrad. These positions have been used by possible besieging troops to attack the castle and control the area around it. By the 15th century fire arms, cannons and muskets were an essential part of any army's equipment. Cesargrad castle was attacked at he beginning of the Great Peasant Revolt of 1573 and taken by the rebels. So, some of these positions can be connected to this single historical event. From written sources, it is known that the assailants were equipped at least with muskets. One of the rebel commanders requested 60 muskets from the rebelled peasants of the Cesargrad estate (Despot & Tatić 2013: 185). As seen by the analysis some of the positions were covered by the defenders from the towers so they could indicate to some older conflicts concerning the castle. They could be connected to the conflicts that followed in the region after the death of Ulrik of Cilli in 1453, when a number of Styrian nobles fought for his estates (Čičko 2018: 22-24).

The acquired data shows similarities with research results in Czechia on sites of documented sieges occurred during the 15th century like the siege camps in Hradečnice and Kostelec nad Sázavou (Koscelnik 2013: 191-193). Documented features around the castle could fall in the category that primarily includes linear structures such as fortifications of camps, approach trenches and earthworks (Koscelnik 2013: 197). The assembled data has to be verified with filed surveys and excavations but they put Cesargrad on the map of archaeology of conflicts.

References

Adamček, J. 1970. *Cesargradsko vlastelinstvo u doba seljačke bune*, Kaj III, 5, 85-93.

Antonow, A. 1977. Burgen des südwestdeutschen Raums in 13. und 14. Jahrhundert unter besonderer Berücksichtigung der Schildmauer, Freiburg.

Brogiolo, G. and Cagnana, A., 2017. *Archeologia dell'architettura, metodi e interpretazioni*, All'Insegna del Giglio, Firenze.

Čičko, B. 2018. Cesargrad – historiografija i povijest, In: N. Filko (ed.) *Cesargrad u vremenu i prostoru,* Zbornik radova sa stručnog skupa, 15-38.

Čučković, Z. 2016. Advanced viewshed analysis: a Quantum GIS plug-in for the analysis of visual landscapes, *Journal of Open Source Software* 1 (4), 32. https://doi.org/10.21105/joss.00032

Despot, Z. and Tatić, D. 2013. *Seljačka buna Matije Gupca*. Nova povijest 1573., Despot infinitus, Zagreb.

Harris, E. C. 1989. Načela arheološke stratigrafije, Ljubljana.

Harris E. C. 2003. The Stratigraphy of Standing Structures, In: *Archeologia dell' Architettura, Supplemento ad Archeologia Medievale* VIII, 9-14.

Horvat, Z. 1999. Kapele u burgovima 13.-15. stoljeća u kontinentalnoj Hrvatskoj, *Prostor* 7 (2), 181-198.

Horvat, Z. 2007. Branič-kule na burgovima kontinentalne Hrvatske od 13. do 15. stoljeća, *Prostor* 15 (1), 27-41.

Horvat, Z. 2006. Drvene konstrukcije na burgovima kontinentalne Hrvatske: II. dio, *Prostor* 14 (2), 142-157.

Janeš, A. 2011. Cesargrad, *Hrvatski arheološki godišnjak* 7/2010, 259-260.

Janeš, A. 2014a. A View on Life in a Castle. An Analysis of the Architecture and Finds from the Castle of Cesargrad, Croatia (2008 and 2010 Excavation Campaigns), *Castrum Bene* 12, 313-324.

Janeš, A. 2014b. Burg Cesargrad: povijesno arheološka analiza, *Portal* 5, 35-48.

Janeš, A. 2019. Cesargrad, *Hrvatski arheološki godišnjak* 15/2018, 265-267.

Janeš, A. 2020. Klanjec, utvrda Cesargrad. Elaborat o provedenim dokumentacijskim radovima 2018. godine, Arhiv Hrvatskog restauratorskog zavoda, Zagreb.

Klaić, V. 1910. *Sutla,* Hrvatsko kolo VI.

Kokalj, Ž. and Hesse, R. 2017. Airborne laser scanning raster data visualization: A Guide to Good Practice, Prostor, kraj, čas, 2014, Založba ZRC, Ljubljana. https://doi.org/10.3986/9789612549848

Koscelnik, P. 2013. Využití lidarových dat v archeologii konfliktu středověku: obléhací práce z 15. Století, In: M. Gojda, J. John (eds.) *Archeologie a letecké laserové skenování krajiny/ Archaeology and airborne laser scanning of the landscape*, 190-199.

Lapajne, D. and Mahović, G. 2007. Stari grad Tuščak na Žumberku, *Godišnjak zaštite spomenika kulture Hrvatske* 29-30 (2005.-2006.), 75-84.

Laszowski E. 1902. *Hrvatske povjesne gradjevine*, Hartman, Zagreb.

Loades, M. 2018. *The Crossbow,* Bloomsbury Publishing.

Madiraca, V. and Čimin, R. 2009. Cesargrad, *Hrvatski arheološki godišnjak* 5/2008, 225-226.

Mazáčková, J., Žaža, P., Púčat, A. and Vanečková, D. 2023. Downfall of the Rokštejn Castle n 1467, In: P. Drnovsky, P. Hejhal, L. Rytíř (eds.) *Archaeology of Conflicts II,* Červený Kostelec: Univerzita Hradec Králové, 55-73.

Stopar, I. 1977. *Razvoj srednjeveške grajske arhitekture na Slovenskem Štajerskem,* Slovenska marica, Ljubljana.

Strzyż, P. 2012. Characteristics of medieval artillery in the light of written sources from Bohemia and Poland, *Fasciculi Archaeologiae Historicae,* Fasc. XXV, 21-30.

Szabo Gj. 1912. Izvještaj o radu zemaljskog povjerenstva za očuvanje umjetnih i historičkih spomenika u kraljevinama Hrvatskoj i Slavoniji 1911., *Vjesnik Hrvatskog arheološkog društva* XII, 201-259.

Zlatunić, R. 2010. Istraživanje vapnenica na lokalitetu Dragonera sjever, In: A. Starac (ed.) *Dragonera: dva bisera/two pearls*, Monografije i katalozi, vol. 19, 295-304.