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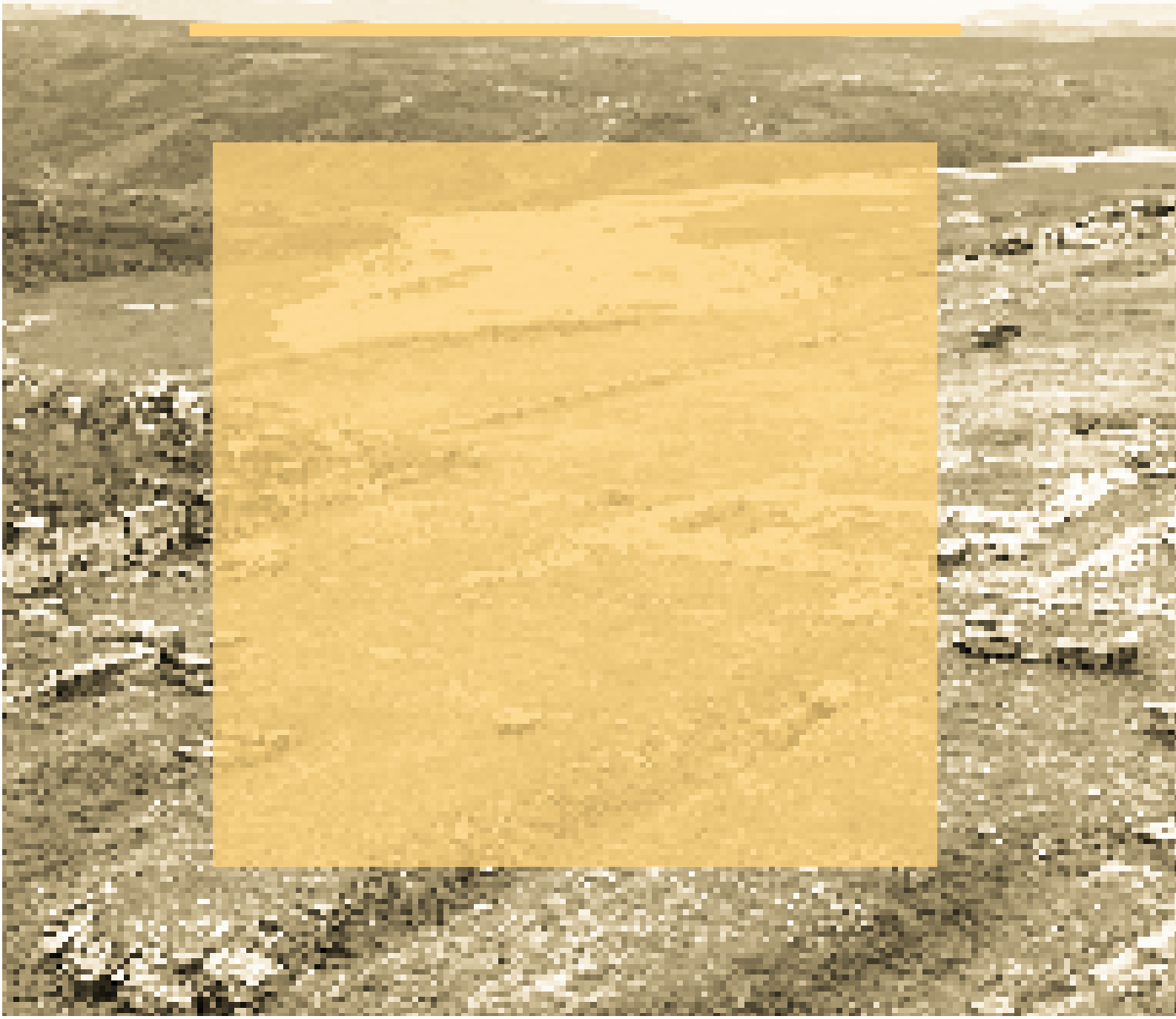
KULTURËS DHE INOVACIONIT

ITALIAN AGENCY
FOR DEVELOPMENT
COOPERATION

ARCHAEOLOGICAL CONSERVATION PLAN
ARCHAEOLOGICAL PARK OF BYLIS
ancient cities of Bylis and Klos



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PART 0

Introduction and purpose of the work

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This document summarizes the guidelines expressed in the Terms and References - ToR, providing a general overview of:

- the project context
- the beneficiary institutions
- the implementing agency of the project
- the purpose of the work
- the regulatory context

1 | General Overview

The archaeological park of Bylis is located in the Mallakastër region, about 1.5 km from the village of Hekal and approximately 8 km from the town of Ballsh. The hill on which the ancient city stands dominates the valley of the Vjosë River and the surrounding mountainous area. To the south, about 5 km from the archaeological park of Bylis, lies the village of Klos (the ancient city of Nikaias). The ruins of the archaeological park of Bylis, along with those of Klos, today represent the most typical representatives of Illyrian civilization in the 5th-1st century BC, and also serve as a new hub for cultural tourism development, with the potential to positively influence the sustainable development of the Mallakastër region.

The sites of Bylis and the ruins of Klos were declared cultural monuments of the first category, respectively by the decision of the Institute of Sciences (published in the Official Gazette No. 95, dated 16.10.1948); the Rectorate of the State University of Tirana/ No. 6/ dated 15.01.1963; and the Ministry of Education and Culture/ No. 1886/ dated 10.06.1973. Today, while the ruins of Klos are under the administration of the Regional Directorate of Cultural Heritage (DRTK) Vlorë, the Illyrian city of Bylis was established as a park with Council of Ministers Decision No. 396, dated 31.03.2005, along with its zoning map and administrative structure. This decision also created the National Board of Archaeological Parks (BKPA) in Albania, which at that time represented a strategic initiative for overseeing the activities of archaeological parks in the country. The director of the Bylis Archaeological Park was appointed, released, and dismissed by the Minister responsible for cultural heritage, based on criteria defined by the BKPA. According to this decision, the office of the Bylis Archaeological Park played a key role in implementing and administering approved programs. It collaborated with various central and local institutions, assisted local authorities, organized consultations with experts, and built partnerships with individuals, organizations, foundations, and international bodies for the recognition, publication, and financial support of projects for the preservation, protection, development, and enhancement of cultural and natural heritage values in the archaeological park. In addition, the Bylis Archaeological Park created better conditions for visitors through modern infrastructure. Financially, the expenses of the Bylis Archaeological Park were covered by the Ministry responsible for cultural heritage, while the revenues came from activities in the archaeological park. The Bylis Archaeological Park had the right to receive donations and sponsorships from various sources, using them in accordance with the park's objectives.

Subsequently, Council of Ministers Decision No. 249, dated 30.04.2014, designated the Office of Administration and Coordination of the Bylis Archaeological Park as the responsible structure for the administration of the Bylis Archaeological Park. Meanwhile, this decision introduced several

other changes regarding the structure of the National Board of Archaeological Parks (BKPA) and the administration of some archaeological parks.
Later, according to the Order of the Prime Minister No. 132, dated 21.10.2019, the Bylis Park was included in a single administration under the name of the Archaeological Park of Apollonia and Bylis. This decision amended previous Council of Ministers Decisions No. 184, dated 23.06.2014, concerning the structure and organization of the Office of Administration and Coordination of the Apollonia Archaeological Park, and No. 185, dated 23.06.2014, regarding the structure and organization of the Office of Administration and Coordination of the Bylis Archaeological Park. In the organizational chart of the administrative structure, Bylis was transformed into a sector within the Office of Administration and Coordination of the Archaeological Park of Apollonia and Bylis.

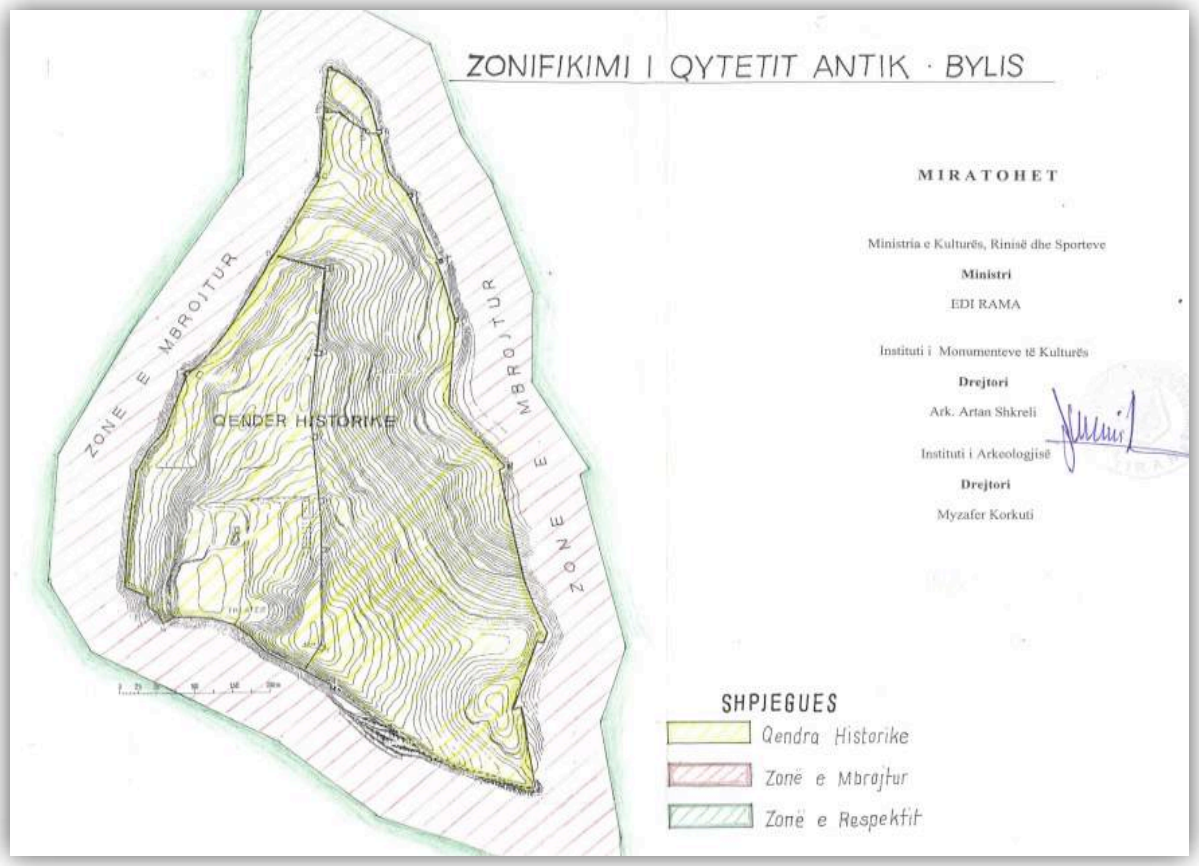

Figure 1 Map of the zoning of the ancient city of Bylis. Although not included in this image, the ancient ruins of Klos are also part of the service area.

2 | Executive Summary

Preservation and enhancement of Albania's cultural heritage are a priority for the EU Delegation in Albania in the context of the country's social and economic development on its path toward European integration.
The EU Initiative for Economic Development – Local Development Led by Tourism, with a focus on cultural heritage, funded by the European Union with 6 million euros and by the Italian government with 250,000 euros, aims to protect, modernize, and improve the archaeological site of Bylis in the Fier region. This initiative is intended to support the economic development of local communities and promote Albanian cultural heritage as part of the broader European cultural heritage. The initiative is implemented by the Italian Agency for Cooperation and Development in Tirana (AICS Tirana) in collaboration with the Ministry of Economy, Culture, and Innovation of Albania, the Emilia-Romagna Region, and the University of Bologna (UNIBO).
In this context, the Tirana Office of the Italian Agency for Cooperation and Development (AICS) invites expressions of interest from companies, experts, or consortia with experience for the preparation of the construction project for the Multifunctional Center for the Archaeological Park of Bylis and Klos.

The overall objective of the project is

"to preserve and enhance the usability and attractiveness of the cultural heritage assets in the Archaeological Park of Bylis (ancient cities of Bylis and Klos."

The Expected Results of the project are as follows:

- **Expected Result 1**: The cultural heritage of Bylis preserved and restored;
- **Expected Result 2**: Increased accessibility and sustainability of the cultural heritage of Bylis, natural assets, and other local assets with the participation and involvement of local communities;
- **Expected Result 3:** Enhanced local economic development through the adoption of the EU's Community-Led Local Development (CLLD) approach, improvement of skills and capacities, and expanded cooperation between local communities and park administration.

3 | Project Context

The development project of the Bylis Archaeological Park is part of the "Contribution Agreement - Instrument of Pre-Accession (IPA) 2018" signed between the European Commission and the Government of the Republic of Albania. In particular, the project aligns with the "Contribution Agreement for IPA 2017 - 'Tourism-led Model for the Local Economic Development Support Program'" signed with the EBRD on December 14, 2018. The project will further contribute to achieving the objectives of the "Integrated Rural Development Program of the Government of Albania (100 villages)" by implementing local development activities in the Mallakastra area. It is also significant for the "National Economic Reform Program 2020-2022 - NERP," as it addresses the specific objective related to tourism-led economic development, leveraging the full potential of its tourism and cultural assets.

In the perspective opened by these agreements, the Ministry of Culture at the time, now the Ministry of Economy, Culture, and Innovation, and the National Institute of Cultural Heritage (NICH - formerly the Institute of Cultural Monuments) prepared the Terms of Reference (ToR) for the management plan of Bylis during 2018, in the form of a document that was officially approved by the Decision of the National Restoration Council (KKR) no. 274, dated 31.05.2018. In 2019, the Government of Albania agreed with the European Union Delegation in Tirana (EUD) on an investment worth 6 million euros over a five-year period for the Bylis Archaeological Park project, through significant conservation and restoration interventions in the monuments of the Bylis Park, a fundamental improvement of the cultural heritage values, the creation of facilities to increase the flow and quality of tourist visits, and a positive impact of these changes on the sustainable economic development of the Mallakastra region through cultural tourism.

In this context, a Contribution Agreement no. 420-271/2020 was signed in December 2020, under which AICS Tirana would support the Ministry of Economy, Culture, and Innovation in the implementation of this project.

4 | Beneficiary Institutions

The beneficiary ministry of this project is:

- The Ministry of Economy, Culture, and Innovation, which is responsible for the creation of cultural and heritage policies and the management of national archaeological parks and museums;

Beneficiary institutions are:

- Administration of the Park with the current function of managing the Archaeological Park of Apollonia-Bylis;
- Institute of Archaeology (IA), Academy of Sciences of Albania.
- National Institute of Cultural Heritage
- The Municipality of Mallakastra as a local beneficiary of the project, focusing on its impact on sustainable development through the promotion of cultural tourism.

5 | Implementing Agency Of The Project

The Italian Agency for Cooperation and Development (AICS) is the agency of the Government of Italy responsible for managing international cooperation initiatives and directing the Italian public and private cooperation system worldwide. It is a public body established by Italian Law 125/2014. AICS has 19 field offices that manage cooperation initiatives in more than 50 countries in the Western Balkans, Africa, Asia, and South and Central America. The main objectives of AICS are the eradication of poverty, reduction of inequalities, protection of civil rights and personal dignity—including gender equality and equal opportunities—as well as conflict prevention and support for peace processes. In coordination with international governmental donors, it is committed to achieving the Sustainable Development Goals 2030. Its office in Tirana manages initiatives in Albania, Kosovo, Bosnia and Herzegovina, North Macedonia, and Serbia. Since 1991, the Italian government has financed international cooperation initiatives in the Western Balkans. By working hand in hand with the national governments of the Western Balkans, we promote intergovernmental dialogue for the sustainable development of local communities, the promotion of peace and human rights, and the European integration of the region. The areas of intervention include: Human Rights, Justice, Health, Civil Protection, Culture, Education, Environment, Sustainable Tourism, and Agro-food.

The main objectives of AICS Tirana in Albania are:
Ensuring food security and supporting sustainable and resilient agro-food production systems, promoting the connection between nutrition and health.
Increasing the protection of cultural and natural heritage; supporting economic activities and employment opportunities related to sustainable and responsible culture and tourism.
Consolidating and promoting inclusive processes of institutional strengthening, ensuring the participation of communities and civil society, especially women, youth, minorities, and vulnerable individuals, in development processes.

6 | Purpose Of The Work

The purpose of the service is to prepare the Archaeological Conservation Plan for the Archaeological Park of Bylis (the ancient cities of Bylis and Klos) for a period of five years. This service is aimed at consulting companies, consortia, and qualified experts, along with any subcontractors they may engage (the Consultant).

The conservation plan resulting from this service must:

a) **Identify threats**: Analyze factors that may threaten the integrity of the site, such as climatic conditions, human activities, or natural factors.

b) **Diagnose, describe, and compile** an illustrated plan on the state of preservation for all monuments in Bylis and Klos.

c) **Propose and describe** a strategy for conservation work based on the level of risk to be undertaken over a five-year period.

This strategy must include an intervention methodology based on the conservation status of the site, the need for digital documentation, sampling tests, and a monitoring system for the future.

The Conservation Plan must consider the potential effects of climate change on the long-term preservation of archaeological remains, so that the Archaeological Park of Bylis-Klos, as well as IKTK and IA, have the most up-to-date and verified scientific information to plan, manage, and finance interventions as much as possible for:

- **Protecting the integrity of the site.**
- **Effectively managing changes.**
- **Engaging and supporting local communities** living or working in the Park.
- **Supporting the local economy** through the planned use and management of the Park as a tourist destination.

The produced service must take into account the recommendations included in the Management Plan of the Archaeological Park of Bylis and Klos and, in doing so, provide a clear, well-researched program supported by scientific results for its implementation by the EU project for economic development—Tourism-led local economic development, focusing on cultural heritage, funded

by the European Union, as well as the structures of the Park, IKTK, and the Regional Directorate of Cultural Heritage in Vlorë.

6.1 Consultation with group of interests

Throughout the work, the Consultant is expected to collaborate with the following organizations and their authorities:

- **Ministry of Economy, Culture, and Innovation through:**
  - National Institute of Cultural Heritage
  - ZAKPAAB
  - Regional Directorate of Cultural Heritage, Vlorë
  -
- **Institute of Archaeology, Academy of Sciences of Albania**

- Furthermore, it is considered necessary for the consultant to connect with local interest groups in Ballsh and Hekal.

- Other institutions and interest groups that will be identified during the service execution.

7 | Regulatory Context

All conservation planning must comply with national standards and Albanian law. However, it is advisable to reference good international practices when developing a conservation plan.

7.1 Albanian Legislation

All work must comply with Albanian law:

a) Decision No. 396, dated 31.03.2005, on the approval of the boundaries and regulations for the administration of the Archaeological Parks of Shkodra, Lezha, Apollonia, Bylis, Amantia, Orikumi, Antigonea, Finiq, and Butrint.
b) Law No. 27/2018 on "Cultural Heritage and Museums."
c) Decision No. 1099, dated 24.12.2020, on "Technical Norms, Criteria, and Models for Intervention in the Field of Conservation of Cultural Properties."
d) Decision No. 1125, dated December 2020, on "Approval of the Rules for Design, Implementation of Conservation and Protective Interventions in Material Cultural Properties, Monitoring, and Acceptance of them."
e) Decision No. 220, dated 07.04.2021, on "Determining the Procedures for Archaeological Research, the Special Conditions for Issuing Permits, Accompanying Documents, and Procedures for Reviewing or Annulment of Permits for Conducting Archaeological Research."

7.2 International Legislation

All conservation efforts must be based on relevant charters, declarations, resolutions, and guidelines. These documents include, but are not limited to:

- The International Charter for the Conservation and Restoration of Monuments and Sites (Venice Charter, 1964).
- The Charter for the Protection and Management of the Archaeological Heritage, prepared by the International Committee on the Management of Archaeological Heritage (ICAHM) and adopted by the 9th General Assembly in Lausanne, 1990.
- ICOMOS Charter on Principles for the Analysis, Conservation, and Restoration of Architectural Heritage, ratified by the 14th General Assembly of ICOMOS held at Victoria Falls, Zimbabwe, in 2003.

- The Salalah Guidelines on the Management of Public Archaeological Sites, adopted by the 19th General Assembly of ICOMOS, New Delhi, India, December 15, 2017.
- The Nara Document on Authenticity.
- The ICOMOS Charter for the Interpretation and Presentation of Cultural Heritage Sites.
- The Codes and Practices of the European Association of Archaeologists, Principles of Conduct for Contract Archaeology, and the European Journal of Archaeology's Ethical Policy.
- Interpret Europe – Engaging citizens with Europe's cultural heritage.
- The Sevilla Principles, ICOMOS International Principles for Virtual Archaeology, and the London Charter for the Computer-based Visualization of Cultural Heritage.
- The Freiburg Declaration, Interpret Europe, European Association for Heritage Interpretation.
- The European Convention on the Protection of Archaeological Heritage, Treaty No. 143, Council of Europe

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PART 1

Methodological approach and contents

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1 | Purpose of the conservation plan

The purpose of the Archaeological Conservation Plan is to ensure the protection, preservation, and definition of measures to be taken to maintain the integrity and historical, cultural, and scientific value of the Park and to identify the key conservation interventions. It must align with the vision outlined in **the management plan of the Archaeological Park of Byllis and Klos**, which is:

> *The preservation and cultivation of the rich values of the ancient cities of Byllis and Klos will contribute to shaping an inspiring model for sustainable local development, education through culture, and the enhancement of tourism offerings, while ensuring that this cultural heritage remains a source of national identity for future generations.*

The Management Conservation Plan included:

a) Diagnose, describe, and create an illustrated report on the conservation status of all monuments in the Archaeological Park of Byllis and Klos.

b) Propose and describe a strategy and a set of accompanying policies for the conservation works to be undertaken over a five-year period.

c) Develop a detailed Action Plan for five years, defining the priorities for interventions and maintenance.

This strategy consider the need for sample testing, a detailed work program (structural consolidation, reinforcement, surface cleaning, etc.), including any future monitoring system. Any detailed project prepared within this conservation plan will be subject to review by KKTKM.

2 | Key point of the conservation plan

The Archaeological Conservation Plan of Byllis and Klos is based on the **philosophy of minimal physical intervention**, which means preserving (as they are) the structures on the site's surface and underground, **aiming to protect the site's unique characteristics and elements that are in situ**, especially those at immediate risk, thereby preserving the heritage values of the park for perpetuity. For all the proposed interventions, traditional techniques and materials of the same type as the originals are used, where possible.

In general, the central philosophy aim to ensure:

- Optimal proposals for structural consolidation, stabilization, and preservation of the intrinsic values of the site's structures.
- The minimal necessary interventions for the preservation of the site's structures as a whole.
- Cost-effective interventions using local materials, where possible.

3 | Methodological Approach

The methodological approach developed by team work for f the **Archaeological Conservation Plan** and the **Detailed Conservation Projects** for the Bylis and Klos sites is based on a synergistic integration of rigorous scientific methods, a strong commitment to cultural enhancement, and a sustainable vision for heritage conservation.

The proposed methodology goes beyond purely technical and restorative interventions; it is embedded within a broader framework of protection, promotion, and informed public engagement, aiming to transform the sites into living, accessible, and widely recognized heritage assets.

The work is structured as a comprehensive, coherent, and articulated plan that respects the historical, environmental, and cultural values of the sites involved, while promoting an innovative, participatory, and interdisciplinary vision of conservation.

In the specific case of the Bylis archaeological site, we are dealing with a **complex historical palimpsest** that is extraordinarily representative of the site's historical evolution.

The significance of the site lies in the presence of idiosyncratic elements: each monument preserves unique, specific, and unrepeatable features that define its material, historical, and territorial identity. This is a highly stratified archaeological complex, where different historical periods are layered not by erasure but by accumulation—leaving tangible traces of settlement continuity and cultural transformation.

Despite the numerous dismantlings, damages, and alterations suffered over the centuries, the site still preserves archetypal elements that make it possible to identify, for each building or structure, its original features and intended function within the ancient urban context. These traces, though fragmentary, are so significant and distinctive that they confer recognizability and uniqueness to every piece of architecture, every wall, and every construction detail. This gives the site a strong identity and a recognizability that goes beyond formal integrity, demanding a thoughtful and deliberate approach to its conservation and interpretation.

For these reasons, **B5 S.r.l.'s methodological approach firmly rejects any logic of arbitrary reconstruction or historical falsification, instead embracing an authentic conservation strategy—one that respects the original material and the lived history of the site. In this context, conservation does not aim to recreate an idealized image of the past, but rather to safeguard and render legible the authentic traces of history, to preserve the specificity of forms and materials, to consolidate what endures, and to enhance what still speaks to the present.**

The intervention is therefore based on a knowledge- and operations-driven strategy that integrates high-precision surveys, material and structural studies, in-depth diagnostic analyses, and environmental assessments.
Each action is carefully calibrated, verified through preliminary testing, and guided by criteria such as physico-chemical compatibility, potential reversibility, and discreet distinguishability. The aim is to develop a conservation project that is consistent with the site's unique characteristics while also addressing current needs in terms of management, accessibility, and cultural engagement.
The site's fragmented yet still powerfully evocative identity calls for an interpretation that integrates both **tangible and intangible heritage**: each preserved stone is not merely a physical artifact but a fragment of memory, a trace of the historical continuity that connects the ancient landscape to contemporary life. From this perspective, **conservation is conceived as an ethical and cultural act, even before being a technical one, and it represents the core of the project proposal for Bylis and Kloss.**

4 | Work Phases and contenets

The above methodology was aligned with the Client's objectives and the minimum requirements set forth in the Terms and References (ToR).
The result was a work plan structured into the following phases:

FASE 1 - Diagnosis and Data Collection

The first step in our approach is the **diagnostic phase**, which is based on the precise acquisition of information. This phase includes an in-depth **documentary analysis**, essential for reconstructing the history of the site and understanding the various phases of intervention that have occurred over the centuries.
This is complemented by an **environmental and landscape analysis** to identify natural disasters and other phenomena that have had a historical impact on the site.
This phase was conducted through bibliographical, historical, archaeological, geological, and environmental research of the site.

The results of this phase are included in the following sections of the conservation plan:
PART 2 - Historical Analysis
PART 3 - Environmental and Landscape Analysis

FASE 2 - Survey

The second step in our approach is the **accurate survey of the current state of the site** to assess its present condition. For spatial and geometric surveying, we employ advanced technologies such as 3D laser scanning and drone photogrammetric surveys, which allow us to capture high-precision documentation necessary for an accurate reading of the structures, surfaces, and their characteristics.
The visual and geometric analysis is complemented by high-resolution photographic shots, which enable detailed cataloging of every element, including the more hidden and delicate features, such

as decorated surfaces or plaster layers. The processing and elaboration of point clouds and high-definition orthophotos allow for a stratigraphic view of the site, making it possible to precisely identify the construction phases and interventions carried out in different periods.

The results of this phase are included in the following sections of the conservation plan:
PART 4 - Survey

FASE 3 - Archaeological investigations

The second third in our approach is the **archeological survey.** The surveys in the development area should aim to answer several questions in relation to the archaeological heritage of the construction area and the surrounding territory. The results of the survey within the reconstruction area of the workers' camp are an important piece of information for the evolution of the settlement from the Hellenistic period to that of late antiquity. It is important to enable a better dating of the period when this area was first inhabited, re-inhabited and abandoned. To define as clearly as possible the urban structure of this village of the late antiquity period, which will be an added value not only for the archaeology of this period. The data collected from the surveys will shed light on the history of the village of this period.

The results of this phase are included in the following sections of the conservation plan:
PART 5 - Archaeological investigations

FASE 4 - Condition Assessment

The fourth phase of the work is the **assessment of the condition** of the site and the structures located within the Byllis and Klos Archaeological Park. This assessment includes identifying risks and threats to the structures, the site, and the surrounding environment.

From a conservation perspective, the heritage protection project for the Bylis and Klos archaeological sites highlights several critical issues that require a careful, multidisciplinary approach grounded in rigorous principles of critical restoration. The main challenges involve a combination of structural, material, environmental, and management factors that compromise the integrity, legibility, and long-term sustainability of the heritage.
This phase includes a description of the necessary conservation interventions, the methodology, a list of priorities for each area (including those foreseen by the current structures), the proposed treatment, the materials, accompanied by specific mappings on digital two-dimensional drawings.

The results of this phase are included in the following sections of the conservation plan:
PART 6 - Condition Assessment

FASE 6 - Tourism Market and Stakeholder Engagement Strategy Analysis

A distinctive element of the approach adopted by team work. is the focus on the **accessibility and sustainable enhancement of the site**, understood as an integral and inseparable part of the conservation process. The material protection of the structures is not conceived as an end in itself, but as a prerequisite for restoring meaning, legibility, and accessibility to places of memory. In this way, conservation becomes part of a broader strategy of integrated enhancement, aimed at reintegrating the monuments into the living fabric of contemporary society, while maintaining full respect for their historical identity and paying the utmost attention to the safety of the site and its visitors, particularly in anticipation of an increase in tourist flows.
The site's accessibility will not merely be an outcome of the conservation process, but its natural continuation. Making the monuments accessible and understandable means strengthening their social value, encouraging the active participation of local communities, and fostering new forms of shared stewardship—where knowledge becomes the primary tool for heritage protection.
The approach adopted acknowledges the value of **intangible heritage and the collective memory** associated with the sites of Bylis and Klos. These are not merely archaeological landmarks, but lived spaces deeply rooted in the historical and cultural narrative of the local community. The project includes active community engagement initiatives such as public archaeology workshops,

educational programs for schools, and collective moments for sharing and interpreting the cultural significance of the sites. In addition, cultural activities and events will be promoted to help preserve local traditions and foster the recognition and transmission of intangible heritage through oral history and other community-based valorization practices.

The results of this phase are included in the following sections of the conservation plan:
PART 7 - Tourism Market and Stakeholder Engagement Strategy

FASE 7 - Action Plan

Finally, the methodology includes the development of a **detailed five-year Action Plan**, defining the priorities for interventions and maintenance.
This plan includes an emergency response plan, outlining the procedures to be followed (maintenance, monitoring, management of natural and man-made risks, further excavations, and analyses).
This will ensure the sustainability of the interventions and the resilience of the site, allowing the preservation of the heritage for future generations, in compliance with international and national regulations regarding the protection of cultural heritage.
The action plan will take into account the timelines of the IPA 2018 project "EU for Tourism-Led Economic Development, Local Economic Development with a Focus on Cultural Heritage."
The related costs will be identified and broken down into these categories:

- Conservation and structural consolidation
- Cleaning and ongoing maintenance
- Monitoring.

The results of this phase are included in the following sections of the conservation plan:
PART 8- Action Plan

4 | The Working Group

The responsible figures belonging to the working group are:

Key Experts

Giovanni Di Fisco
Overall Team Leader

Francesca Brancaccio
Lead Conservation Architect

Agron Islami
Local Art Restoration

Neritan Ceka
Lead Archeologist

Massimo Di Fisco
Structural Engineer

Bujar Karanxha
Topographer - Geodetic Engineer

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2

PART

Historical Analysis

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This document is to be considered part of the Conservation Plan. In particular, it contains information regarding the site's origins and significant phases of its development. This information is essential to support the analysis and conservation proposals for the site from a historical perspective (**ref. point 8.1 - Historical Analysis of Terms and References - ToR**)

This document contains technical contributions prepared by individual subject-matter experts engaged in the project. Each section authored by a specific expert reflects the professional judgment, interpretations, and opinions of that contributor alone.

1 | Historical Analysis of Bylis

In its approximately 1000-year life, from its foundation around the middle of the 4th century BC until its abandonment at the end of the 6th century BC, Byllis had two major periods of economic and cultural flourishing, which materialized through social or private monuments that formed the architectural physiognomy of the city.

- **The first period** is that of **classical Illyrian antiquity**, which summarizes the life of the city under the administration of the Koinon of the Bylliones in the 4th-1st century BC and which continues from an architectural point of view even in the period of administration by Colonia Iulia Byllidenses and the Roman provincial administration in the 1st century BC until the 3rd century AD.
- **The second period** coincides with **Late Antiquity**, the 4th-6th century AD, when Byllis administratively belonged to the Byzantine Empire, undergoing fundamental changes in its architectural physiognomy.

The complete urban-architectural physiognomy of Byllis took shape around the middle of the 3rd century BC, about a century after its foundation, as a result of investments made by the political community known as the Koinon of Bylliones, as well as the increase in the quality of life from the enrichment of the civic elites. Three important monumental complexes can be distinguished that can be summarized as:

- *The city's surrounding walls, with entrances and towers as basic architectural elements.*
- *The agora, with the theatre, stadium, stoa and other public buildings.*
- *The hippodamic road network with private residences.*

1. The city's surrounding walls

The surrounding walls of Byllis are among the best preserved and most magnificent of the ancient Illyrian fortifications of the mid-4th century BC. At a length of 2250 m, they surround an area of 30 ha, in which the ancient city with its three internal divisions lay:

- the *agora*, for social and cultural activities;
- the residential area for housing and the *euchorion* for sheltering the village population in case of war.

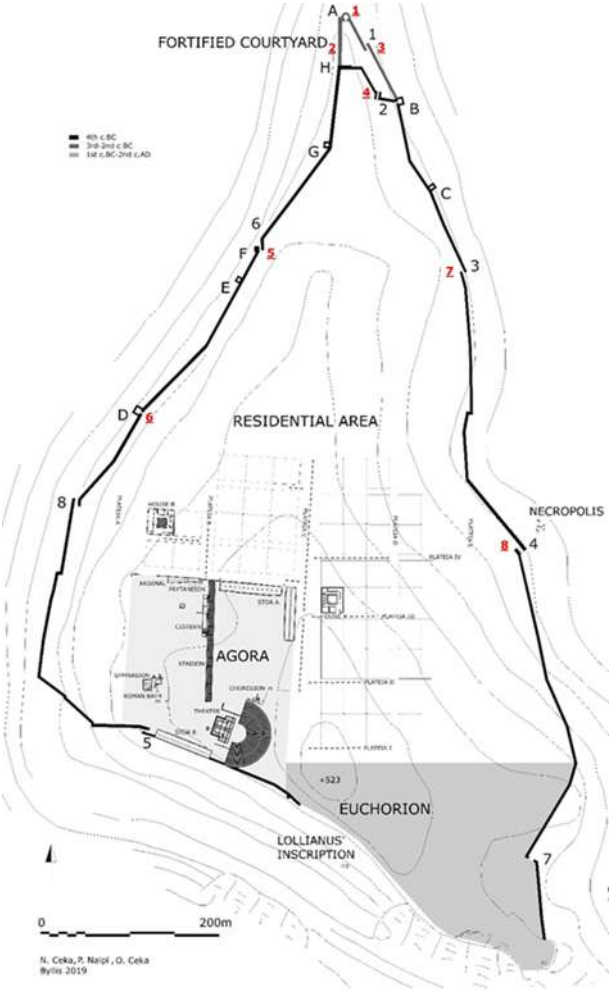


Figure 1 Planimetry of the ancient city of Byllis during the 4th-1st centuries BC, according to N. Ceka, P. Naipi, O. Ceka.

The layout of the surrounding wall is simple, in the shape of a triangle, which remains open for only about 200m, on the impassable rocks of the southern side.

Five towers were placed at the bends of the surrounding wall, which served to place guards, but also strengthened the stability of the walls. So far, eight gates have been discovered, which ensured the rapid movement of residents and travelers in the city, which are numbered 1-8, in the order of discovery. Passage through them was controlled by guards stationed in towers that rose above the arches in the entrance corridors.

Gate no. 4 on the eastern side had the appearance of a real building measuring 10.85 x 8.45 m and was about 9 m high.

Gate no. 5 served mainly the agora for direct access for participants in the activities that took place there.

An interesting element is the fortified courtyard, which was added to the surrounding wall in its northern corner in a second construction period, to secure the main entrance to the city from the attacks of *lithoboles*.

The 3.50 m wide walls are built of limestone blocks worked in quadrangular shapes and placed in almost equal rows with a height of 0.55-0.65 m, known as the isodomic technique. Their structure is of the emplekton type, where only the two outer faces of the wall consist of blocks, while inside

they have a filling of small stones, which is connected by transverse blocks to the faces. The height of the wall from the outside ranged from 8-9 m. The surrounding wall of Byllis was part of a system of fortifications created around the middle of the 4th century BC, related to the social and economic development of Southern Illyria, as well as the strengthening of the Illyrian Kingdom in the hinterland of the Hellenic colonies of Dyrrachium and Apollonia.

A second period of construction was carried out in the fortifications of Byllis in the conditions of the wars that took place in the Bylin territory between 230-167 BC. During this period, the fortified courtyard was built on the northern side of the city, to withstand the attacks of war machines. For this purpose, a round tower with a diameter of 9.60 m was also built, with triple walls, which ensured its stability against the attacks of lithoboles, but could also bear the weight of the stone-throwing machines installed on the tower. The surrounding walls of Byllis were preserved without visible changes even when the city was transformed into a Roman colony, by a special decree of Augustus, as attested by the Latin inscription preserved in gate no. 5.

With its powerful fortification and the large area enclosed within them, Byllis was the political, but also military center of the Koinon of Bylliones. The territory and wealth of its inhabitants were protected by a complete system of fortifications, which included the cities of Klos, Gurëzesa (Eugenum) and Margëlliç (Bargullum), as well as the castles in Kalivaç and Rabie.

1.1 The fortified courtyard

The fortified courtyard represents an addition to the Bylis fortification, which was intended to protect the northern, more attackable side of the fortifications, which had until then been entrusted to the large bastion. Located in the northwestern corner of the fortification, it simultaneously protected against frontal attacks from the north, as well as controlling the main entrance to Bylis, which was made through Gate No. 6. The opening of Gate No. 2 on the eastern side of the bastion made it necessary to create a fortified courtyard in front of it, which was crossed by Gate No. 1 and protected by the Round Tower.

Although this construction was **built in the 3rd century BC**, the construction technique is the same as that of the 4th century walls, with isodomic quadrangular masonry of the *emplekton* type with a row height of 0.60 m. The blocks on the facade have flat faces and slightly cut sides, which create a shallow decorative groove.

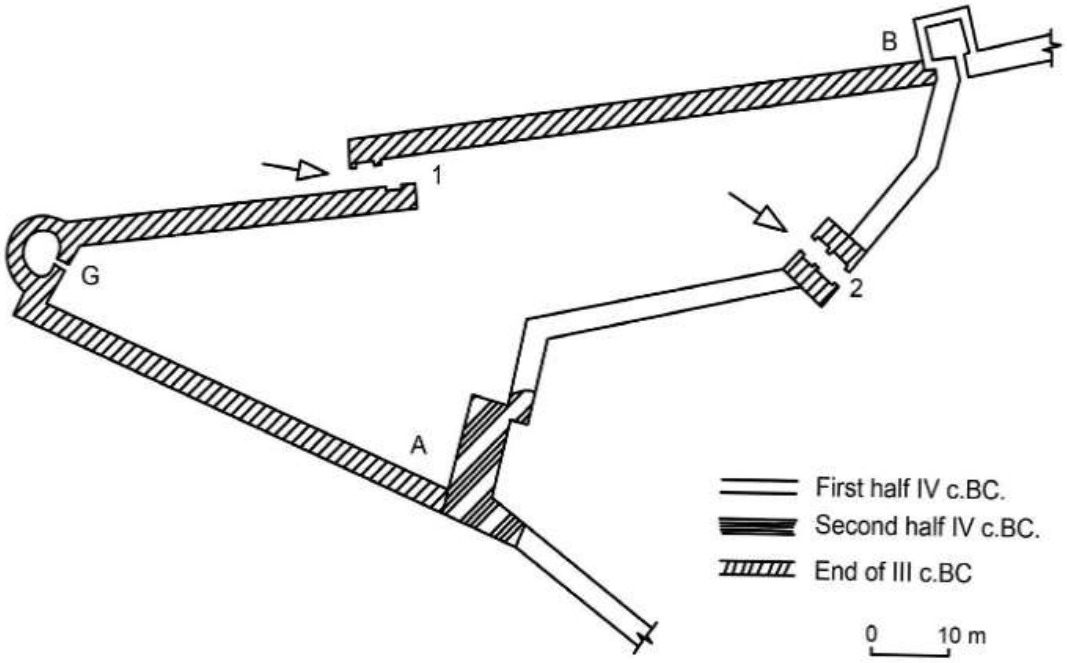


Figure 2 The fortified courtyard at Byllis. Plan by N. Ceka, O. Ceka

Past conservation and restoration works - The fortified courtyard

The courtyard has been the object of restoration interventions carried out by L. Papajani for the Great Bastion, Gate 1, Gate 2, the eastern and western walls and by E. Haxhiraj for the Round Tower.

Photographic documentation - The fortified courtyard

Figure 3 Fortified court. Ortophoto, N. Ceka, J. Pekmezi. AIA

1.2 The Round Tower

In a third period, coinciding with the Roman-Macedonian wars in the hinterland of Apollonia, a triangular fortified courtyard was added, as was an enormous round tower with a diameter of 6.90 meters. The tower had two stories and was about 9 meters high; It controlled the entrance toward a new gate that was built to its left side.[1]

Past conservation and restoration works - The Round Tower

It was restored by Edmond Haxhiraj. The method was the ansatylosis of the blocks that were found directly collapsed under the surrounding wall, being oriented by the height of the rows. Because the wall was rebuilt during Late Antiquity and the area was used for a long time as a quarry by the locals, it was not easy to complete the rows, so the restorers have placed the blocks on the wall, mainly respecting their height.

Photographic documentation - The Round Tower

Figure 4 The Round Tower. Photo by N. Ceka

[1] *2025, Byllis, It's History af monuments, N. Ceka, S. Muçaj*

1.3 The Gate n.1

It is the main gate of the Fortified Courtyard, as well as the entire city starting from the end of the 3rd century BC.

Past conservation and restoration works - The Gate n.1

Restoration works by L. Papajani have restored part of the blocks in the upper rows of the western face, but without correcting the slope (inclination) of the wall that is quite pronounced in the inner corner of the entrance.

Photographic documentation - The Gate n.1

Figure 5 The Gate nr. 1. During the restoration works. Photo by N. Ceka

1.3 East Wall with Gates 3 and 4

From its foundation and up to the fourth century AD, the eastern part of Byllis was the principal residential area, but in the fifth century AD, the life of the city was focussed principally on the west. With the building of the new surrounding wall in the middle of the sixth century AD, the area remained outside the city and was abandoned.

Observations and soundings show that he eastern part of the city was densely populated and had an orthogonal or grid system of roads.

In addition, it was connected to the surroundings of the city through entrance nr. 3 (the narrowest one in the city 1.40 meters wide), which principally served the necropolis of the fourth-third centuries BC, and through entrance nr. 4.[2]

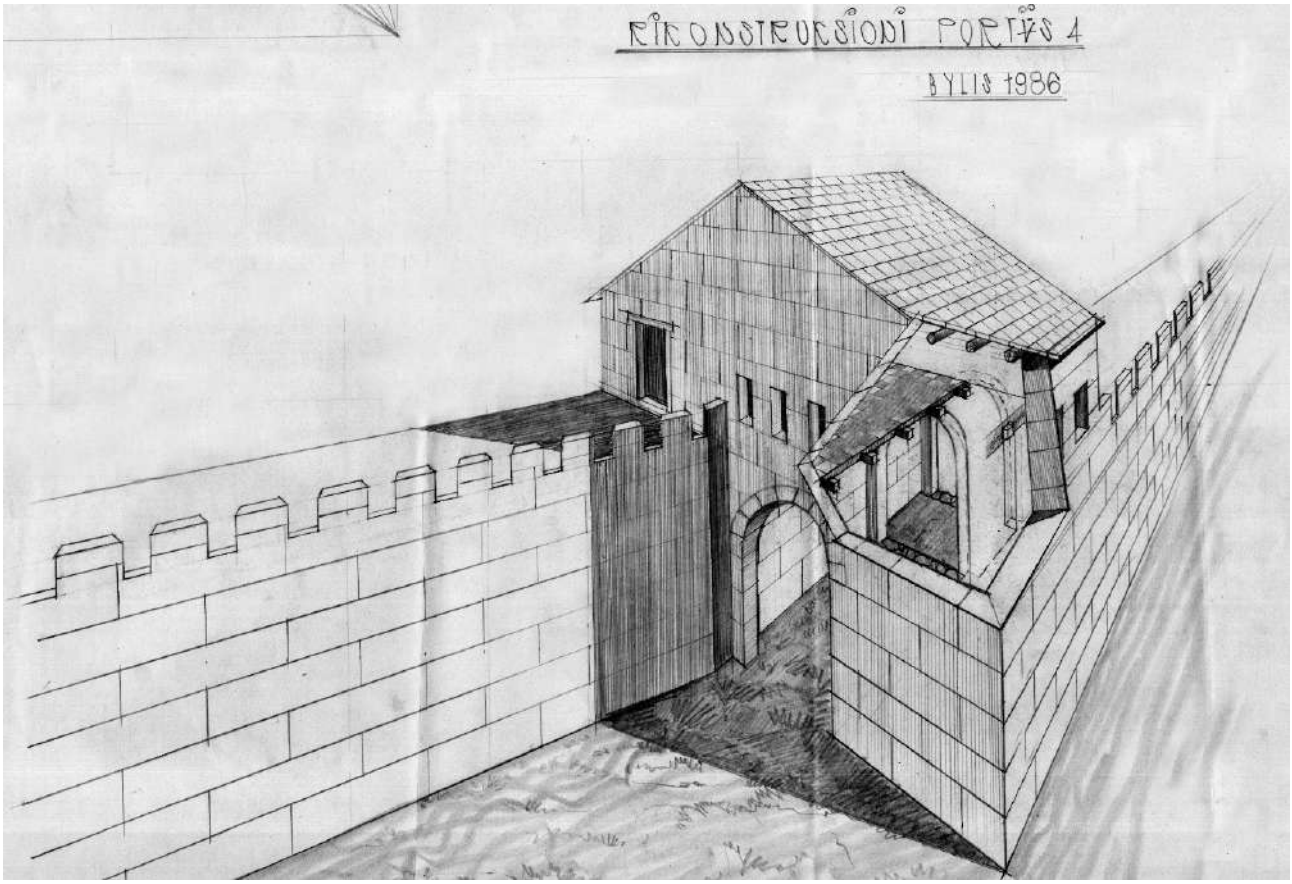


Figure 6 Recostruction of Gate nr. 4 by N. Ceka, L. Papajani (AIA)

This entrance is located in the middle of the wall of the eastern side, where it begins to rise to the slope of the hill. The road that connected Byllis with the neighboring city of Klos passed through it.

[2] *2025, Byllis, It's History af monuments, N. Ceka, S. Muçaj*

Gate nr. 4 is the largest and best preserved of all the gates of the city. The entrance corridor, 8.45 meters long and 4.20 meters wide, was covered by an enormous tower measuring 10.85 x 8.45 meters.
It rested on three arches following on in continuation of six buttresses on both sides
of the corridor.
A door with one leaf was located after the second buttress; its axis was supported on the left side of the entrance. The entrance was used, although narrowed, as late as the fifth to sixth centuries AD [3].

Past conservation and restoration works - East Wall with Gates 3 and 4

This part of the wall was partially treated by L. Papajani, who cleaned Gate No. 3, which had been excavated in 1918 by C. Praschniker. He also carried out conservation interventions on Gate No. 4 excavated by N. Ceka, restoring the fallen blocks.

Photographic documentation - East Wall with Gates 3 and 4


Figure 7 Gates nr. 3 - 4

[3] *2025, Byllis, It's History af monuments, N. Ceka, S. Muçaj*

1.4 Southeast with Gate 8 and *Euchorion*

It was one of the main gates through which the population of Koinon entered the *euchorion* to take refuge in case of war.
An area of about 6 ha constitutes *euchorion*, where no construction was allowed and therefore today it appears as a bare terrain, exposed to erosion. In the center of this area, right on the edge of the impassable cliff, is the only known quarry of Byllis, which has served to extract construction material, but also sculptures throughout all periods.

Past conservation and restoration works - Southeast with Gate 8 and *Euchorion*

The quarry has been partially cleaned during the research work for its publication, but has been covered again by soil deposits and vegetation.

Photographic documentation - Southeast with Gate 8 and *Euchorion*

Figure 8 Euchorion

1.5 Southwestern, southern wall and Gate nr. 5

This wall, which extends from the rock falls to the southwest corner of the Byllis fortification.
At a distance of about 70 m the surrounding wall was rebuilt in the 3rd century BC to serve as the main wall of Stoa B. Its buttresses also served this purpose. The destruction and removal of the building material of Stoa B in the Late Antiquity period caused the wall to be leveled to the surface of the stoa floor on its inner side, while the outer side was demolished at 45 degrees.
Near the theater, is located gate nr. 5, through it the population of the surrounding areas entered the agora. Its planning repeats the scheme typical of the early entrances of Byllis, with a slanted corridor.

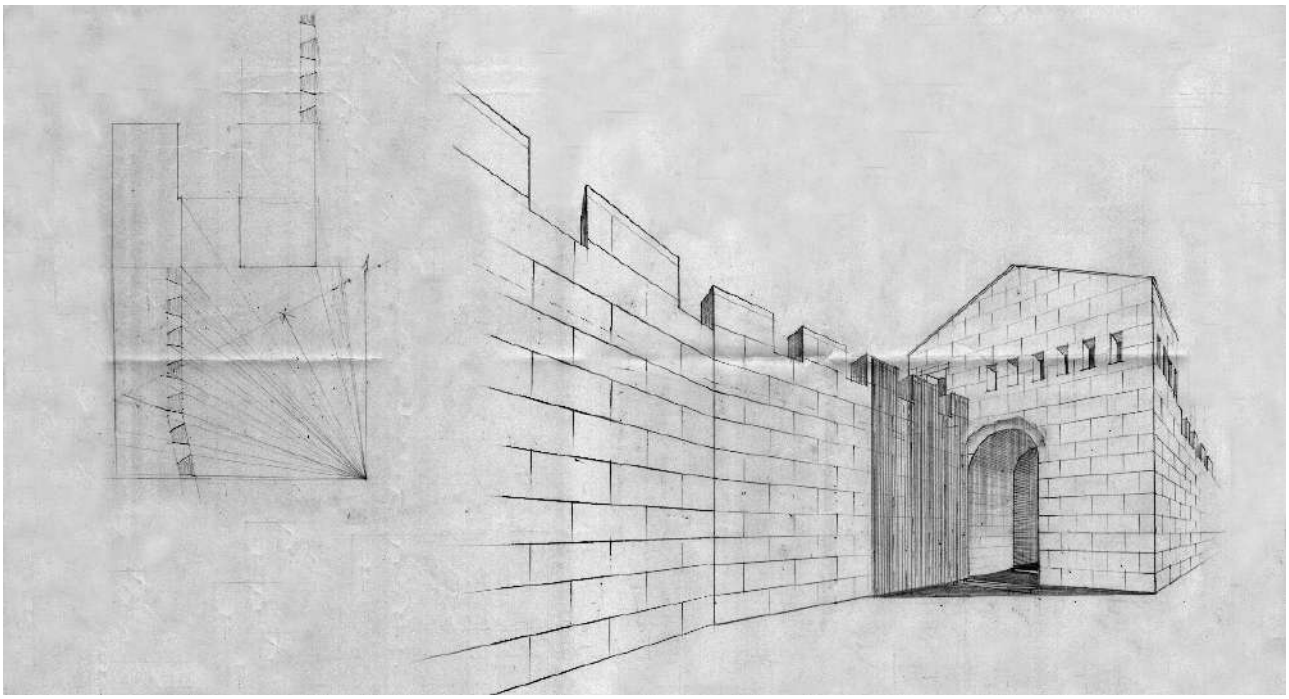


Figure 9 Gate nr. 5. View and reconstructio. N. Ceka, P. Naipi (AIA)

Seven meters long and three meters wide, it ran between the two parallel wings of the wall. Thus the entrance was hidden from frontal attacks, and those besieging the city were forced to pass along the wall, from which they could be attacked from above.
In addition, the entrance leading to the gate was also controlled by a tower a tower with dimensions of 9,88 x 7 meters, rising over the entrance corridor erected on arches 8,80 meters high. The wooden door itself was 3,60 meters deep into the corridor, so that it would not be assaulted or burnt when the city was attacked.
This gate was rebuilt when the Roman colony was established. A Latin inscription in a block on the right side of the entrance says: "*Augustus, son of the emperor, divine Caesar, permitted it [the rebuilding of the walls*]".

On another block a partial inscription that can be filled in is legible "*The colony of Julia Augusta"*. During the reconstruction of the city walls at the beginning of the fifth centuxy AD, this entrance continued to be used, although it was narrowed. During the reconstructions of Victorinus, however, it was walled up.
Part of the necropolis of early Byllis was located near this gate, with graves in the form of large boxes of dressed stone slabs. Several of them were re-used in the second half of the sixth century AD.[4]

Past conservation and restoration works - Southwestern, southern wall and Gate nr. 5

This wall, which extends from the rock falls to the southwest corner of the Byllis fortification, has been the subject of conservation-restoration interventions only in the area of Gate No. 5. The entire part of the surrounding wall under the southern analemma of the theater has been partially discovered during its excavations.
Surrounding wall under Stoa B was partially excavated during the excavation of the Stoa B and its easternmost part was restored by L. Papajani in a satisfactory manner.
The gate was excavated by N. Ceka and restored by L. Papajani, who placed the fallen blocks on the side walls. He raised the level of the walls by placing the blocks that came from the reconstruction of the Late Antiquity period, when they had lost their original alignment. However, this method ensured the stability of the walls, as well as the perception of the architectural form of the building.

[4] *2025, Byllis, It's History af monuments, N. Ceka, S. Muçaj*

Photographic documentation - southern wall

Figure 11 The southern wall

Figure 10 The city wall under Stoa B

Figure 12 Unrestored wall under Stoa B

Photographic documentation - Gate nr. 5

Figure 14 Gate nr.5

Figure 13 The wall after the Gate nr. 5

1.6 Western wall with Gates nr. 6 - 7 and the tower of the Bektashian pilgrimage

This might be called the Apollonian gate, because it marked the beginning of the road that led from Byllis to Apollonia, passing along the spine of the hills and the ancient city of Gurezeza.
The ascent toward this gate was controlled by a turn of the wall and by tower F. The entrance corridor, with dimensions of 7.60 x 2.40 meters, is formed between two parallel wings of the city's surrounding wall. There were two doors, one at the beginning of the entrance and the second at a depth of 4.20 meters from it. The entrance was covered by a tower with dimensions of 9 x 7.60 meters, built over the arches on top of the corridor. At the threshold of the gate, two hollow depressions can be seen, one for the passage of carts and one for water.
In a second period of construction, during the third and second centuries BC, the tower over the entrance was torn down and replaced by a square tower with dimensions of 6.10 x 4 meters located to the right of the entrance. The gate was repaired during the Byzantine period, in the fifth century AD, reusing the blocks from the Illyrian wall and putting a Latin inscription on the left side of the entrance. Victorinus made partial repairs but only in the height.
A repair with reused blocks and mud serving as binder might be related to the events of the thirteenth and fourteenth centuries, when the ruins of Byllis served as military camps.
In front of the entrance, on both sides of the road, part of the city's necropolis was locateci. It has given us several grave steles that date from the third to first centuries BC[5].

Past conservation and restoration works - Western wall

The western wall was excavated by N. Ceka, but there has been no conservation or restoration intervention. Gate no. 6 has been treated by L. Papajani, who has restored the fallen blocks, creating a clear view of the monument.

[5] *2025, Byllis, It's History af monuments, N. Ceka, S. Muçaj*

Photographic documentation - Western wall

Figure 15 The western wall still unexcavated

Figure 16 The tower under the Bektashian sanctuary

Photographic documentation - Gate nr. 7

Figure 17 Gate nr 7

Figure 18 Gate 6 - 2025, Byllis, It's History af monuments, N. Ceka, S. Muçaj

1.7 Necropolis

Outside of entrance no. 4, a monumental necropolis was started during the fourth century BC. Most of the graves were cut deeply into the rocks in an east-west direction. Two graves belong to a type covered with an vault. They consist of a rectangular room cut into a rock, with an entrance from the east and with a stone ledge on the left for placement of the body. The earlier tombs contained materials of the second half of the 4th century BC, which also serve as *terminus ante quem* for dating the wall and Gate no. 4, with the construction of which the creation of necropolis was also related.

Figure 19 Monumental tomb near Gate No. 4 x x

2. The Agora and its monuments

The Agora was the meeting place and the main social, political and cultural activities of the city and, in certain activities, also of other residents of the Koinon of the Bylines. Its space has been reserved since the beginning of the founding of the city in the center of the southern side, on the highest and most picturesque part of the hill where the city was located. The agora square has the shape of a regular quadrangle, typical of the agoras of the cities of Magna Grecia (Southern Italy). The monuments were placed on two planes of different heights, which were connected by the steps of the stadium and the theater. The agora space was separated from the city by a decorative wall on the north side and by the walls of the great stoa. Two monumental entrances allowed the entry of citizens from this side, while from the south side the entrance was made from the city's gate no. 5. From here the residents of other Bylliones centers entered, because the agora belonged to all citizens of the koinon.

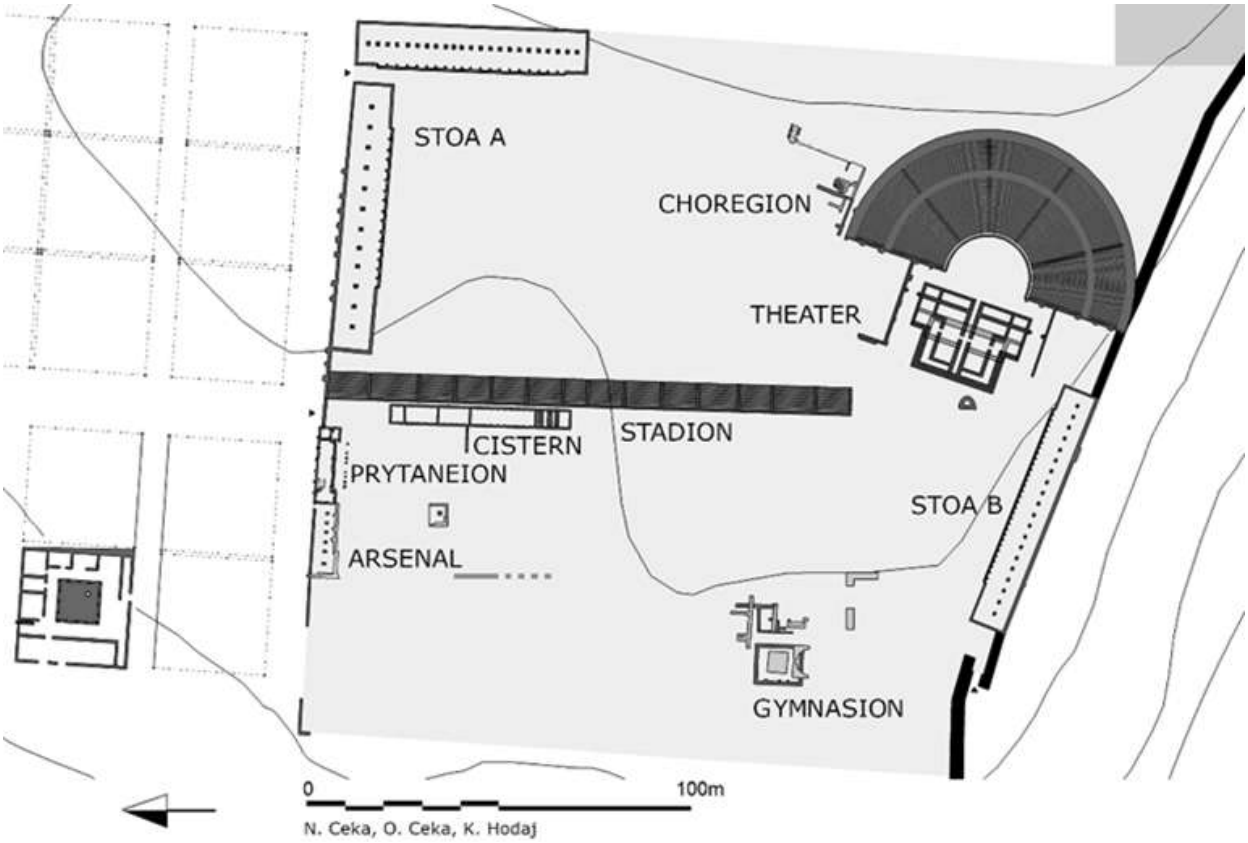


Figure 20 The Agora of Byllis in the 3rd century BC. Plan by N. Ceka. O. Ceka, P. Naipi.

The construction of the agora was carried out around the middle of the 3rd century BC according to a single plan, which included the harmonization of the placement of the theater, stoa, stadium, gymnasium and other public buildings. This was the place where political meetings were held and where festivals, theatrical performances, sports games and religious ceremonies were held. The agora maintained its role as the public center of the city even in the colonial period, when it was transformed into a forum. During this period, the theater was rebuilt and several monuments were built, as evidenced by Latin inscriptions from the time of Augustus, Vespasian, Hadrian and Antoninus Pius. Two monuments, still not fully excavated, formulated the new appearance of the forum during the reign of Emperor Augustus. In the northwestern square of the agora, the temple dedicated to Augustus was erected, built on a large scale with the Ionic order. In the southwestern part, the baths were built, an equally magnificent monument with an area of about 1000 m².

2.1 Propylaea, prytaneion and arsenal

The dividing wall of the agora, which marked its border with the residential area of the northwestern side of the city, is well preserved along its entire length of 200 m, built with limestone blocks with quadrangular shapes, profiled with an ornamental frame. Having a mainly decorative character, it also served as a support for three important buildings, which were *Stoa* A, the *Prytaneion* and the Arsenal. In the middle of its length, the agora wall was crossed by the *Propylaea*, which was the monumental entrance to the *agora* with a width of 9.20 m. The base is well preserved, which also constitutes the stylobate of an Ionic colonnade with three columns and two pilasters as delimiters of the four passages.

After passing the propylaea, the ancient visitor found himself in front of the perspective of the stadium stairs on the left wing, while on the right wing there was a building measuring 20.10 x 5.80 m, built on the wall of the *agora,* which is thought to have been the prytaneion, the office of the highest executive functionary of the *Koinon.* The plan is preserved with two side alcoves and a portico decorated with a colonnade of the Doric order, from which a considerable number of elements were found during the excavations.

To the west of the *prytaneion*, but with a difference in level of 3 m, there is a closed environment measuring 18.20 m x 6.20 m, built behind the wall of the *agora*, through which it communicated through a gate. A row of octagonal columns served to support the floor of the first floor, which should have been raised above the plane of the agora. The placement of quarries of rectangular blocks on the sides of the room indicates that it was used for the storage of trophies, or as an *arsenal* for weapons. The room was rebuilt at the beginning of the 1st century AD, using opus reticulatum masonry.

In the square to the south of the *prytaneion* and the arsenal, a quadrangular foundation measuring 5.88 m x 7 m was discovered, built with a core of gravel and mortar and a covering of quadrangular blocks connected with iron and lead rods.

Past conservation and restoration works - Propylaea, prytaneion and arsenal

In the framework of the arrangement of the materials placed on the summer side of the stadium cistern, O. Ceka and E. Haxhiraj differentiated a group of architectural parts that corresponded to the stylobate of the Propylaea, preserved *in situ*. As a result, space was freed up for conservation and restoration interventions on the northern side of the stadium cistern, but also a clear view of the monumental entrance to the agora was created.

A number of columns collected during excavations near the Prytaneion were identified as belonging to its Doric colonnade and were temporarily placed by E. Haxhiraj on the *euthynteria* of the stylobate of the monument, creating its architectural image.

Of course, this anastylosis is temporary and cannot last long, because the columns are not fixed to their bases and can fall. On the other hand, it is necessary to create a more vertical image of the monuments of the agora, which were damaged the most during Late Antiquity. For this reason, the restoration project should have as its objective a more stable fixation of the elements of the colonnade of the propylaea and the prytaneion. The filling of the missing parts of the columns, but also the complete filling of the column, when there is a certainty about its height and shape, can be taken into consideration.

The conservation-restoration intervention in the Arsenal carried out by N. Ceka and E. Haxhiraj in the years 2005-2006 aimed at consolidating the western and southern walls of the monument, which were a Roman reconstruction with opus retculatum, as well as the anastylosis of the octagonal Doric columns, found collapsed in situ. The southern wall still remains the object of an intervention, which aims to raise the level of the wall to that of the land behind it and eroded by precipitation.

Photographic documentation - Arsenal

Figure 22 Arsenal after the restauration

Figure 21 Restored opus reticulatum

Figure 23 Diateichisma as Arsenal's wall

Figure 24 Diateichisma as supporting wall of Stoa

Photographic documentation - Arsenal

Figure 26 Arsenal after the restauration

Figure 25 Restored opus reticulatum

Figure 27 Diateichisma as Arsenal's wall

Figure 28 Diateichisma as supporting wall of Stoa

Photographic documentation - Prytaneion & Propylae

Figure 29 Prytaneion

Figure 30 Propylaea in the diateichismas wall

Figure 31 Propylaea. Architectonic parts before and after the temporary anastylosis

2.2 Latrina and The Baths of Justinian

The cistern continued to be in use until the Byzantine period. Public baths were erected west of it, taking advantage of its water. Built to the west of the cistern, it has a rectangular shape of 24.50 m x 6.40 m. It features the *apodyterium* (undressing room) with fresh water baths (*frigidarium), tepidarium* (lukewarm environment), *sudatio* (sweating bath), *caldarium* (hot room), oven and fire chamber (*praefurnum*). The time of its construction is given by an inscription found on the city's surrounding wall, which may possibly come from this excavated bath. The inscription, carved on a tabula ansata, partially preserved, speaks precisely of the construction of a bath during the time of Justinian I. The construction of the baths at that location was determined by the stadium cistern that was still in use at that time. Blocks taken from the stadium and theater of the ancient city were used in the construction.

The numerous bronze coins (numia) found in the prefurnum, minted by Justinian I and Baduila (Totila), date its destruction to the years 547-551, while the time of its construction is given by an inscription found on the city's surrounding wall, which may possibly come from this excavated bath. The inscription, carved on a tabula ansata, partially preserved, speaks precisely of the construction of a bath during the time of Justinian I. "Of Justinian (the very powerful ruler), (…) I am a bath, (a useful building?); (…) but (I bear the name) of him himself (….) who (…), above all (…)".

Photographic documentation - Latrina

Figure 32 Latrina

Figure 33 Latrina. The chanel

Photographic documentation - The Baths of Justinian near Cisterna

Figure 34 The Baths of Justinian next to the stadium cistern

Photographic documentation - The Baths of Justinian

Figure 36 The Baths of Justinian. The pilaster of the theater stage gate at the entrance to the baths

Figure 35 The Baths of Justinian. The fence

2.3 The stadium and its cistern

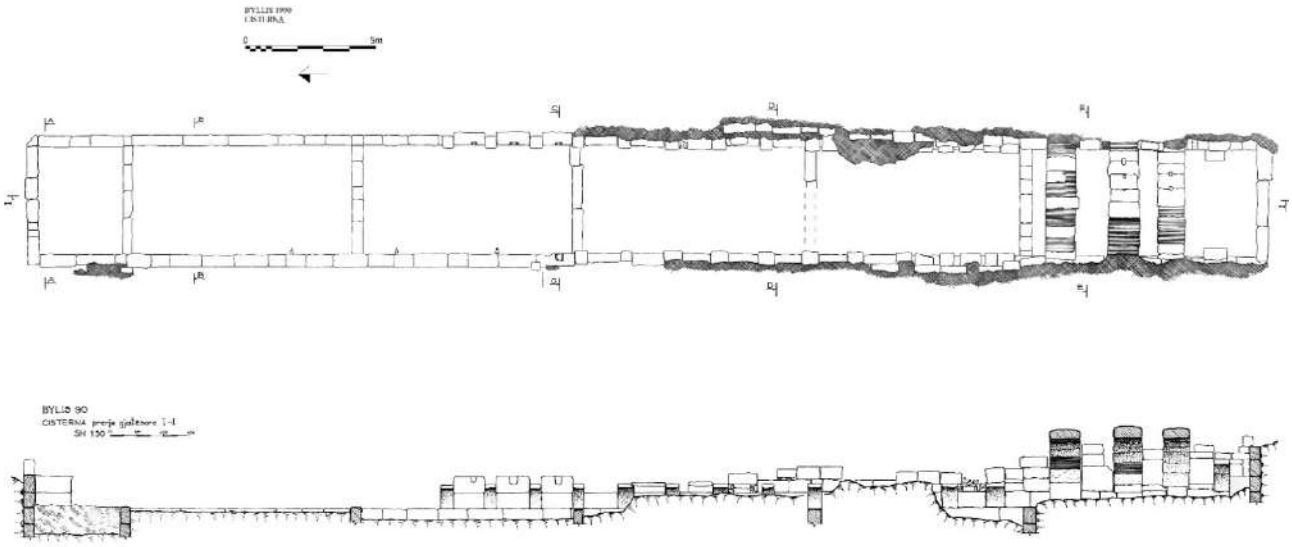


Figure 37 Plan restoration model (O.Ceka, N.Ceka, P. Naipi)

The Byllis stadium represents a unique solution compared to the horseshoe-shaped stadiums of ancient cities. Due to its adaptation to the terrain, it has only one wing, which rests on the slope of the terrain at a length of 134 m, fulfilling the standard of 180 m with the extension of the track in front of the theater. The most typical feature of the Byllis stadium is the construction of a giant water tank under the track of its.

This is also the part where the stadium staircase built with rectangular limestone blocks is best preserved. 19 steps with a height of 0.30 m and a width of 0.40 m are preserved. At such dimensions, they did not offer space for spectators to sit, who were forced to follow the sports competitions while standing. The southern part of the stadium is preserved only in a few rows, but the 0.58 m (two feet) wide steps, which served for the movement of spectators, placed at equal distances of 9.50 m, are visible.

The cistern, which served to collect rainwater from the stadium steps and, apparently, from the roof of the great stoa, has a quadrangular shape of 50.90 x 4.20 m and a depth of 6.46 m, measured from the inside. In this way, it constituted a large water reservoir of 970 m^3, i.e. about 970,000 liters that were stored during the winter and served to supply water to the numerous citizens who gathered in the agora during political activities, theatrical performances, or sports competitions.

The cistern was built entirely below the surface of the ground, with the walls partially carved into the rock, or being completed with masonry of quadrangular blocks. To maintain the pressure of the walls and to avoid contamination of all the water in special cases, the interior of the cistern is divided into six basins by transverse walls. The platform was covered with a system of arches made of

limestone blocks, on which stone slabs were laid at the level of the stadium track, leaving the spectators' view of the competitions free. To isolate the water, but also to protect it from dirty infiltrations, the platform was plastered with mortar mixed with ceramic fragments. Along the stadium steps, the water collection and decantation system is preserved, consisting of large stone troughs. Based on the construction technique and archaeological findings, the construction of the stadium and its platform belongs to the great period of the architectural formulation of the agora, around the middle of the 3rd century BC, but it continued to be used continuously until Late Antiquity, when it also served the terms of the Justinian period.

Past conservation and restoration works - The stadium and its cistern

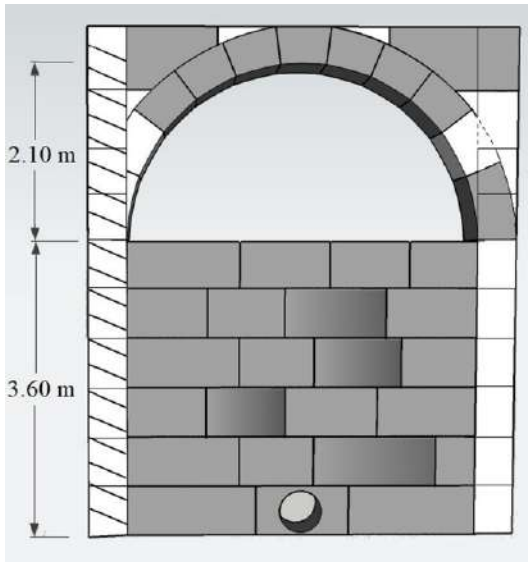
Restoration interventions have begun to be implemented in the stadium cistern since the excavations of 1987-1990, when L. Papajani restored the collapsed blocks of basin no. 6 and made the anastylosis of its three arches. This in situ restoration had the defect that due to the excavation in progress, he completed some blocks of the arches that were missing, but that could have been found away later. Also, due to the lack of sectoral blocks, the restorer did not realize that the ceiling of the cistern was horizontal and placed the cover plates in the shape of an arch.
A few years later, an attempt was made to excavate basin no. 1 and restore its walls. The basin was not excavated to the end, while the placement of the side blocks was not correct. The excavation was resumed by O. Ceka in 2018 with the assistance of E. Haxhiraj with a systematic work, which accompanied the placement of the blocks found in situ in their places and the alignment of the arches outside the cistern in preparation for their re-installation after the final excavation of the cistern, when all the elements of the cover will have been removed from it.

Photographic documentation - Cistern

Figure 38 Restoration of the cistern's arches. L. Papajani 1987

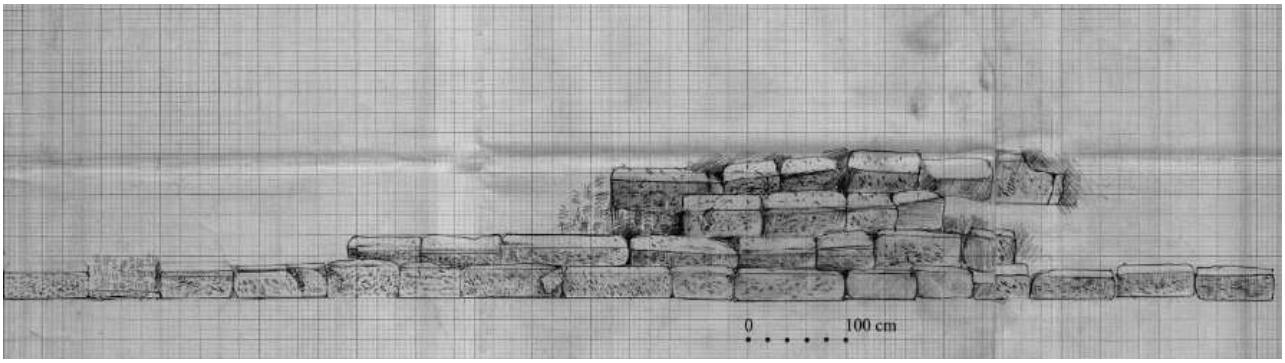
Figura 42 Restarting of cistern excavation and restoration, by O. Ceka 2019

Photographic documentation - Conservation restoration works 2019-2024



Photographic documentation - Stadion

Figure 39 Stadions staircases and the water



2.4 The theater

The theater is the most important monument of Byllis from the ancient period. Together with the great stoa and the stadium, it determined the architectural composition of the agora around the middle of the 3rd century BC. The southeast corner of the agora was chosen for the construction of the theater, where the immediate elevation of the terrain provided the opportunity to use the slope for the construction of the stairs. Also, this position adjacent to the city's surrounding wall and gate no. 4, provided the opportunity to communicate directly with the rural area of the koinon, from where a large part of the spectators came, without the need to pass through the city's neighborhoods. To the visitor coming from the stadium, or entering the city through gate no. 4, the theater appeared before him as a magnificent construction, with the stage building in the

foreground of the stairs.

Two *analemmata*- side retaining walls emphasized this perspective, while the Doric colonnade of the portico of the stage building created a monumentality unknown to the theaters of the time. Two bases in front of the theater mark the places where sculptures of Dionysus, or the muses, were placed. A front entrance served the actors to pass into the backstage alcoves, while the spectators passed through the *parodoi* decorated with decorative arches, according to a model also implemented in Dodona. In waiting, or in wet weather, they could also take shelter in the porticoes next to the entrances, which rested on the backstage walls at a width of 2.80 m and were decorated with a Doric colonnade. Its frieze was decorated with rosettes and laurel wreaths, symbolizing the prizes awarded to the winners of theatrical competitions.

The architectural elements discovered in the archaeological excavations help to complete the ideal reconstruction of the theater. In front of the spectators sitting on the steps of the theater, a low proscenium of about 3 m was erected, decorated with an Ionic colonnade, with an architrave decorated with floral motifs. It supported the tribune where the actors played. Behind them was the architectural background of the stage, treated with a Doric colonnade, from which some parts of columns and components of the entablature are also preserved. The stage building was separated from the spectators by the semicircular orchestra. This was the place where the choir stood, which represented a permanent element in ancient dramas. The *orchestra* was surrounded by a channel with stone slabs for collecting rainwater, which, through the *orchestra* and under the stage building, was conveyed outside the theater.

The theater's cavea-staircase has the shape of a semicircle with a diameter of 78 m. Its central part was deepened into the rocky face of the hill, while on both sides it rose on retaining walls. Of these, only the front walls of the *analemmata* are partially preserved, which, unlike Greek theaters, close the staircase in a straight line. The total height of the staircase was 16 m, which at a height of 0.40 m of the seats, proves that there were 40 steps. The total number of spectators who could sit on them is estimated at about 7500 spectators compared to the capacity of 10,000 spectators of the Apollonia theater. During the excavations, only a few seats carved from limestone blocks were found. Most of them were broken, or reused in the Byzantine wall of the 6th century AD, or in the baths of Justinian. Several seats of the *proedria*- the first row, where the city's dignitaries sat, were also found. A row of orthostate slabs, also found during the excavations, seem to have served to separate the *proedria* from the rest of the audience. They are decorated with crowns, which symbolize the prizes awarded to the winning playwrights. According to ancient tradition, theatrical performances were also a competition between the best playwrights.

The large size of the Byllis theater, where a large number of spectators sat, proves that they were not only citizens of Byllis, but came from all the settlements of the Koinon of the Bylins. The massive participation of a population, which Pliny of the 1st century AD still called barbaric, i.e. non-Greek, makes one think that the theatrical performances were not addressed only to an elite educated in the language of culture of the time, which was Greek, but in the language of the people, i.e. Illyrian. The Byllis theater was also used during the Roman colony, undergoing a fundamental reconstruction. The stage building was demolished, raising only a frons scenae, a facade with a brick wall on a limestone block foundation, like that of Buthrotum. This was done to expand the orchestra square, where gladiator contests were held, as an integral part of the lifestyle of the Roman colony located in Byllis.

Past conservation and restoration works - The theater

The cavea of the theater is completely devoid of seats and only a part of the plinth is preserved, where the orthostats that separated the proedria from the cavea were placed. Some of the benches of the proedria and the dividing orthostats found moved from their places have been temporarily replaced to their possible places, but without completing the missing parts and without integrating all the seats brought. All the orthostats have traces of bullets during the period of political turmoil in 1997, which have not been restored.

Based on the projects prepared by the Institute of Monuments, L. Papajani and E. Haxhiraj carried out the anastylosis of the blocks of the two parodoi found collapsed in situ. Then, interventions were also made to reconstruct a part of the wall of the northern analemma and a section of the cavea of the theater with seats that were found during the excavations of the theater and the Victorinus wall. In the function of arranging the architectural parts found in the heap, the reconstruction of the proedria was designed with the restoration of the seats in their possible places, as well as the orthostats reused during the reconstruction of the theater in the Roman period.

These interventions, based on consultation with the excavation authors, enabled a sensitive perception of the theater by visitors. Temporary placements of architectural parts were also made in the proscenium with the relocation of an Ionic frieze, which had been used as spolia in the proedria's plinth, as well as in the northern parodos with the placement of a pilaster found near the Byzantine baths. In the theater's portico, two entrance pilasters from the same place, a Doric column of the portico itself, and the architectural parts of the entablature were temporarily placed on the stylobates.

The walls of the analemmata are preserved along their entire length, but due to the coverage by the layer of cavea ruins, the lower parts up to a height of 3.60 m are better used as spolia in the proedria's plinth, as well as in the northern *parodos* with the placement of a pilaster found near the Byzantine baths. In the theater's portico, two entrance pilasters from the same place, a Doric column of the portico itself, and the architectural parts of the entablature were temporarily placed on the stylobates.

The walls of the *analemmata* are preserved along their entire length, but due to the coverage by the layer of *cavea* ruins, the lower parts up to a height of 3.60 m are better preserved. Both of these walls were restored immediately after the excavation by replacing the fallen blocks, as were the side walls of the two *parodoi*.

The stage building was discovered in a less well-preserved state, where the foundation of the first period with large limestone slabs is differentiated from the massive reconstruction with blocks connected with iron and lead hooks of the Roman colonial period. The preservation of the walls of the *parodoi* and *analemmata* below their former level has revealed the fillings of the terraces behind them, exposing them to erosion. This situation is repeated throughout the surface of the *cavea*, which was filled to accommodate the stair seats. Their plundering in Late Antiquity has revealed that filling, which has been largely eroded by erosion. This phenomenon is particularly pronounced in the northwestern part of the *cavea,* which was built entirely with artificial fillings at the level of the *analemmata.*

The surface of the *orchestra* has suffered damage to the entire arch of *the euripus*, whose slabs have been completely robbed. The drainage channel *(euripus*), which runs under the stage building in the form of a tunnel, has been preserved along its entire length, but its continuation towards a possible cistern in the square in front of the theater has not been followed. After its excavation, the entire *euripus* has been filled again by the eroded soils.

2.5 Stoa A and B

2.5.1 Stoa A

The construction of the largest stoa of Byllis, designated as Stoa A, coincides with the beginning of monumental construction in the agora of Byllis around the middle of the 3rd century BC, as evidenced by the continuation of the northern wall of the agora as the wall of the stoa itself. The purpose of the construction of the stoa was to limit the agora from the north, but also to protect its space from cold winds. For this reason, it was built in the shape of the letter L with a total length of 144 m. In the design of the stoa, the architect Bylin adopted the Apollonian type, developed in two floors divided from the inside into two passages by axial colonnades. The superimposition of the Ionic colonnade on the Doric one on the facade of the monument also constitutes a continuation of the Apollonian model, together with the use of octagonal Doric columns. The eastern part of the stoa, which measures 67 m x 11.40 m, is better preserved, also due to the fact that it was partially

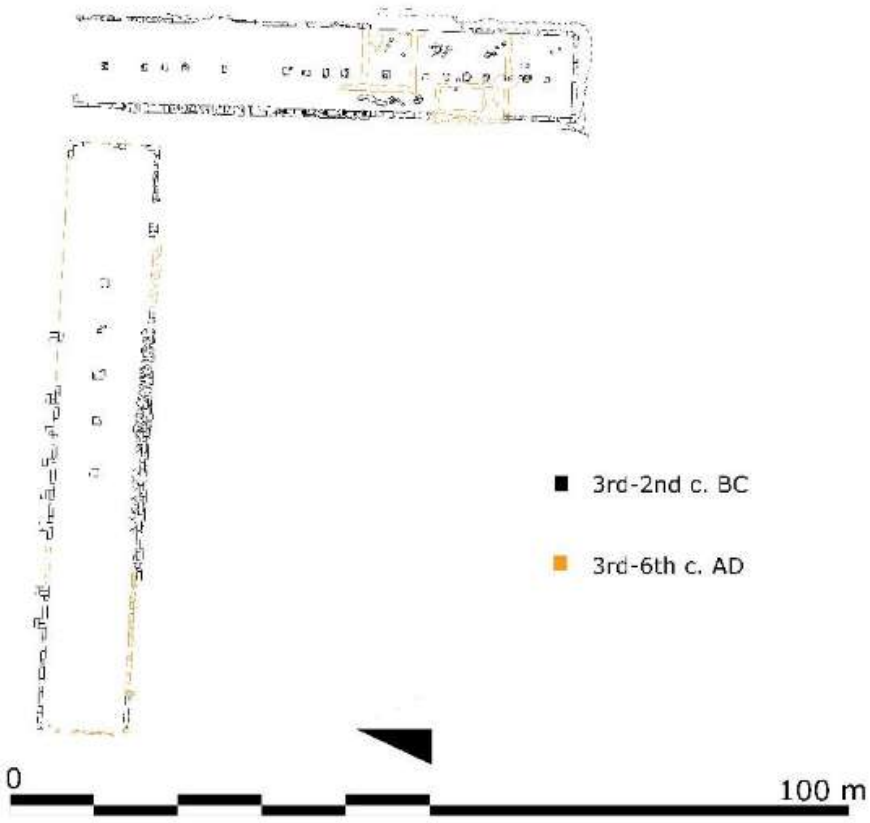


Figure 40 General Plan of Stoa A, K.Hodaj

carved into the rock.

The holes in the beams that supported the second floor floor allow the calculation of the heights of the two floors, while the preservation of the stylobate and some column trunks allows for an ideal

reconstruction of this part of the stoa. A space of 4 m, which served as a secondary entrance to the agora, separates the eastern wing of the stoa from the northern wing, which was 73 m long but the same width as the rest. The stylobate with traces of octagonal columns is better preserved in the westernmost part of the stoa, where Basilica A was built on top of it. Column trunks and architectural elements have also been found, which testify to the same construction method as in the eastern part of the stoa. In front of the stoa, several bases were found, which, like in the theater, served to erect statues.

Stoa A of Byllis was used as a meeting place and a place for walks for free citizens, who circulated in both passages of the monument, with columns in between. During the early period of the Roman colony there was a reconstruction of the eastern wing of the stoa, while in the 3rd century AD the stoa was destroyed and a small shrine to the god Aesculapius was built in the eastern part. In the 5th century AD the Basilica A was built in the westernmost part of the *stoa*, while its entire eastern wing was used for the construction of the houses of this period, in which architectural parts of the stoa were reused as *spolia*. In designing the stoa, the Bylliones architect adopted the Apollonian type, developed in two floors divided internally on both floors into two streets by axial colonnades. The superimposition of the Ionic colonnade on the Doric one on the facade of the monument also constitutes a continuation of the Apollonian model, together with the use of octagonal Doric columns. The eastern part of the stoa, which measures 67 m x 11.40 m, is preserved in better condition also due to the fact that it was partially carved into the rock. The holes of the beams that supported the floor of the second floor enable the calculation of the heights of the two floors, while the preservation of the stylobate and some column trunks allows for an ideal reconstruction of this part of the stoa.

A space of 4 m, which served as a secondary entrance to the agora, separates this wing of the stoa from the eastern wing, which had a length of 73 m, but a width equal to the rest. The stylobate with traces of octagonal columns is better preserved in the westernmost part of the stoa, where Basilica A was built on it. Column trunks and architectural elements have also been found, which testify to the same construction method as in the eastern part of the stoa. In front of the stoa, several plinths have been found, which, like in the theater, served to erect statues.

The eastern part of the stoa, with dimensions of 37 x 11.40 meters, is preserved in better condition, partly also because of being carved in the rock, where one finds holes for the beams that supported the floor of the second story. In this way, the heights of the two stories can be calculated, while the preservation of the stylobate and several column shafts permit a hypothetical reconstruction of that part of the stoa.

A space of four meters, which served as the entrance to the agora, divides this part of the stoa from the north side, which was 73 meters long but had the same width as the other part.In the third century AD, the stoa was destroyed and a small sanctuary was erected on the east. In the fifth century AD, basilica A was erected on the west side of the stoa, while the whole eastern wing of the

stoa was used for the construction of residences of the period, one of which had many rooms while the others were simple and poor.

Past conservation and restoration works - Stoa A

The excavation of the stoa by N. Ceka in the years 1982-1987 was accompanied by in situ restoration by L. Papajani, who restored the collapsed blocks of the eastern wall of the stoa, as well as the wall of the diateichisma, on which stoas northern wall was supported. The temporary erection of some collapsed columns aimed to create the architectural image of the monument on both its wings. Meanwhile, efforts to stabilize the condition of the Late Antique walls that cover the entire eastern part of the stoa have not been successful and they continue to lose their shape.

Piles of stones collected from former agricultural works and partly from excavations, create a chaotic environment in front of the eastern part of the stoa and make it difficult for visitors to pass.

No damage from atmospheric agents has been observed in the rock cut that forms the inner face of the eastern wing of the stoa and it seems that this rock is quite solid.

Photographic documentation - Stoa A

Figure 41 Stoa A. View and the plan

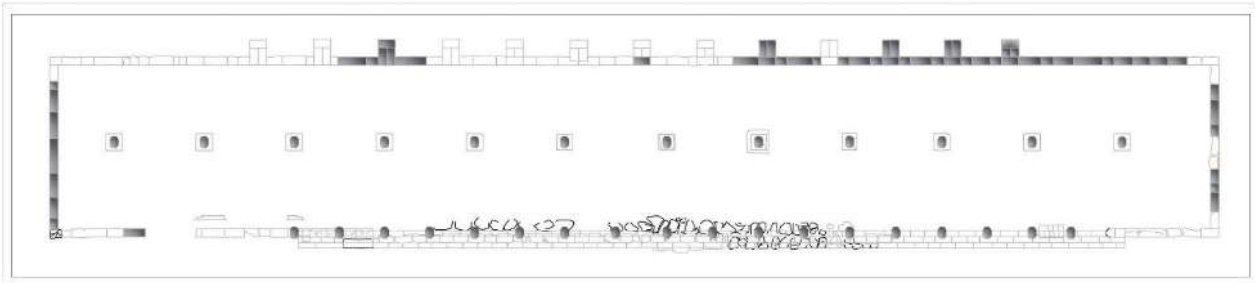
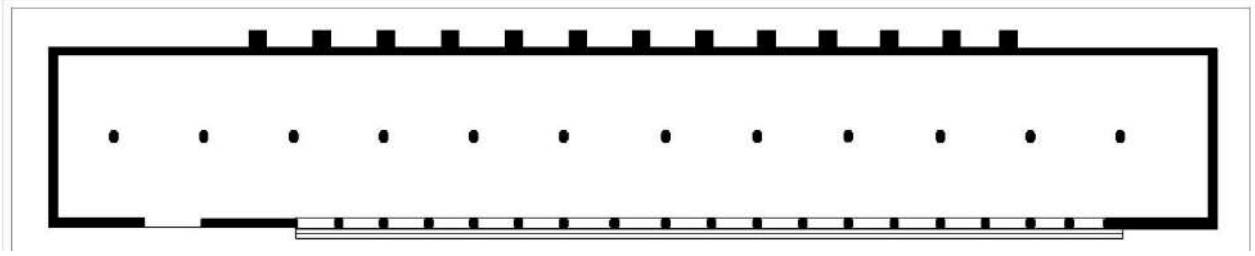


Figure 42 Plan of actual state of preservation with virtual recostructions. K. Hodaj



Photographic documentation - Stylobate

Figure 43 The stylobate of the western wing

Figure 44 Apotropaik sign on the stylobate

Photographic documentation - Stylobate and eastern wall

Figure 45 The end of the stylobate and the beginning of the eastern wall. Controle trench of 2019 by O. Ceka

Figure 46 Eastern wing . The stylobate

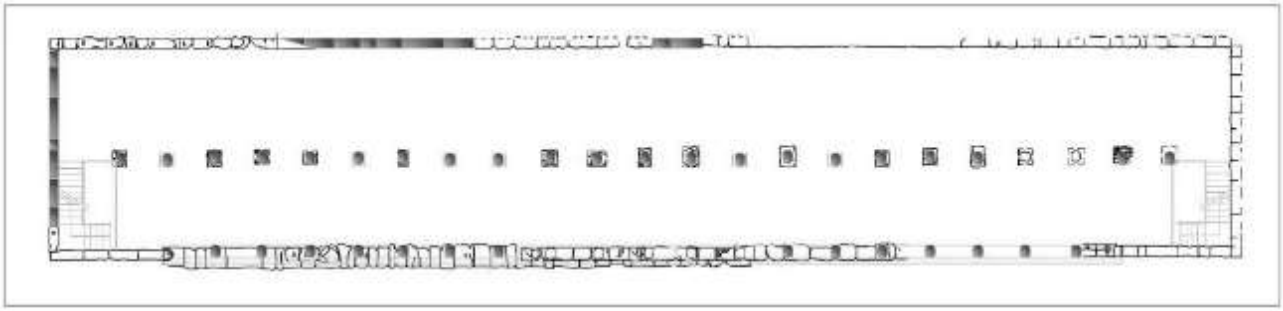


Figure 47 The eastern wing. The plan

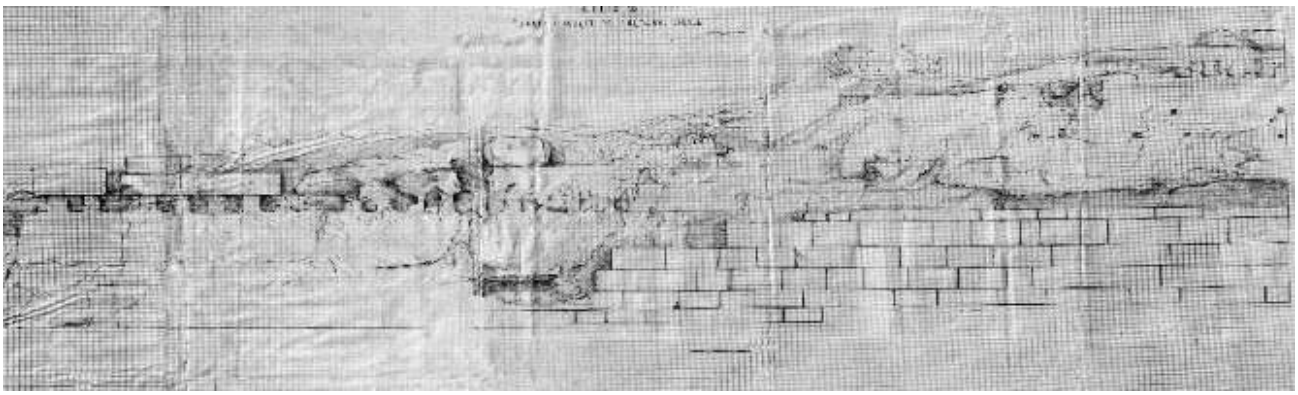


Figure 48 The eastern wall cut into the rock with the holes of the second floor beams. N.Ceka, P.Naipi

Photographic documentation - Late Antiquity dwellings

Figure 49 Late Antiquity Buildings on the Eastern Wing

2.5.2 Stoa B

Stoa B of Byllis is also called the Theater *Stoa*, not only because of its location next to that monument, but also because it was built for its function. Theatrical performances in antiquity were associated with the festivals of Dionysus, which took place in the months of March-April. They continued for several days from morning to evening, so the spectators needed a place to rest, to eat, or to take shelter in case of rain. For this purpose, not only the porticoes of the theater building served, but also a stoa built next to it, along the perimeter wall. The stoa was a two-story building. It measured 60 m x 11.40 m (20 x 40 ancient feet). Its back was the perimeter wall, while from the side of the agora square the stoa opened with a Doric colonnade on the lower floor and an Ionic colonnade on the upper floor. The interior of the building was divided into two passages, by a row of columns on the lower floor, which supported the upper floor. The eastern wing of the building is well preserved, where it connected to the theater. Here were found the ruins of a kiln, where in the 6th century AD the sculptures, architectural elements and inscriptions of the stoa itself and the theater were turned into lime.

Photographic documentation - Stoa B

Figure 50 Stoa B from the theatre southern analemma

Figure 51 Stoa B from the West

Figure 53 Stoa B. Kanali

Figure 52 Stoa B The stylobate

2.6 Gymnasium and Roman Baths

In the southwestern part of the agora, near gate no. 5, the ruins of a social building have been discovered, which has been identified with the city **gymnasium** due to its quadrangular plan, with a row of alcoves that develop around an inner courtyard. The monument was part of the architectural complex of the agora, as evidenced by its orientation according to the urban axes of the city. It was built in the second half of the 3rd century BC with the typical technique of this time, with quadrangular blocks, which are preserved only in one row of the foundation. An inscription found in the neighboring city of Klos confirms the construction of a Bylliones gymnasium during the time of the prytan Aspima Praugu and the gymnasiarchos Cratilla Mahata.

The gymnasium building was destroyed during the period of the creation of the Roman colony and the baths were built on it with an area of about 1000 m², but with a preservation only at the level of the foundations. On their basis, discovered only in the western part of the building, the tepidarium, caldarium, frigidarium, praefurnum and four other alcoves are distinguished. This construction, also realized with the opus reticulatum technique, was adapted to the urban orientation of the agora. From a Latin inscription of the 1st century AD we know that a patron of the colony of Byllis, Lucius Domitius Salentinus, had built a public bath at his own expense.

Past conservation and restoration works - Gymnasium and Roman Baths

In an area of about 1000 m2, the Roman baths have been preserved only at the level of the foundations, thus losing the perspective of their overall perception. This is also hampered by their partial excavation in the 1980s, which has revealed less than a third of the surface, and this too is filled with soil and vegetation. A limited restoration of the hypocaust of one of the premises has degraded and is not perceived as an important part of the baths. Even the building interpreted as a gymnasium, which was partially destroyed during the construction of the baths, is not easily readable, due to the partial preservation of the euthynteria.

Being on the outskirts of the agora and away from the tourist movement path, the surface of both monuments has been left untreated and is partially covered by deposits of sediment and vegetation.

The gymnasium is preserved only in the basement and a few in situ blocks of the first row on the western side, but it is illegible in its architectural form due to the coverage by the walls of the baths. Determining a way of differentiation is also necessary for structures of 3rd-2nd c. B. C. with a longitudinal wall parallel to the eastern wall of the baths.

Photographic documentation - Gymnasion

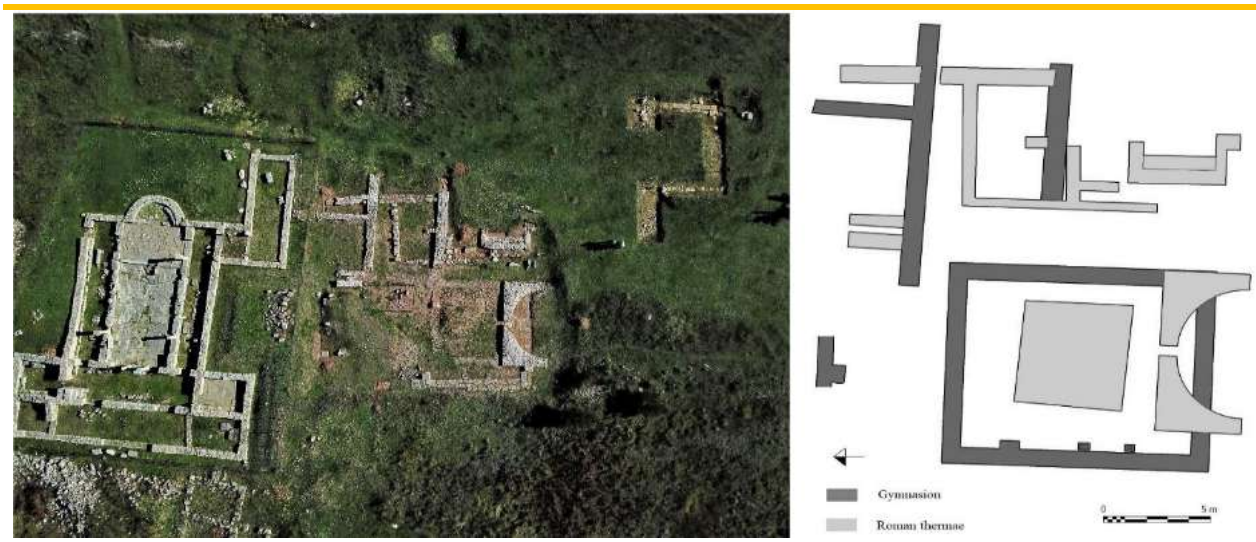


Figure 54 Aerial view of the gymnasion, between the Basilica C and the Roman thermae. Schematic plan of the gymnasion design by O. Ceka

Figure 55 Euthyntera

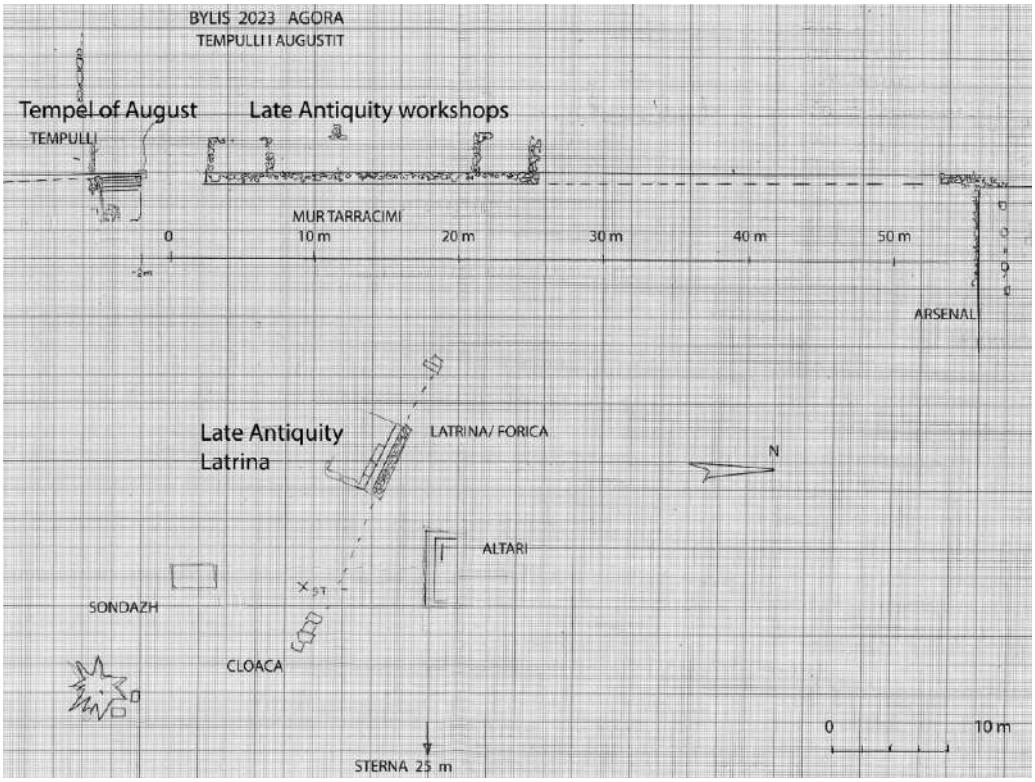
Figure 56 Western and eastern walls of gymnasium

Photographic documentation - Thermae

Figure 58 Central area of thermae

Figure 57 The northern side, still unexplored

2.7 Temple of Augustus



Past conservation and restoration works - Temple of Augustus

Geophysical surveys allowed the discovery of the site of the **Temple of Augustus**, which was evidenced by the presence on the surface of an architrave, columns and a Latin inscription. It was located above the channel for the discharge of the thermal waters at a distance of 26.50 m from its exit from the caldarium. The channel crosses a terraced wall that divided the western part of the square and where there was a row of workshops and shops, built with spolia from previous constructions and dating back to the Late Antiquity period.

Due to damage throughout Late Antiquity, only the five-step staircase of the temple made of limestone blocks has been preserved, as well as a part of the southern wall with *opus reticulatum*. During the excavation, a column truncation and a capital of the Corinthian order were also found. The traces of the walls and architectural elements allow for the virtual reconstruction of a 7.20x7.20 m square temple of the prostyle type.

During years 2023-2024, the team of Dr. O. Ceka excavated the Temple of Augustus, from which only the staircase and a number of architectural elements have been preserved (Ionic columns, composite capital, an architrave element, a fragment of an inscription in bronze letters, etc.), which have provided the opportunity to identify the ruins, as well as determine its architectural model. The temple was built in the first years of the foundation of the Roman colony with the opus reticulatum technique and was completely destroyed during the construction of the Justinian period. The excavation of the temple will continue during 2025.

Photographic documentation - Temple of Augustus

Figure 59 The staircase of the Augustus Tempel

Figure 60 Different levels of walls: opus reticulatum; 3rd centuries BC structures on the right; LA walls over temple staircases

3. Urban planning of Byllis and private housing

The construction of Bylls an initiative of the Koinon of Bylliones, had foreseen not only the creation of a secure fortification, but also the provision of a normal life for its inhabitants. Three main areas were defined within the surrounding walls in the initial plan. In the center of the southern side, in the highest and most picturesque part, an area of about 4 ha was reserved for the social, political and cultural activities of the citizens through the separation of the *agora* with a decorative dividing wall. The second part, about 22 ha, was a residential area organized in a network of streets according to the *Hippodamic* principle. The third part, the euchorion, with an area of about 4.4 ha in the southeastern corner of the city, does not contain buildings, because it was reserved for the shelter of the inhabitants of the villages with their wealth in case of wars and other dangers. It communicates with a special entrance on the eastern side, which is also the shortest road connecting Byllis with Klos.

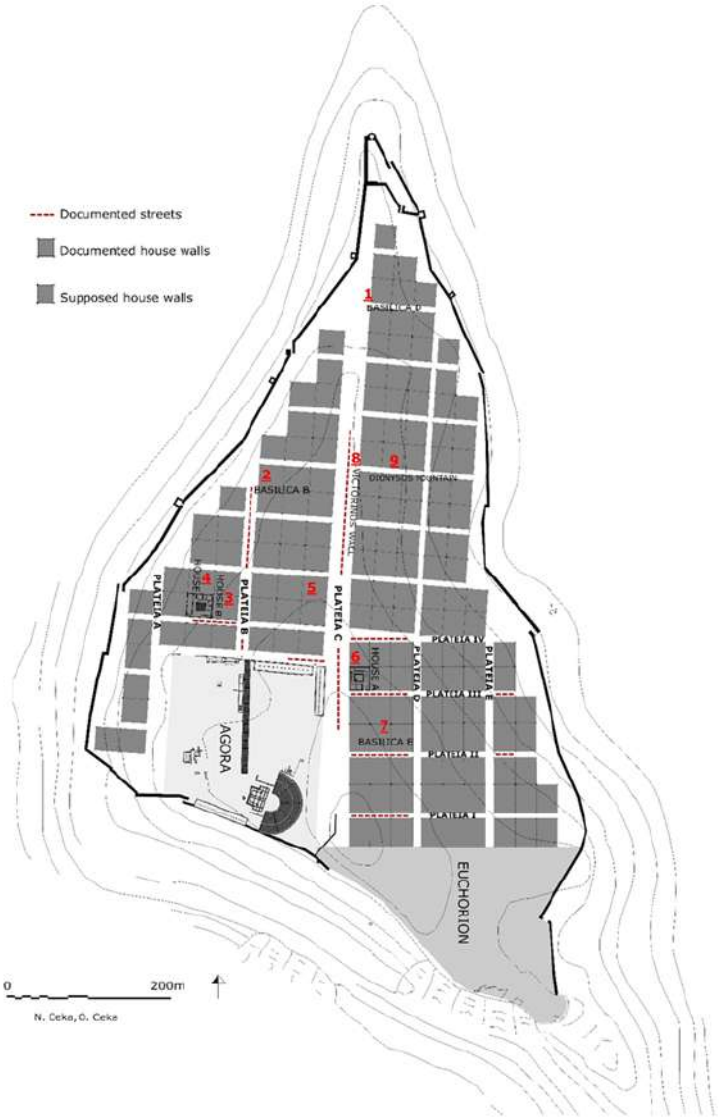


Figure 61 Urban system of Byllis with main areas. Plan by N. Ceka, O. Ceka

Around the middle of the 3rd century BC, the urban system of Byllis took its full form in a quadratic network of streets. The axis of this network consisted of four streets 8.30 m wide, called *plateia*, that ran north-south 134 m apart. They were intersected every 69 m by transverse streets 6.60 m wide, creating *insulae,* i.e. quadratic islands, initially divided into eight residential plots. Between the two rows of houses ran a small alley, the stenopoi, often stepped, which also served to drain rainwater. For study purposes, the main North-South roads are named in capital letters of the alphabet, while those East-West with Roman numerals. *Plateia* C, which was the main axis of the

roads, passed along the ridge of the Byllis hill and separated the inhabited area from that of the agora, which had an area equal to three *insula.* Only four dwellings from the period of classical antiquity have been discovered, which are named according to the order of discovery from A to C.

3.1 The dwelling A

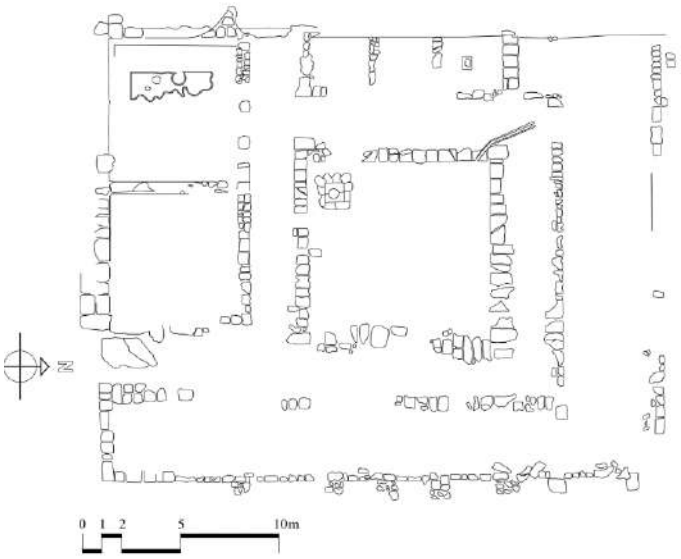


Figure 62 Plan of House A, Ceka N. 1992

Was located on the eastern side of *Stoa* A, on the other side of *Plateia* C, at its former intersection with *Plateia* III, and occupied an area of 30 x 24 m. In order to adapt to the orthogonal system, the house was built on a terrace created by a powerful wall with buttresses and partially carved into the rock. The center of the composition of the rooms was the square courtyard with sides of 9 m, surrounded by an Ionic order peristyle. Behind it was a portico with a width of 2.80 m, around which the rooms were developed. On the southern side, immediately after the entrance corridor, were the two main rooms of the apartment, one of which served as an andron. Continuing from them, on the western side, were the service rooms. Opposite them, in the southwestern corner of the courtyard, was the cistern, which was deepened into the rock in the shape of a pear. On the northern side of the portico were the family rooms. The gate that led to *Plateia* III had the width of the corridor, 3.50 m. Data from archaeological excavations proved that dwelling A was built around the middle of the 3rd century BC, simultaneously with the implementation of the orthogonal system in Byllis, and continued to be inhabited continuously until the second half of the 4th century AD, undergoing partial changes, but maintaining the appearance of a dwelling with a peristyle. During a reconstruction in the 3rd century AD BC, the entrance hall was paved with colorful mosaics with partially preserved geometric motifs. In the 5th century BC, a simple dwelling with several alcoves was built on its ruins.

Figure 64 Dwelling A. The peristyl courtyard

Figure 63 Stilobati i peristilit

3.2 Dwelling B

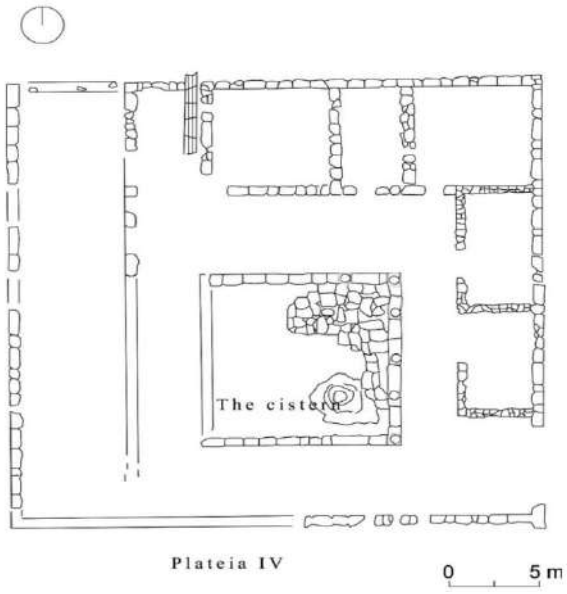


Figure 65 Plan of House B, Ceka N. 1992

measuring 29.5 x 24.8 m, once occupied one-sixth of an insula, at the intersection of plateia C and plateia IV, near the dividing wall of the agora. Like apartment A, it was located on a terrace created by strong walls of thickly worked blocks, partially leveling the sloping terrain. The center of the apartment was formed by a quadrangular courtyard with sides of 9.6 m, which was surrounded by a colonnade of the Doric order. The peristyle corridor, 3.6 m wide, connected the alcoves located on the eastern and northern sides. The southern side, where the entrance was located, as well as the western side, built on the wall of the terrace, constituted a long porch, which was used for economic activity. The main room, the andron, was located on the eastern side and measured 6.4 x 7.7 m. It retained this function even in the later reconstructions of the dwelling, until the 3rd century AD, when its walls were plastered and painted with a combination of squares. The courtyard was paved with limestone tiles to keep it clean. In the southeast corner is the cistern, where rainwater from the roof was collected, as a reserve for the dry seasons. Dwelling B was built in the 3rd century BC by a wealthy family and was used without interruption until the 4th century AD. In the 5th century, two two-rooms dwellings with weak walls made of small stones with clay bonds were built on its ruins.

Photographic documentation - Dwelling B

Figure 68 Dwelling B

Figure 67 Perisyle courtyard and cistern

Figure 66 Kolone dorike dhe jonike

3.3 Dwelling C

was adjacent to the northern side of Dwelling B, from which it was separated by a *stenopos*. In its centuries-old use it represents different periods of construction and does not present any special architectural values. During its excavation a marble head of the emperor Hadrian was found, which was certainly brought to this place from the agora, after being broken by the statue.

Photographic documentation - Dwelling C

Figure 69 Dwelling C

Figure 70 Dwelling C Columns from house B. The inscription of L. D. Sallentinus

3.4 Dwelling D

is known as the **House of Terentians**, from the discovery during excavations of two inscriptions dedicated to his two sons by the owner of the house, Quintus Allius Terentianus. The house has known four construction periods, of which the first belongs to the 3rd century BC. A part of the stylobate of the peristyle courtyard has been preserved from it, as well as the threshold of the gate that connected it to the main street on its southern side. The second period belongs to the 2nd half of the 2nd century AD and marks a radical reconstruction of the house with walls of small stones bound with clay mortar, where the most interesting environment is the lararium, a small shrine built in the impluvium, with altars that once held statues of the two sons and where inscriptions dedicated to the two sons of Terentianus were carved. During the excavations, an acephalous marble statue of one of them was also found. The other two periods of the house belong to Late Antiquity. The city was then rebuilt almost over its entire surface, but with a different urban concept, the orthogonal system was abandoned, and, in its place, separate houses were built, grouped around churches.

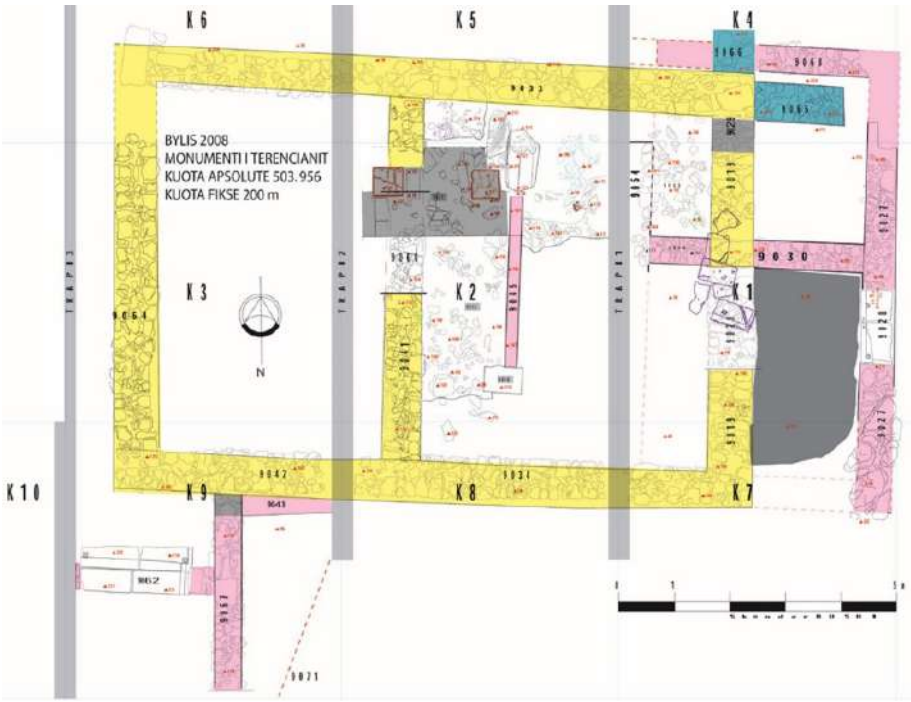


Figure 71 Banesa e Terencianëve. Planimetria nga S. Muçaj, S. Xhyheri

Figure 72 Hause of Terentiani

Figure 73 House of Terentianii. Laurarium

Figure 74 The walls of Bylliones house

3.4 Marcus Lollianus inscription

Although isolated from the monumental complexes of Byllis, the **Marcus Lollianus inscription** is located on the the rocks that border the *euchorion* of Byllis on the southern side of the city. The face of the rock, where the inscription is carved, has been flattened in the form of a tabula ansata, measuring 2.03 m x 3.05 m. The inscription published a decree of the *decurions* in the name of the citizen Marcus Lollianus, who at his own expense had built a chariot road, which led from the colony of Byllis to Astacia, passing through broken and dangerous places and crossing the Argias River with a bridge. Traces of this road mentioned in the inscription, recently discovered, show that it left from gate no. 5 and passed right below the inscription, to cross the Povla stream, which would be Argias, and continues southwards on the right bank of the Vjosa river to the Kuta plain. The width of the road in the preserved tracts is 2.40 m. The inscription is dated around 150 AD.

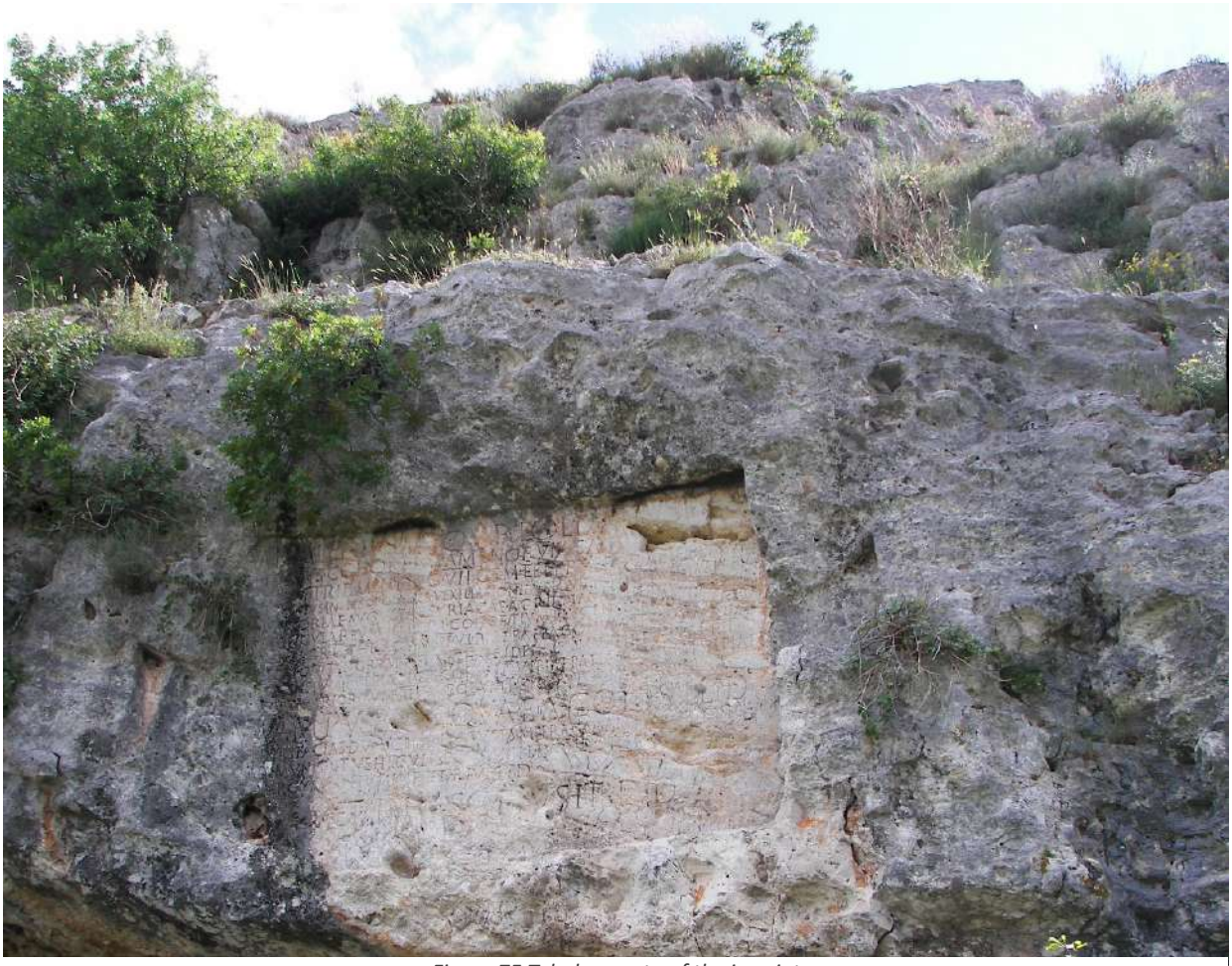


Figure 75 Tabula ansata of the inscript

4. Monuments of the late antiquity period of Byllis

The complete urban-architectural physiognomy of Byllis in Late Antiquity took full shape at the beginning of the 5th century BC, after the destructions carried out by the Goths, when the city of Byllis underwent major changes not only in its urban-architectural physiognomy but also in the composition of the population. The remaining inhabitants of the abandoned city of Apollonia and other centers of the area settled in the city of Byllis. The consequences that brought about the invasion also made possible the rapid embrace of Christianity, turning it into an important institution of all political and economic life. In this period, three important monumental categories are distinguished that can be summarized in:

- The city's surrounding walls, with entrances and towers as basic architectural elements.
- Monuments of Christian worship: The Cathedral with the entire episcopal complex and Basilicas A, C, D, E.
- Cisterns, thermal baths and private residences

4.1 The city's surrounding walls in late antiquity

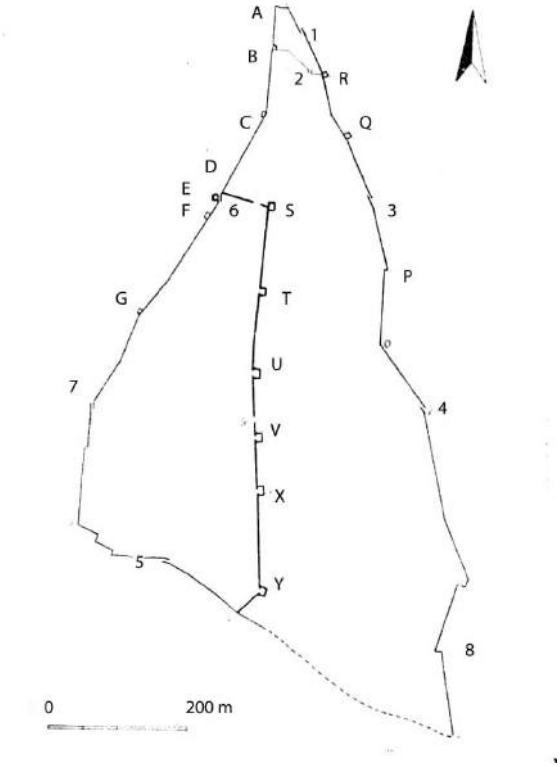


Figure 76 Victorinus wall inside the Bylliones city wall

The surrounding walls of Byllis were preserved even when the city was transformed into a Roman colony. They were partially preserved in height, even at the beginning of the 5th century AD, but not in use, when Byllis was refortified after the destruction that the city suffered from the invasions of the Goths. For the reconstruction of the wall, the collapsed blocks of the ancient phase wall were generally used, but placed irregularly and connected to each other with a thin layer of mortar. The towers for the curtain walls and those at the entrance were built on the remaining constructions of the towers of that phase, always preserving the plan, but adding a new floor. Even the entrances during this reconstruction have not undergone changes in their typology, but only in the narrowing or functioning of the gates. After the destruction that the city suffered during the years 547-51 and the economic weakening of the Byzantine Empire, the fortification system built could no longer fulfill its function, so Justinian was forced to build a new system, supervised by Victorinus. The walls of the two previous phases throughout the western and southern sides of the city have been reconstructe, while on the northern and eastern sides they built a new wall 2.20 m thick, equipped with three-story towers 12 m high, thus closing only the western side with an area of 11 ha compared to 30 ha of the ancient city.

The technique used in the Byllis IV phase is the same as in the new and reconstructed wall, reused blocks, architectural parts, medium-sized stones bound with mortar were used on the face, while the core was made by pouring abundant stones and mortar. The most typical element are the towers. All of them are quadrangular with wall thicknesses of about 1.40 m, but with different dimensions in the planimetry. The ascent to the passage path is made next to each tower by means of a staircase.

4.1.1 The Victorinus Wall and the tower

The second major period in the fortification of Bylis dates back to Late Antiquity with the repairs carried out along the line of the byline walls, which had been abandoned during the Pax Romana period. They were carried out by restoring the collapsed blocks in an irregular manner, without respecting the previous alignment and using lime mortar to connect the blocks. This reconstruction did not withstand the first Slavic invasion of 547-548, when the city was destroyed. After this, an authority sent by the emperor Justinian, known from construction inscriptions as Victorinos, undertook the refortification of Bylis, building a 661 m long wall along the ridge of the hill and reinforcing the old line of walls on the southern and western sides for about another 880 m. This fortification included only about 12.5 ha, approximately one third of the ancient city, leaving out of the enclosure the entire eastern part of the previous city.

The Victorinus Wall, built around **550 AD,** is notable for the reuse of spoils taken from the ruined buildings of the theater, stoa A, diateichisma and private buildings and the bonding of the stones with lime mortar obtained from the burning of ancient architectural parts, mixed with coarse river sand. It can be clearly seen that only the lower part of the wall up to 2 m was built with spoils, placing them mixed with architectural parts, small stones, fragments of tiles and pithoi, with mortar bonding. Generally, the mortar is white, obtained from the burning of architectural parts, sculptures, stairs of the theater, etc. Its filler is coarse sand from streams and only in the northern part of the wall was tile dust used, which gives the mortar a pink color and makes it more resistant to erosion. In the 2.20 width of the surrounding wall, two faces are distinguished, the inner and the outer, as well as the filling with small stones and abundant mortar. However, on the facade, the mortar between the stones has not withstood erosion, emphasizing the joints.

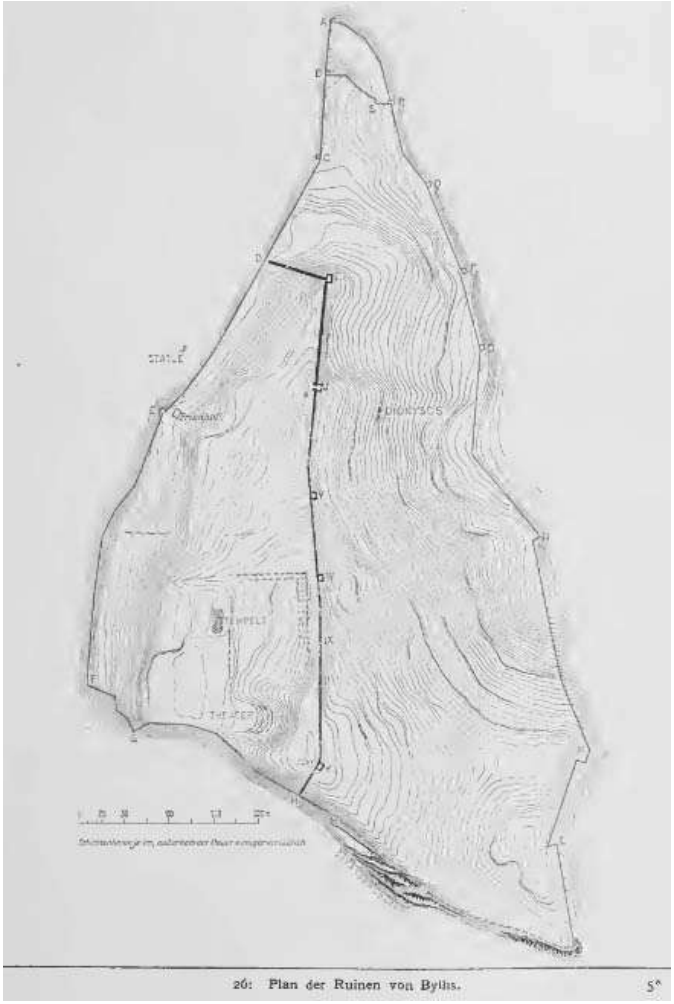


Figure 77 Victorinus wall inside the Bylliones city wall

Only inside the towers, which have been less exposed to atmospheric factors, is the original appearance preserved with the mortar extending even over the surface of the stones on the facade.

After the destruction by the Slavs in 587-588 AD, the Victorinus Wall was not rebuilt and during the Ottoman period it was used as a quarry by the inhabitants of the village of Hekal. This has caused it to be destroyed to a different extent depending on the possibilities of transporting the extracted material, but also on the solidity of the individual parts of the wall. In general, the entire core of the wall in its cylindrical shape has been stripped, due to the continuous removal of stones from both facades of the wall. Large cavities have also been created by the intensity of the looting in a limited area. As a result, the entire wall is exposed to a gradual degradation, which can be followed by comparing the earliest photos taken during the first half of the 20th century.

Past conservation and restoration works - Victorinus Wall

Since 1978, there has been an attempt at conservation intervention in cleaning both sides of the surrounding wall, as well as the towers, undertaken by S. Muçaj[6]. Among other things, the only turret of the S Tower has also been consolidated. The Park Administration has also undertaken interventions in recent years to cover the eroded parts of the wall on both sides by placing stones in continuous rows without mortar, closing the paths for entering the monumental area, but also preventing in some way the further erosion of the facade.
The Victorini Wall represents the best-preserved example of a wall from the Byzantine period, after that of Durrës. It is completely readable along its entire length together with the towers, of which the T is preserved up to the third floor. The few conservation-restoration interventions carried out by the staff of the Byllis archaeological park have made possible the stability of the preserved structures, as well as have created a clearer profile of it in the architectural landscape of the site. However, the removal of large blocks from the lower part of the wall in the past, when Byllis was used as a quarry for rural construction, has created significant depressions along the entire length of the wall and risks further damage to the parts around them.

[6] See the publication: The fortification system of the city of Byllis in late antiquity /Le système de fortification de la ville de Byllis dans la Basse Antiquité by Skënder Muçaj in Iliria, 1, 1990, p. 169-200. The letters S-Y of the towers of the Victorinus wall refer to this article.

Tower S

It has a quadrangular plan, with walls that protrude completely outside the surrounding wall. The entrance to the first floor of the tower is located on its western side and the corridor has a length of 5.60 m and a width of 1.35 m. The walls of the corridor are preserved at a height of 3 m, while those of the tower at 1.70 m. The entrance is missing the lintel, but the legs of the arch that rises above it are preserved, while the stairwells are partially preserved.

Photographic documentation - Tower S

Figure 78 Tower S

Figure 79 The wall between towers S and T

Tower T

is located to the east of the cathedral, has a quadrangular shape and is better preserved than the other towers. Its southern face is preserved 0.40 m above the floor level of the third floor, which determines that it was three-story, the height of the first and second floors are 3.80 m and 3 m respectively. The front wall is 7.30 m long and 1.30 m thick, while the side walls have the same thickness of 1.30 m and different lengths. The one on the southern side is 5.50 m long, while the one on the northern side is 5 m. The entrance corridor with a length of 2 m is built with reused blocks and is covered with five stone lintels. At the ends of the lintels, a cylindrical vault built with a row of bricks measuring 0.37m x 0.28m (0.29m) x 0.04m, with a radius of 1m, is supported, which has a discharge function. The floors of the above floors were made of wooden planks placed on four beams, the holes of which are preserved on the side at a distance of 0.60 m from each other. The ascent to the second floor was made from the inside with wooden stairs, while the entrance to the third floor was made from the outside through a gate that communicated with the passage path. The ascent to the path was made by means of a special staircase, which is attached to the wall from the outside, narrowing the curtain by 0.15 m, as is also the case in the castles of Durrës and Elbasan. The length of the staircase is 8 m, while its width is 1.40 m. Only the first six landings of the staircase with a length of 1.40 m are preserved in full, while their height and width are equal to 0.30-0.32 m.

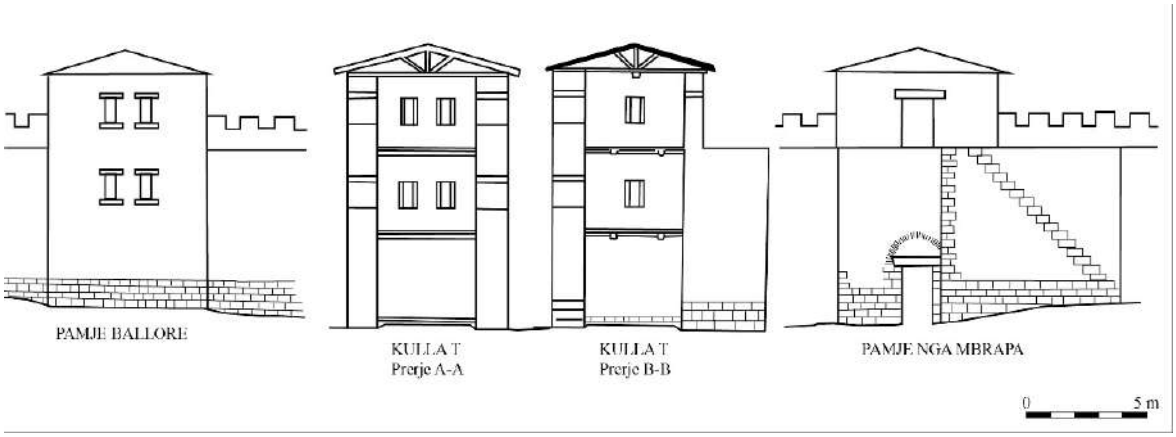


Figure 80 Tower T. Virtual reconstruction. S. Muçaj

Of the functional elements of the tower, a turret is preserved on the southern side of the second floor, which served for archers. It has dimensions, with a trapezoidal cut with a small base on the outside. Its height is 0.80m, its width on the inside is 0.80m, and on the outside 0.20m. During the excavation carried out in this tower, a layer of tiles was found, which indicates that the tower was covered with a hipped roof. In addition to the tiles, a pitos similar to those discovered in the 6th century AD dwellings of the city was also found in this layer, which indicates that the premises served as a warehouse.

Photographic documentation - Tower T

Figure 81 Tower T. The gate and staircases

Photographic documentation - Tower T

Figure 82 Tower T. The outer wall

Figure 83 Tower T. The western wall

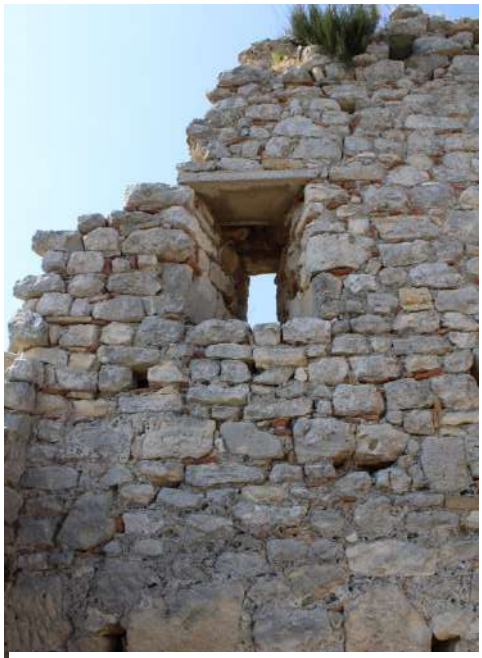


Figure 84 Tower T inside

Tower U

It is built almost halfway along the length of the wall from tower S to Y, where the terrain experiences the greatest decrease in the entire length of this wall line. It has a quadrangular shape with walls protruding completely outwards and with the back in a straight line with the surrounding wall. The three walls of the tower have the same thickness of 1.30 m, while their lengths vary; the front 6.82 m, while the side 5.50 m. In this tower, the outer walls of the tower should be raised to a height of 2 m.

Photographic documentation - Tower U

Figure 85 The wall between towers T and U

Figure 86 Figure 32 Tower U

Figure 87 The tower's U gate. The cracked architraves

Photographic documentation - The wall between U and V

Figure 88 The wall between U and V

Tower V

It stands on the south side of entrance no. 9, where the terrain rises to continue again on the plain behind it. Like the other towers, it has a quadrangular shape with walls that protrude completely outward and at its rear, which continues in a straight line with the surrounding wall. Its front wall is 6.70 m long, while the side walls are 5.25 m and 1.35-1.40 m thick. The front wall of the tower is preserved at a height of 2 m, while the rear wall is 4.16 m. To restore 5 stair bases.

Photographic documentation - Tower V

Figure 89 The tower V. Staircases

Figure 90 Drywall additions

Tower X

It was built 63 m from Tower V, thus marking the shortest distance between the towers. Like the other towers, it has a quadrangular shape with a frontal edge of 6.50 m and side edges of 5.40 m and 5.50 m, and wall thicknesses ranging from 1.35 m to 1.39 m.

Photographic documentation - Tower X

Figure 91 The wall between towers V and X

Figure 92 Tower X

Photographic documentation - Tower X

Figure 93 Tower X The staircases

Figure 94 Tower X The gate 2019 - 2025

Photographic documentation - The wall between tower X and Y

Tower Y

It is located on the southern side of the fortification, where the wall line turns at a wide angle to join the ancient wall. It has a quadrangular shape with walls that protrude completely outside the curtain. Its front wall is 6.50 m long, while the side walls are 5.16 m. Given its dominant position not only over the city but also over the Vjosa valley and the entire Mallakastra region.

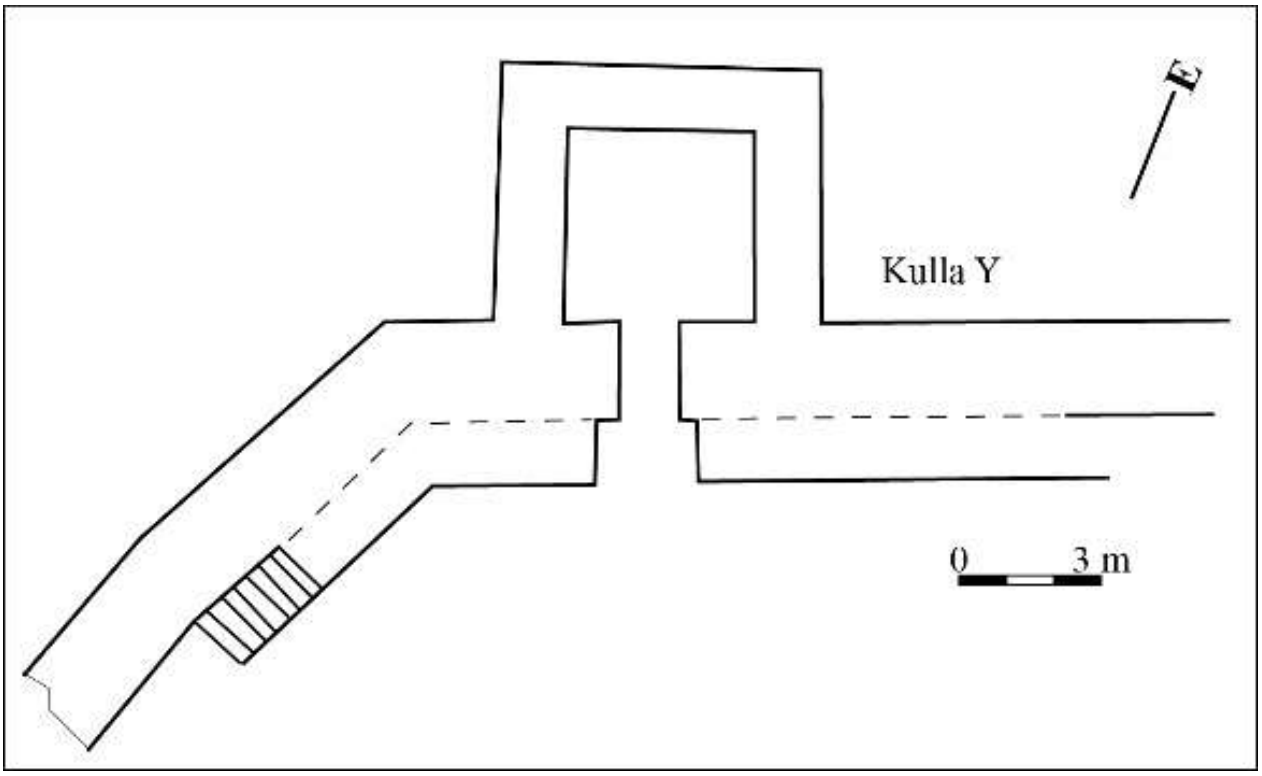


Figure 95 Tower Y. Plan by S. Muçaj

Photographic documentation - Tower Y

Figure 96 Tower Y

Photographic documentation - Tower Y

Figure 97 The tower Y. Northern and southern

4.2 Basilica B- The Cathedral

The Byllis Cathedral, consisting of the basilica, baptistery and episcopal complex, is the city's largest monument from late antiquity, occupying an area of more than 10 000 m^2 inside the Byzantine town. The cathedral basilica (B) from a planimetric and volumetric point of view has a much richer treatment than the other basilicas of Byllis. The plan of the basilica in its final phase, reaching a total length of 67m, is characterized by a narrow and long structure, with the side naves, the *narthex,* the *exonarthex* and the *atrium* porticos crowned with galleries which greatly increase its height. The atrium has an elongated rectangular shape in the L-W direction with dimensions of 11.15 m x 6.80 m surrounded by four porticos, one of them being the exonarthex. A pear-shaped cistern with a depth of 8.45 m was built in the western portico. The exonarthex and the other three porticos opened onto the atrium courtyard by means of arcades raised on columns placed on a high stylobate. Capitals treated according to the old Doric order were placed on the columns, while in the arcade of the second floor that followed the same rhythm, the capitals are of the Ionic order. The great height of the stylobate and the lack of stairs completely separated the courtyard from the porticos.

In the northeastern corner of the exonarthex, a staircase was built that led to its upper floor and from there to all the other galleries.

The narthex, 3.96 m long and 14.40 m wide, followed to the north and south by annexes, opens into the central nave through a tribelon, while to the side naves with simple doors.

The church, 14.40 m wide and 24.70 m long, consists of three naves with widths; the central one 7.75 m, the northern one 2.30 m and the southern one 2.90 m.

The naves are separated from each other by arches raised on columns and the latter on pedestals placed on a high stylobate. The arcade of the galleries continues at the same pace, raised on the same columns and pedestals as the first floor.

Ionic capitals with imposts were used for the first floor, while capitals with four leaves were used for the galleries. The Ionic capitals with imposts made of limestone from Byllis imitate the marble types of Constantinople, while those with four leaves were treated in a special way. In addition to the carved decoration, the capitals are also painted. In the gallery, the parapets are made with decorated plates only from the side of the central nave where tripods for fixing the numerous luminaries were installed.

The floor of the exonarthex, the naves, the sanctuary and the northern wing of the transept are paved with mosaics, marking the largest surface area with mosaics discovered so far in the territory of Albania. The motifs and scenes are very diverse, there we find scenes from the daily life of the shepherds, but also representations from the life of the fishermen of Galilee such as that of the brothers Simon and Andrew.

The mosaics of the three naves of the basilica are decorated with geometric motifs and contain a number of inscriptions, most of which belong to the repairs made during the Justinian period. All the walls were covered with frescoes, but of these, only those with geometric motifs belonging to the first-generation panels have been preserved. From the narthex, one passes through a tribellum into the baptismal complex and into two other rooms equipped with benches and sinks that served to prepare young people (catechumens) with the teachings of Christian dogma. The baptismal font was supplied with hot water from a furnace built in the courtyard east of the baptistery. The stairs built in one of the rooms served to climb to the upper floor not only of the baptismal complex but also to those of the episcopal complex, which is interconnected with the baptistery. The episcopal complex, with a large number of niches, passages, courtyards, cisterns is still in the process of excavation. The first floor of this complex was used for food storage, workshops and stables and the completion of the excavations will help to better understand the role played by the clergy in a city of Late Antiquity. The large number of architectural elements of the windows show that the buildings in Byllis were very well lit, continuing the Byzantine tradition.
The cathedral over a period of almost 200 years has three important construction phases:

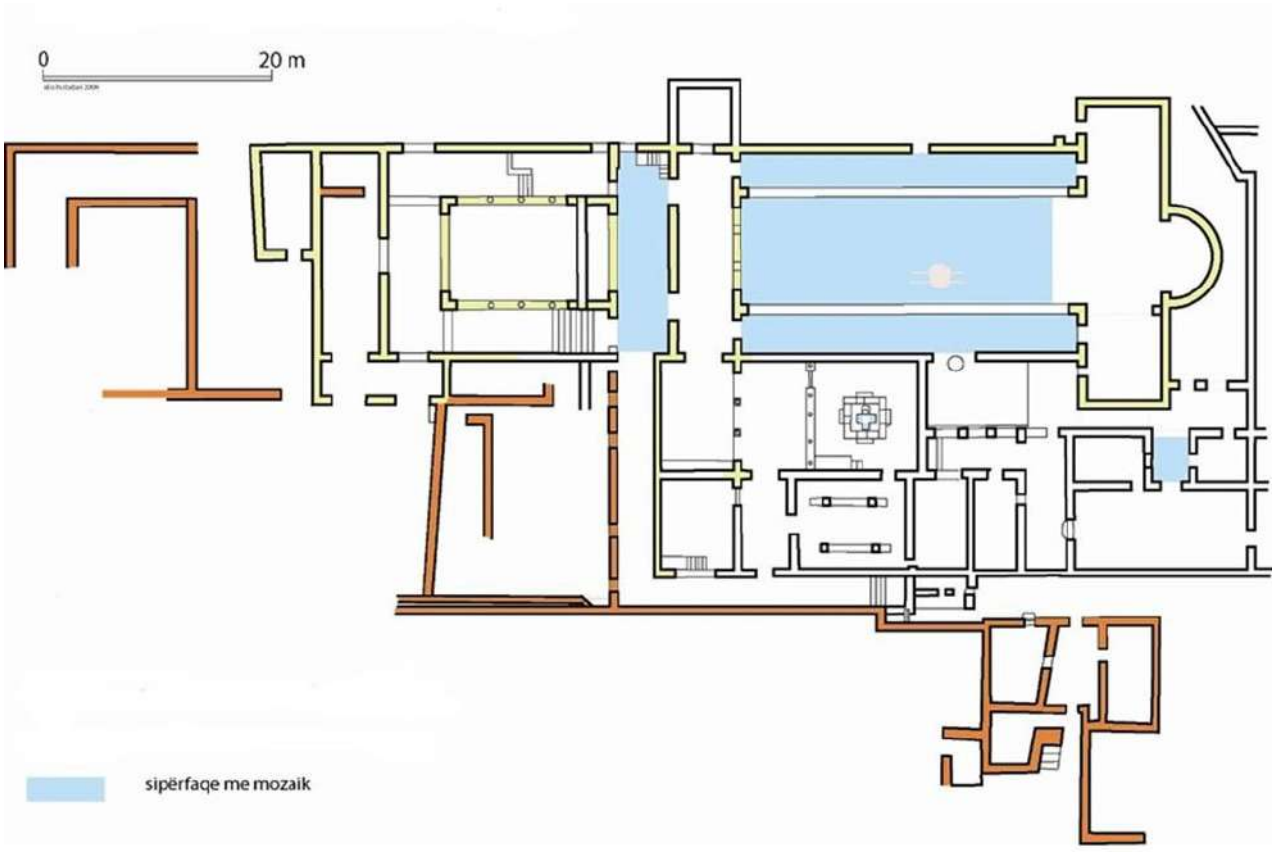
- the first at the end of the 4th century or the beginning of the 5th century AD;
- the second in the 470s
- the last is related to the period of Justinian's rule before 547 AD.

It has undergone numerous changes:

- In the first phase a three-nave basilica with a narthex and portico and a simple baptistery;
- In the second phase the atrium and galleries are added and the atrium is transformed into a complex;
- In the last phase the *episcopal complex* was built.

The episcopal complex, which consisted of a large number of rooms, passages, courtyards, cisterns and monumental gates, is still in the process of excavation.The first floor of this complex was used to store food reserves and for workshops and stalls[7].
The bishop's complex represents so far only the economic part of the bishopric of Byllis, as the bishop's palace and the corresponding living rooms are still unexcavated. Of the parts of the complex with special value to visit is the wine workshop and the rainwater supply system. The city's water supply system has been designed since its beginnings, where in addition to the houses that each have their own cistern, there are also public ones. The winery, since it is one of the rare cases where it has been found with all its constituent parts: grape storage, foot-pressing tub, hand-squeezing

[7] *2025, BYLLIS. Its History and monuments. N. Ceka S. Mucaj*



vessels, must collection tub, must transport trough, decanting and fermentation tubs, storage of reserve vessels (pithoi and amphorae) were found in a well-preserved condition and form a complete artisanal complex for the time. The grain warehouse (21 pithoi) is also partially preserved in the Bishop's complex, while another warehouse served for liquids, where 14 small pithoi were identified during the excavation, one of which was made of stone.

The mosaic-paved areas include the sanctuary (of which only a small portion is preserved), the central nave, the northern and southern naves, the exonarthex, and a small room to the south of the transept. The total area paved with mosaics is approximately 400 m^2.

- ***Sanctuary:*** Only a small fragment of mosaic, about 1 m^2, is preserved in its southern part. The exact dimensions of the sanctuary are 6 x 8.5 m, or approximately 51 m^2.
- ***Northern Part of the Transept****::* The floor features geometric motifs, and the dimensions of the space are 4 x 5.97 m, with a surface area of approximately 24 m^2. The mosaic displays numerous gaps, cracks, and fractures. In the southern part, near the sanctuary, the mosaic has experienced slippage.

Figure 98 Plan of the surfaces with mosaics

- ***Central Nave:*** The floor consists of several scenes with geometric decorations, various figures, inscriptions, etc. At the center of the mosaic, a band of opus sectile composed of triangles has been inserted. The dimensions of the space are 7.58 x 19.6 m, with a surface area of approximately 149 m². The mosaic is generally intact, though there are various gaps. In some areas, the surface shows unevenness with rises and depressions. The bonding of the tesserae to the bedding layer varies, ranging from very good to quite poor. In the central part, slightly shifted to the south, is the base of the ambo.
- ***Northern Nave:*** The floor is composed of two mosaic panels. The eastern panel consists of medallions containing zoomorphic figures, while the western one features geometric decoration. The nave's dimensions are 2.2 x 23.96 m, with a surface area of 53 m². Restoration work on this nave was completed in 2004.
- ***Southern Nave:*** The floor has geometric motifs in the western part and floral and zoomorphic decoration in the remaining area. The dimensions are 2.35 x 13.75 m and 2.82 x 10.05 m, with a total surface area of approximately 61 m². The mosaic shows various gaps, especially in the western part. Overall, the condition of this mosaic is good.
- ***Eastern Wing of the Atrium (Exonarthex***): It consists of two scenes with Christian themes. The mosaic is complete, except for a few gaps that have already been filled. The tesserae are generally well bonded to the bedding, except around the edges of the previously existing gaps. It is more fragile along the western wall.

Past conservation and restoration works - Basilica B

Partial or complete conservation interventions carried out over the years on the mosaics of the basilicas in Bylis.
Bazilika B 1986, 1987,1988, 1989, 2004, 2005, 2008, 2024, 2025

Photographic documentation - Basilica B

Figure 99 Basiolica B, The nave

Figure 100 Basila B - Transept

4.3 Basilica A

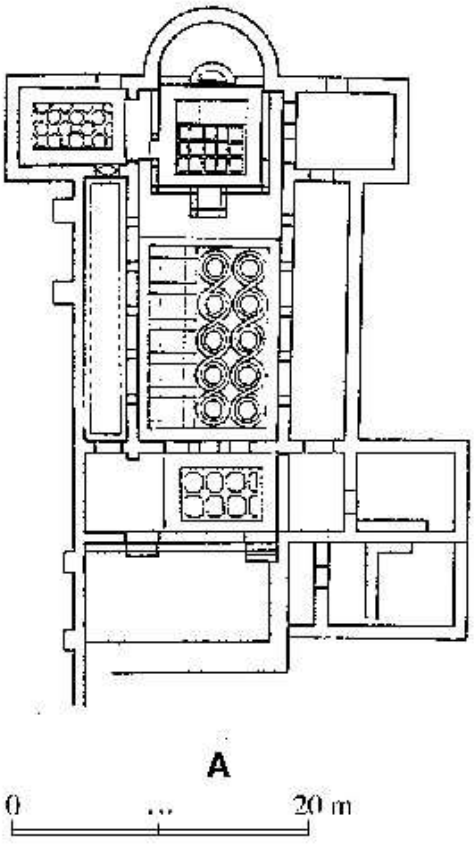


Figure 101 Plan of Basilica A

The basilica was built within the agora of the Hellenistic period, partially utilizing the structural remains of the northern wing of the L-shaped stoa in a commanding position towards the northwestern part of the city. It is three-navechurch with a semicircular apse, a three-part transept, a narthex, a portico and two niches on the south side, a staircase located in front of it, which used the ancient seats of the stadion. The state of preservation of this monument allows the planimetric and volumetric elements to be clearly determined. The naves are separated from each other by arches raised on masonry pillars and the latter on a high stylobate. The spaces between the pillars are closed with parapets. The naves are interrupted by a three-part transept, in the middle of which is the sanctuary, clearly defined. The three-stepped synthron was equipped with a wooden podium, rare in its form in churches of this period. In front of the apse, below the altar, only the cross-shaped reliquary is preserved.

The architectural sculpture and decorated liturgical installations that have survived to our days, complete or fragmented, are made of limestone taken from the Byllis quarries. The sanctuary, the central and northern nave, the northern wing of the transept and the narthex have floors paved with colorful mosaics. Basilica A was built in the first half of the 5th century and burned in the middle of the 6th century AD (547 – 548 AD).

- **The floors** of the sanctuary, the central and northern aisles, the northern arm of the transept, and the narthex are paved with mosaics, covering a total surface area of approximately 190 m².
- **Sanctuary,** prothesis area, and apse: The floor (measuring 4.8 x 5m, around 24 m²) appears damaged in its central part. Overall, the tesserae are well bonded to their bedding layer.
- **Northern part of the transept:** The floor (3.88 x 5.24 m, around 21 m²) is decorated with bird figures set within an octagonal grid. It exhibits significant subsidence caused by construction over poorly compacted earth fill. Cracks, deformations, and numerous voids are present.

- **Central Nave**: The floor is longitudinally divided into two compositions featuring geometric motifs and animal figures. Dimensions: 6.95 x 11.95 m, with a surface area of approximately 83 m². It is generally well preserved, although there are a few small gaps and a collapse along the northern stylobate, which could potentially cause surface damage.
- **Northern Nave**: The floor, decorated with a geometric pattern (intersecting circles), is preserved only at its eastern and western ends. Most of the mosaic surface (1.95 x 12.93 m, approximately 26 m²) is missing. The two preserved fragments measure: in the east, 2.6 x 1.25 m; in the west, 2.5 x 1.1 m.
- **Narthex:** The floor is organized into two zones: the northern part features geometric motifs, while the southern part is decorated with animal motifs within rectangular frames. Dimensions are 4.12 x 8.87 m, with a surface area of approximately 37 m². The floor is relatively well preserved. It shows general subsidence, except for the area dividing the two scenes, where a wall beneath the floor has prevented settling.

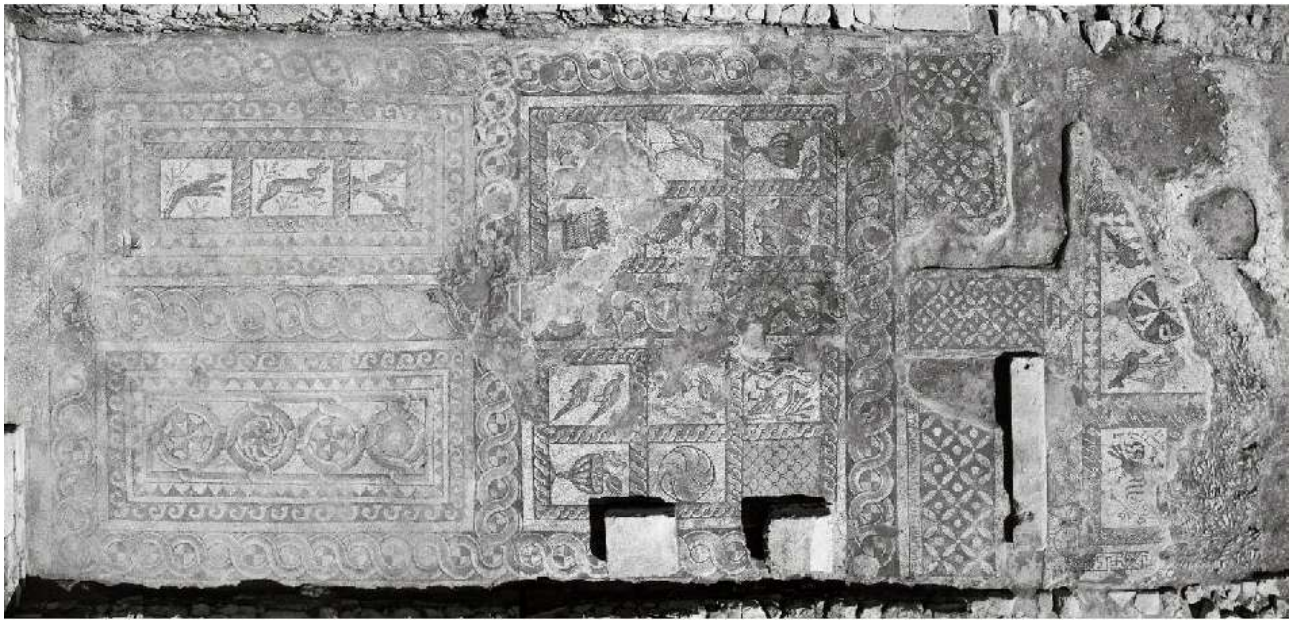


Figure 102 Basica A - The mosaic of central nave.

Past conservation and restoration works - Basilica A

Partial or complete conservation interventions carried out over the years on the mosaics of the basilicas in Bylis.
Bazilika A 1987,1989,1990, 2001, 2005. 2010

Photographic documentation - Basilica A

Figure 103 The diateichisma wall under Basilica A

Figure 104 Basilica A. Plan and the southern nave

4.4 Basilica C

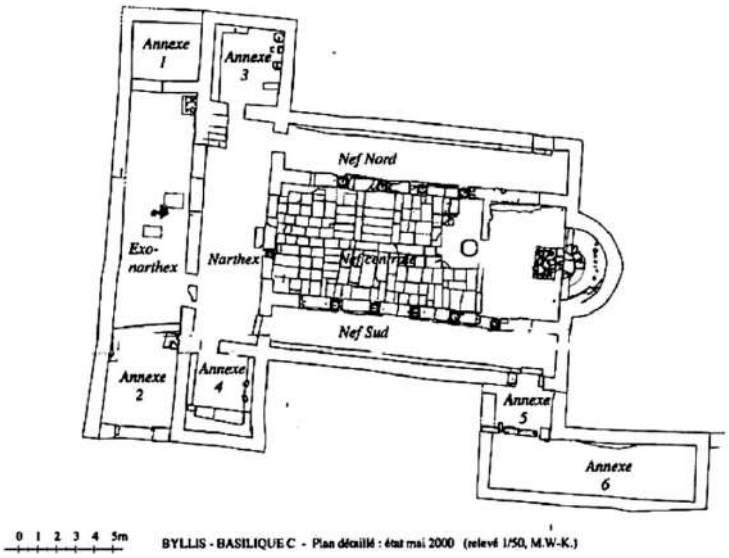


Figure 105 Plan of Basilica C

Basilica C has a traditional plan with a semicircular apse, three naves, narthex, portico, several annexes on their sides, and is equipped with a gallery above the narthex. and annexes. The maximum dimensions of the basilica are 33 m long and 22.80 m wide. The central nave paved with stone slabs is 5.80 m wide, while the side naves, equipped with benches for believers to sit, are 2.46 m and 2.26 m wide.

The sanctuary and one of the annexes are paved with mosaics with geometric, plant, zoomorphic motifs and human figures. The dimensions of the room are 4.15 x 5.95 m, with a surface area of approximately 25 m².

In the sanctuary there are two unusual scenes, the first 6+6 lambs personifying the apostles go towards the altar, while in the second members of the clergy with candelabra in their hands are directed towards the church. An inscription written on the mosaic shows that it was made during the time of Bishop Praisios, who is not mentioned in the lists of bishops of Byllis. Second quarter of the 6th century AD seems to be closer for the period of construction of the basilica C. Near the basilica is a building of the 6th century AD, which belongs to the most widespread type during the 5th-6th centuries in Byllis, with three rectangular rooms, parallel to each other, equipped with a veranda. Most of them had a basement, which served to store food reserves.

Past conservation and restoration works - Basilica C

The monument has been completely excavated and has undergone systematic conservation interventions, consisting of the reinforcement of the walls using a fairly stable white cement mortar coating, as well as the rebuilding of the fallen columns in the colonnades of the naves. Starting from the apse the preservation under a layer of sand of the mosaic is noted, which has had restoration interventions to fix the tesserae, restoration that needs to be continued, The floor of the central nave, paved with rectangular limestone slabs, has unevenness due to the base not being well fixed by the builders, but interventions to level the floor are not recommended due to the numerous cracks that each slab contains. In front of the southwest corner of the basilica, where archaeological excavations have discovered a Late Antiquity dwelling which is covered by new deposits and vegetation.

Partial or complete conservation interventions carried out over the years on the mosaics of the basilicas in Bylis. Bazilika C 1991, 2001, 2003, 2004, 2005, 2009

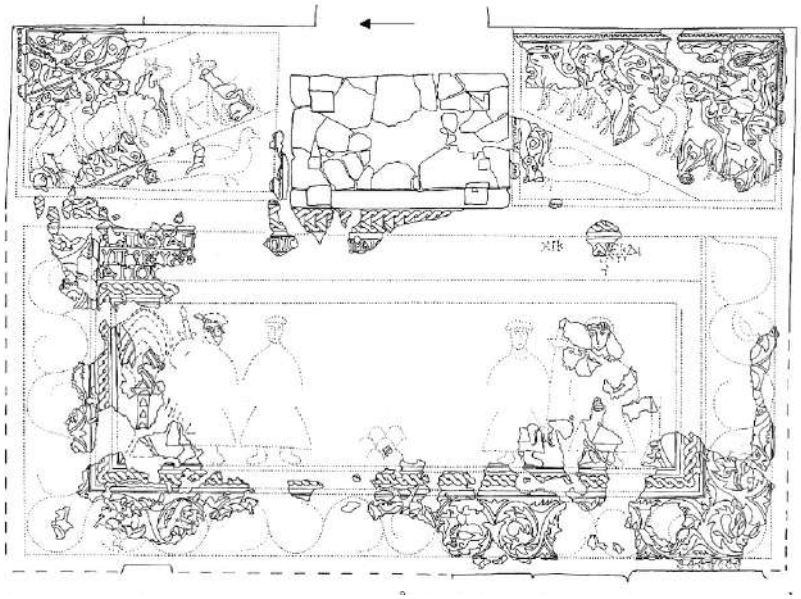
Photographic documentation - Basilica C

Figure 106 Basilica C: view from the East

Figure 107 Basilica C. Central nave

Photographic documentation - Basilica C Central Nave

Figure 108 Bazilika C Altar and apse with mosaics



Photographic documentation - Basilica C - The floor of central nave

Figure 109 The architectural parts to be restored

Figure 110 The floor of the central nave

4.5 Basilica D

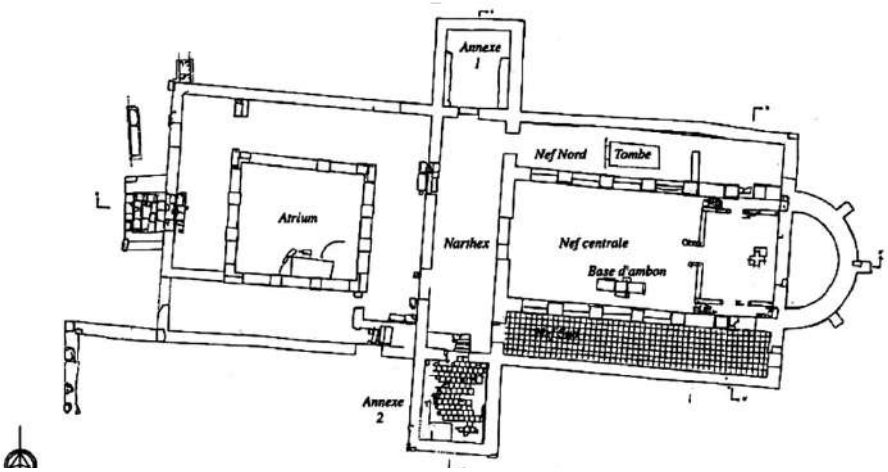


Figure 111 Basilica D plan, S. Muçaj

It is a three-naved basilica with a narthex featuring two annexes to the north and south, and an atrium. It is located in the northern part of the city, outside the 6th-century fortification built during the time of Emperor Justinian. Mosaic pavements are found in the prostoon, the central nave, the eastern part of the northern nave, the narthex, and its northern annex.

Basilica D is 45.25 m long by 26.15 m wide and has three naves, a semicircular apse with a synthronon and sanctuary. The narthex, central nave, northern annex and part of the northern nave are paved with mosaics. Among the scenes is one of the Rivers of Paradise: Pishon, Gihon, Tigris and Euphrates. Basilica D was built at the beginning of the sixth century AD.

Prostoon and Central Nave: The mosaic surface (11.4 x 7 m, approximately 80 m²) shows significant damage. The central section of the mosaic is completely missing, and the preserved areas also contain gaps.

Northern Nave, Eastern Section: The geometric decoration with the *pelta* motif covers the entire surface. The mosaic area measures 2.65 x 3 m, approximately 8 m².

Narthex*:* The floor is decorated with geometric motifs, within which are depictions of birds, baskets, and other figures. The dimensions are 3.7 x 12.92 m, with a surface area of approximately 48 m². The mosaic is largely intact, with only a few gaps.

Annex North of the Narthex*:* In the central part of the floor, there is a depiction of deer drinking from the Four Rivers of Paradise. The mosaic also includes geometric figures and inscriptions in Greek. The dimensions are 3.87 x 1.3 m and 2.75 x 3.1 m, with a total surface area of approximately 14 m². There are no significant gaps. The tesserae are generally well bonded to the bedding layer, although some are detached.

Past conservation and restoration works - Basilica D

Partial or complete conservation interventions carried out over the years on the mosaics of the basilicas in Bylis.
Bazilika D 2001, 2005, 2011

Photographic documentation - Basilica D

Figure 112 Basilica D Entrance and quadriporticus

Photographic documentation - Basilica D the nave

Figure 113 Bazilika D. Absida dhe altari

Figure 114 Basilica D The naves. The level of the walls

Figure 115 The central nave and the restored arch

Photographic documentation - Basilica D Mosaic

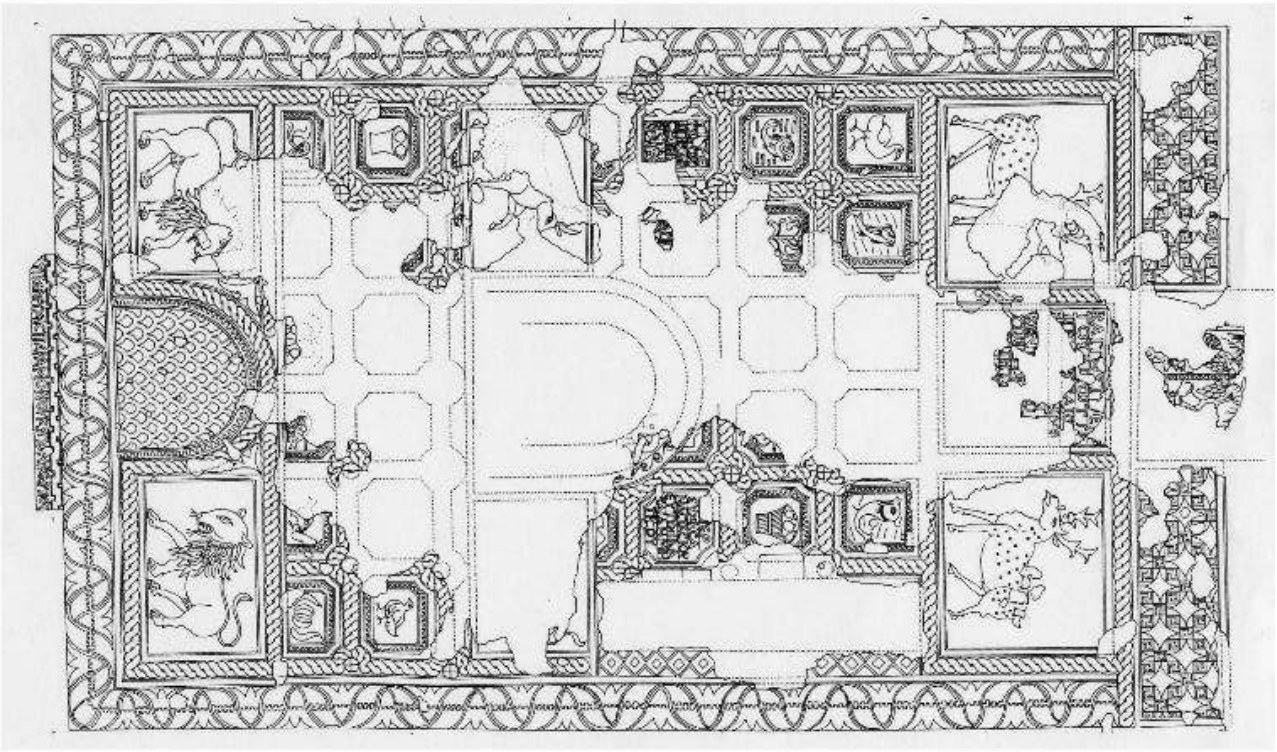


Figure 116 the mosaic of the central nave

a

b

4.6 Basilica E

Basilica E is located in the eastern part of the city, outside the wall of Victorinus. It is a three- naved basilica with an apse, a narthex, an exonarthex, and two annexes on either side of the narthex. The basilica is 33 m long by 22.80 m wide. The floor of the sanctuary was paved with mosaics. The central nave, measuring 13.75 meters in length and 5 meters in width, is paved with mosaic. The southern nave and the narthex are paved with square brick flooring (30 x 30 cm), which is well preserved. The excavated southern annex is also paved with similar bricks, but unlike the narthex and southern nave, its condition is poor. The mosaic in the central nave is well preserved. The sanctuary of the basilica is also paved with mosaic.

Past conservation and restoration works - Basilica E

Partial or complete conservation interventions carried out over the years on the mosaics of the basilicas in Bylis.
Bazilika E 2006, 2007,2023

Photographic documentation - Basilica E

Figure 117 Basilica E View from the West

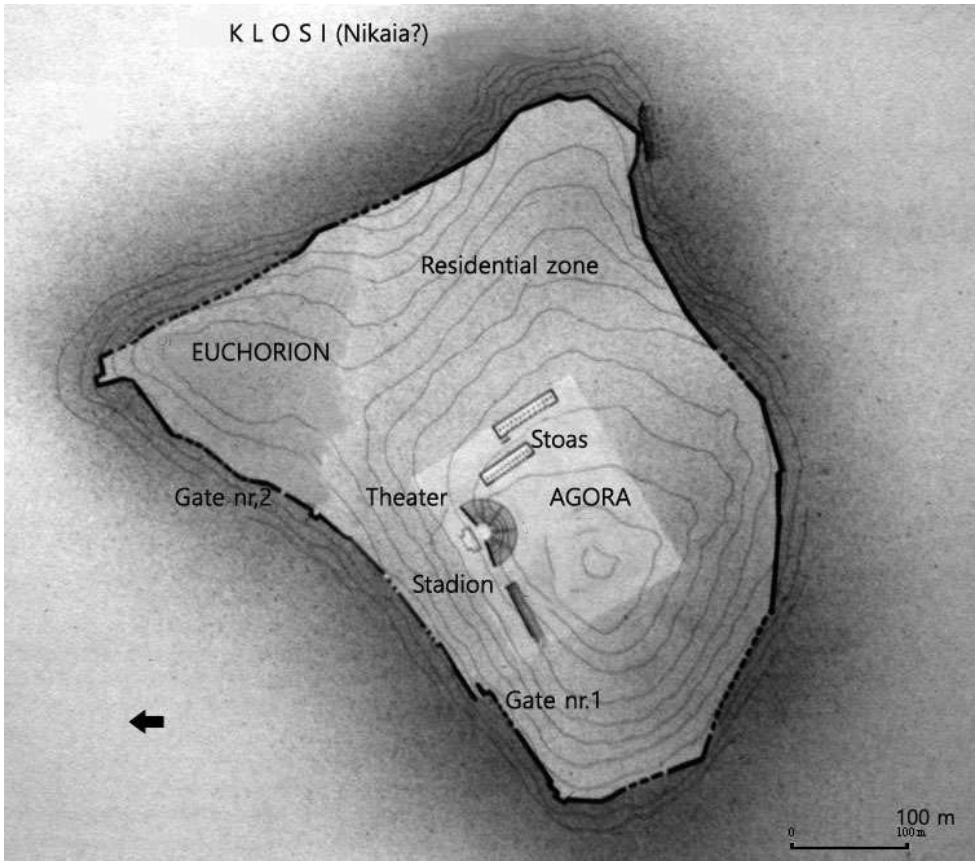
Figure 118 Basilica E. Exonartex and narthex Architectural parts for recording and arrangement

Photographic documentation - Basilica E

Figure 119 Basilica E. Exonartex and narthex Architectural parts for recording and arrangement

Figure 120 Basilica E during the excavations. 2007

2 | Historical Analysis of Klos



In the years 1971-1975, the first archaeological excavations were carried out, as well as conservation-restoration works under the direction of L. Papayan, which continued in the years 1974-1975. The French epigraphist L. Robert has expressed the hypothesis for the identification of Klos with the city of Nikaia, which is generally accepted by archaeologists. Although it was only 1 km from Byllis, Nikaia as the ancient capital of the Bylliones Koinon, preserved its special political and social life even later, which is noticeable in the construction of its agora in the 3rd century BC. In the agora, in addition to the theater and an excavated stoa, traces of a stadium are also visible, with a single-wing layout, like in Bylis. Also, a number of inscriptions with the names of the city's prytans are indicative of the strong tendency for autonomy within the Bylliones Koinon, but also of a vibrant political, social and cultural life of this Bylliones community. It was precisely during this period that a young man from Nikaia won the gun-running race at the games of the city of Oropos in Greece.

1. Surrounding wall

The ancient city was built on a hill with steep slopes on three sides and connected by a neck to the hill on which Byllis stood. The 1850 m long wall encircles the hill completely on an area of 18 ha, following the terrain line. The wall, one of the earliest Illyrian urban fortifications, is 3 m - 3.5 m thick.

In the wall of the first period (second half of the fifth century BC), the blocks have polygonal and trapezoidal forms.

The wall of the second phase (middle of the fourth century BC), they are quadra tic. The city had only one entrance, formed by the parallel extension of the two sides of the walls - and set on the side of the pass that connects it with the surrounding area. [8]

Three defensive towers were built at the entrance, and at the most likely points for enemy attacks.

Past conservation and restoration works - Surrounding wall

On the northwest side, towards Byllis, is the only entrance to the ancient city, excavated and restored by L. Papajani. The blocks have polygonal and trapezoidal shapes in the wall of the first period (second half of the 5th century BC) and quadrangular in the second phase (mid-4th century BC).

[8] *2025, Byllis, It's History af monuments, N. Ceka, S. Muçaj*

Photographic documentation - Surrounding wall

Figure 121 Southern surrounding wall

2. Theatre

Like the Bylis theater, the Klos theater has survived to this day in very poor condition. Of the staircase, only the first step, the proedria, is well preserved, while the paraskenion and stage only have traces of them carved into the rock. The orchestra, with a diameter of 11.60 m and an incomplete semicircular shape, used the carved rock as a floor. Built according to the typical Illyrian-Epirotic form, just like the Byllis theater, its staircase with 15 steps could accommodate about 800-1000 spectators. The first row, reserved for the city's aristocracy, has thrones with a 0.25 m high backrest and was separated from the other rows, which served the common public, by a corridor.
On the preserved wall of the eastern *analemma* of the theater, which leads to the stoa, are engraved 14 decrees for the granting of citizenship. They date from the second half of the 3rd century BC and testify to a policy of attracting new residents to Nikaia.

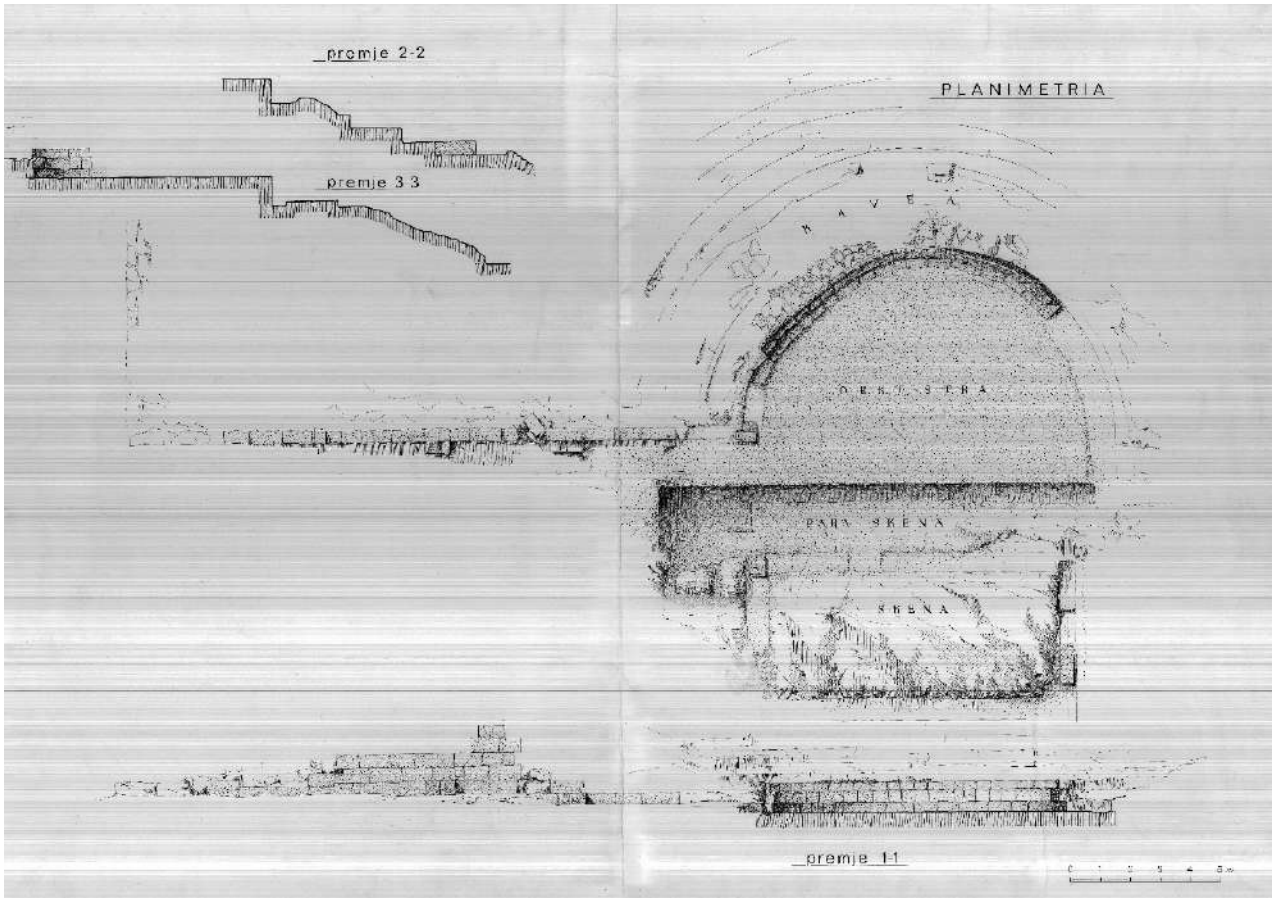


Figure 122 Teatri. Dokumentacioni. L. Papajani (AIA)

Photographic documentation - Theatre

3. Stoa

The stoa, which represents another typical monument for ancient agora, has been partially discovered on the eastern slope of the city, measuring 40 m in length and 10 m in width. It was a two-story building, as evidenced by the Doric and Ionic architectural elements found in its space. On the western side, its back was closed with a wall, while on the eastern side the stoa opened with a Doric colonnade on the first floor and an Ionic one on the second. The interior space of the building was divided lengthwise into two equal parts by a row of columns, which supported the roof.

Photographic documentation - Stoa

Figure 124 Stoa

Figure 125 Columns from the stoa located in the neighborhood house.

4. Dwelling

The simple dwellings of Nikaia indicate a modest life of the inhabitants, without the quality of Bylils. The dwelling excavated by L. Papayanis is located on the western side, near the surrounding wall. It had a small courtyard, where the windows of two rooms located on the side of a corridor opened, which continued to the pantry where the reserves were kept in pythoi. The water from the roof was collected in a cistern carved into the rock below the courtyard. This was the only way to provide water for use and to drink in case of danger, while in quiet periods the citizens took it from the springs outside the city.

Based on the materials found, the dwelling is dated to the second half of the 3rd century BC.

Immediately after the excavation, L. Papajani undertook the reinforcement of the walls, built with small stones and clay mortar, by capping them. This ensured their preservation in the condition after the excavation.

Photographic documentation - Dwelling 2019-2025

Figure 126 Dwelling 2019-2025

3 | Archeological and Restoration Background

3.1 Archaeological stratigraphy and restoration techniques

Archaeological excavations have been mainly focused on the western part of the ancient city of Byllis.In the eastern part, excavations have been carried out in the discovery of the dwelling A, Gate no. 4 and the Basilica E.

The stratigraphy recorded in the archaeological excavations reflects the main periods of the development of life in the ancient city of Byllis with the greatest intensity in the *Bylliones period*, which corresponds to the Hellenistic one of the 4th-2nd century BC.

The Roman colonial period is mainly evidenced by an intensive layer of the 1st-2nd century AD with a period of decline in social and cultural life in the 3rd century AD.

The Late Antiquity period of the 4th-6th century AD. marks an intensification of life developed mainly around the basilicas A, B. C with the creation of clusters of houses built mainly with spoils from the monuments of the agora.

The stratigraphic sequences are similar in all excavations with:

- **a layer** of light brown clay soil mixed with ceramics mainly of local production with typical Hellenistic forms in the 3rd-2nd century BC, placed on the rocky and clay base of the hill.
- **the second layer** has a blue clay content with amphorae of Italic production and terra sigillata of the 1st-2nd century AD.
- **the third layer** has dark brown clay with a high content of wood chips and ash and contains ceramics of local production of the 4th-6th century, as well as imports from the Late Antiquity from Asia Minor and Africa.

Anastylosis as a restoration method was mainly applied to the theater with the restoration of architectural parts found during excavations, as well as of blocks fallen from the walls of the parodos and analemma. The latter represented the easiest case, because the materials were in situ, while all the architectural parts were found collected in three different places, apparently ready to be transported to be placed in the surrounding wall, or to be burned. The restorations were carried out immediately after their discovery, completing the graphic and photographic documentation by the restorer *L. Papajani*.

The restoration of the corridors of gate no. 4 and gate no. 5 was also carried out with the same method. The restoration of the fortified courtyard was carried out on the basis of a three-year project by the restorer *E. Haxhiraj*. The round tower was the main object, where a good part of the

fallen blocks were preserved. The line of weight in the center of the facade of the tower served as an orientation for their erection. The difficulty presented the western part of the tower wall, which had been rebuilt during the 4th century AD by restoring the blocks of the ancient wall with lime mortar connections.

3.2 Archaeological excavations and restoration works

The first archaeologist to publish scientific data on Byllis was the Austrian K.Patsch in the book "Sandschak Berat in Albanien" (Sandzhak of Berat in Albania), Vienna, 1904.
In addition to the monuments: the theater, the surrounding walls and the Latin inscription of Lollianus, he published a series of inscriptions and sculptures, as well as a catalog of Bylliones coins.
During World War I, in the winter of 1917-1918, the first archaeological excavations in Byllis were carried out by the Austrian C. Praschniker, who discovered parts of the surrounding wall, a part of the great stoa and a corner of the theater. In his book "Muzakhia und Malakastra" he also published some previously unknown inscriptions and sculptures.
In the summer of 1978, the Archaeological Research Center of the Albanian Academy of Sciences organized an archaeological expedition in Byllis, led by N. Ceka and S. Muçaj, with the assistance of a restoration group from the Institute of Monuments under the direction of L. Papajani.
The research for the Illyrian antiquity period was mainly focused on the city's agora, where the theater (1978-1981), the stadium (1981), the stoa A(1984-1986), the Stoa B (1985), the Propylaea-entrance to the agora with the public spaces next to it (1987), the stadium's cistern (1987), the gymnasium (1989), as well as part of the urban network through the discovery of dwelling A (1979) on the eastern side, of dwelling B (1990-1991) on the western side have been excavated. Meanwhile, most of the entrances to the ancient Illyrian and Byzantine walls were discovered, and parts of the ancient necropolis near these entrances were excavated.
The archaeological excavations of year 1980 allowed verification of the Byllis plan and the fortification elements (which surrounded an area of 30 hectares within a perimeter of 2,550 m). The archaeological excavations also revealed an orthogonal grid pattern in the residential area.
Another important **area of archaeological researches in Byllis was the Byzantine city**, mainly through the excavation of the Paleochristian basilicas.
In 1980, Basilica A was discovered, built on the ruins of the great stoa. The discovery of Basilica B, which had also been the city's cathedral, began in 1984 and lasted, with interruptions, until 2003. In 1989, Basilica C was discovered in the northwestern part of the agora, as well as a Byzantine bath built near the stadium cistern during the reign of Justinian I. A fourth basilica, named D, was discovered outside the Byzantine enclosure, on the northern side of the ancient city (1990). In 1991, excavations also began in Basilica E, south of dwelling A.

In 1999, an Albanian-French expedition led by S.Muçaj, J.P.Sodini and P.Chevalier began work on the complete discovery of Basilica B, the episcopal complex, as well as on the assessment of the monuments of the Byzantine period.

In the years 2014-2017, an Albanian-Italian expedition led by L. Përzhita and R. Belli worked in Byllis, which focused mainly on documenting the monuments of the ancient Illyrian period discovered by previous archaeological excavations.

Archaeological excavations resumed in the years **2018-2024** under the direction of L. Përzhita and O. Ceka, with the consultancy of N. Ceka, focusing on the discovery of the cistern and the Temple of Augustus. Alongside them, the restoration of basins 1-2 of the cistern was carried out by E. Haxhiraj, and geophysical research was carried out by the Archaeology Unit of the Academy of Sciences under the direction of N. Ceka, P. Aliaj and S. Muçaj.

The continuation of archaeological excavations and their association with restoration interventions, financed by the Academy of Albanological Studies and Academy of Sciences, has influenced the overall care of the Byllis Archaeological Park, which cannot be said for the Klos archaeological site, which is in a state of complete abandonment.

Since 2021, the restoration of the cistern, begun in the 1980s by L. *Papajani* with the anastylosis of the three arches of basin no. 6, has resumed. Because the excavation was not completed in that basin, he only installed the found parts of the arches, filling some of the blocks with concrete and not installing the priamatic blocks that ensure the horizontal installation of the ceiling tiles.

During **2021-2024** the restoration work was part of the archaeological excavations, preceding the release of the excavation spaces by placing the blocks from the ruins and those found in situ in the walls of the basin. The blocks of the arches found in situ were reconstructed in a horizontal plan in the square in front of the monument pending the final restoration, which will take place after the complete excavation of the monument. The temporary anastylosis of architectural parts was also applied to the Doric colonnade of the prytaneion and the Temple of Augustus.

3.3. Chronological sequence of archaeological excavations and restoration interventions

1917 -1918 *Camillo Praschniker*'s first excavation campaign. During the excavations, part of the theater, Stoa A, and the fortifications on the walls were discovered. In addition to Byllis, he also excavated the city of Klos.

1976 *L. Papajani* defined the plan and construction techniques of the Klos surrounding walls and brought to light the city's theatre.
Archaeological excavations have revealed a spatial organization within the surrounding walls, with the *agora*, the *euchorion*, and the residential area with a geometric arrangement of the monuments according to a quadratic scheme[9]

1978 - 1991 Archaeological expedition in Byllis, led by *N. Ceka* and S. *Muçaj*, with the assistance of a restoration group from the Institute of Monuments under the direction of *L. Papajani*.

The excavations included:

- 1978-1981 - the theater
- 1979 - dwelling A
- 1981 - the stadium
- 1984 - 1986 - the stoa A
- 1985 - the Stoa B
- 1987 - the Propylaea-entrance to the agora with the public spaces next to it
- 1987 - the stadium's cistern
- 1989 - the gymnasium
- 1990-1991 - dwelling B

1980 -2003 archaeological researches in the Byzantine city. The excavations included:

- 1980 - Basilica A was discovered, built on the ruins of the great stoa.
- 1984 - 2003 - Basilica B
- 1989 - Basilica C
- 1990 - Basilica D

[9] *CEKA N.- CEKA O. 2018, p. 985, fig. 19.*

- 1991 - Basilica E

1999 Excavations by *Skender Muçaj, Jean-Pierre Sodini, and Paskale Chevalier*, in collaboration with the French School of Athens. The excavations included:

- the complete discovery of Basilica
- the episcopal complex
- the assessment of the monuments of the Byzantine period

2014-2017 Albanian-Italian expedition led by *L. Përzhita* and *R. Belli*. Documentation of the monuments of the ancient Illyrian period discovered by previous archaeological excavations

2018-2024 Excavations by *L. Përzhita* and *O. Ceka*, with the consultancy of *N. Ceka.* The excavations included:

- **2018** - a trench was opened to verify the continuity of the canal to the west for over 2.10 meters. This campaign revealed the section (0.93 meters high and 0.64 meters wide) inside, which is preserved only under the *stereobate.*
- **2023 - 2024** - Temple of Augustus

Recent years, the archaeological excavations of recent years have always been preceded by geophysical and cartographic studies, which were carried out by a special team in collaboration with the Academy of Sciences and the Polytechnic University of Tirana in the project called ArcheoByllis. Four objectives were defined for that project, which aimed at discovering:

- the temple of Augustus, as evidenced by the architectural parts and inscriptions found in the northwestern part of the Agora;
- the cistern that supplied water to the Roman baths in the southwestern part of the Agora;
- the temple of the Bylliones period in the space in front of the Stoa A;
- the episcopal palace north of Basilica B.

5 | Annexes

Annex 1 Monument Passports

6 | Bibliography

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MINISTRIA E EKONOMISË, KULTURËS DHE INOVACIONIT

ITALIAN AGENCY FOR DEVELOPMENT COOPERATION

ARCHAEOLOGICAL CONSERVATION PLAN
ARCHAEOLOGICAL PARK OF BYLIS
ancient cities of Bylis and Klos

PART 3

Environmental and landscape Analysis

ILLYRIAN CONSULTING ENGINEERS

AGATE

B5 s.r.l ENGINEERING

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This document is to be considered an integral part of the Conservation Plan. Specifically, it provides a comprehensive overview of the landscape components, with attention to constraints, environmental issues, and landscape issues.
Assessments of the significance of physical risks related to climate and the environment (seismic activity, landslides, hydrogeological activity, and other similar events) are essential to support the analysis and conservation proposals for the site (**see section 8.1 Terms and References - ToR**).
This document contains technical contributions written by individual subject matter experts involved in the project. Each section written by a specific expert reflects exclusively the professional judgment, interpretations, and opinions of that expert.
All intellectual property rights relating to these individual contributions remain the property of their respective authors.

This document is divided into three sections:

- Geological and geotechnical analysis
- Seismic analysis
- Hydrological analysis

1 | General Overview

The archaeological park of Bylis is located in the Mallakastër region, about 1.5 km from the village of Hekal and approximately 8 km from the town of Ballsh. The hill on which the ancient city stands dominates the valley of the Vjosë River and the surrounding mountainous area. To the south, about 5 km from the archaeological park of Bylis, lies the village of Klos (the ancient city of Nikaias). The ruins of the archaeological park of Bylis, along with those of Klos, today represent the most typical representatives of Illyrian civilization in the 5th-1st century BC, and also serve as a new hub for cultural tourism development, with the potential to positively influence the sustainable development of the Mallakastër region.

The sites of Bylis and the ruins of Klos were declared cultural monuments of the first category, respectively by the decision of the Institute of Sciences (published in the Official Gazette No. 95, dated 16.10.1948); the Rectorate of the State University of Tirana/ No. 6/ dated 15.01.1963; and the Ministry of Education and Culture/ No. 1886/ dated 10.06.1973.

Today, while the ruins of Klos are under the administration of the Regional Directorate of Cultural Heritage (DRTK) Vlorë, the Illyrian city of Bylis was established as a park with Council of Ministers Decision No. 396, dated 31.03.2005, along with its zoning map and administrative structure. This decision also created the National Board of Archaeological Parks (BKPA) in Albania, which at that time represented a strategic initiative for overseeing the activities of archaeological parks in the country.

Subsequently, Council of Ministers Decision No. 249, dated 30.04.2014, designated the Office of Administration and Coordination of the Bylis Archaeological Park as the responsible structure for the administration of the Bylis Archaeological Park. Meanwhile, this decision introduced several other changes regarding the structure of the National Board of Archaeological Parks (BKPA) and the administration of some archaeological parks.

Later, according to the Order of the Prime Minister No. 132, dated 21.10.2019, the Bylis Park was included in a single administration under the name of the Archaeological Park of Apollonia and Bylis. This decision amended previous Council of Ministers Decisions No. 184, dated 23.06.2014, concerning the structure and organization of the Office of Administration and Coordination of the Apollonia Archaeological Park, and No. 185, dated 23.06.2014, regarding the structure and organization of the Office of Administration and Coordination of the Bylis Archaeological Park. In the organizational chart of the administrative structure, Bylis was transformed into a sector within the Office of Administration and Coordination of the Archaeological Park of Apollonia and Bylis.

2 | Geological and geotechnical analysis

2.1 Methology

This report presents the general geotechnical aspects of the Bylis ancient area. Geological and engineering surveys were conducted throughout the entire area of the archaeological park, enabling the geotechnical assessment of the terrain upon which the park's engineering structures have been built.

In oriented profiles, surface field observations were carried out at a scale of 1:500. Additionally, all encountered excavations and exposures within the park area were assessed from a geotechnical perspective.

Based on the results of the fieldwork and laboratory testing, it was possible to interpret the obtained data and accurately correlate the geotechnical parameters across the entire studied area.

The archaeological parks of Bylis and Nikaia are located in the region of Mallakastër. The Bylis Archaeological Park lies 1.5 km south of the village of Hekal, while the Nikaia Archaeological Park is situated southeast of the village of Klos. Bylis Archaeological Park is positioned on the upper part of a hill at an altitude of 490–520 meters above sea level, whereas Nikaia Archaeological Park is located on the upper part of Castle Hill at an altitude of 353 meters above sea level.

It is worth noting that the ancient cities of Bylis and Nikaia are located about 2 km north of the Vjosa River valley, in a dominant and very scenic geographical position.

Figura 1 Project Location Orthophoto - Byllis

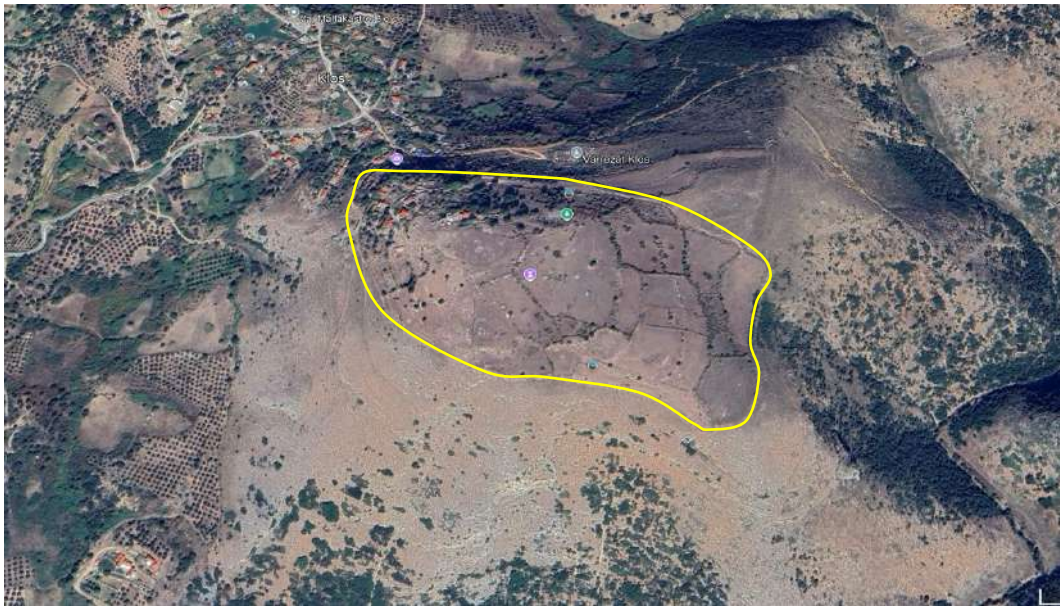


Figura 3 Orthophoto of the project location, Nikaia Archaeological Park, Klos Village

2.2 Geomorphological characteristics and structure

The study area, from a geomorphological perspective, is part of the morphological unit within the drainage basin of the Vjosa River.
This hilly morphological unit is composed of hill ranges extending from north to south. The studied zone lies within the hilly region of Vurg—specifically in the Kash-Hekal-Klos area.
The Bylis and Nikaia archaeological parks are located respectively on the upper parts of Gradishta Hill and the Castle Hill of Klos, both of which are composed of Neogene terrigenous formations.
The elevation above sea level in the area where the Bylis Archaeological Park is situated ranges from 400–450 meters up to 500–523 meters (at the peak of Gradishta Hill).
Meanwhile, the elevation of the area where the Nikaia Archaeological Park is located, in Klos, varies from 350 meters to 353 meters (at the peak of the Castle Hill of Klos).
The hilly area has a rounded shape with slopes that vary in inclination from 15–35° up to 45–55°.
Generally, the hill slopes are affected by erosion caused by surface water runoff, which has left noticeable traces in the form of deep and narrow valleys that are highly active during periods of heavy rainfall.

The terrain of the study area is formed by the following types of geological deposits:

- *Quaternary Formation (Q);*
- *Serravalian Formation (N_1^2s);*
- *Burdigalian Formation (N_1^1b);*

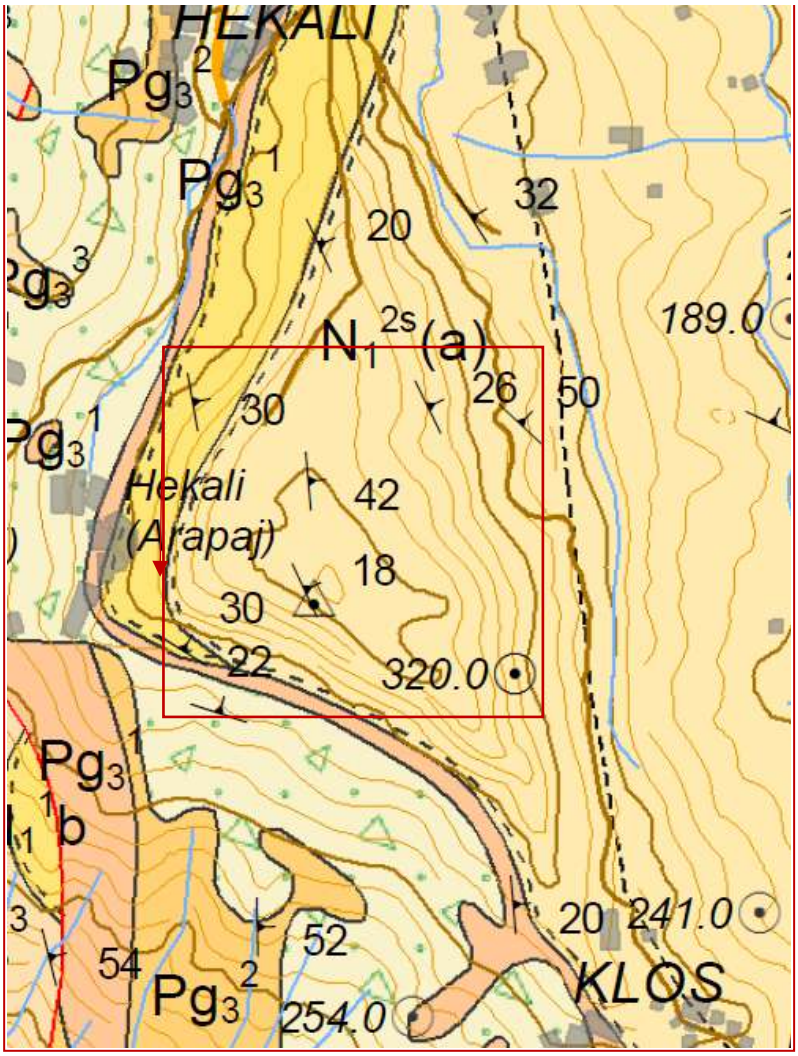
Quaternary Formation (Q)
The recent slope deposits (colluvium) are widely encountered along the hill ranges, primarily represented by mixtures of gravel, pebbles, and clay, with thicknesses ranging from 1.7–2.5 m up to 4.5–5.0 m.

Serravalian Formation (N_1^2s)
The Serravallian deposits have a surface distribution throughout the entire study area. These deposits are characterized by lithothamnion limestones interbedded with carbonate clays and carbonate sandstones.

Burdigalian Formation (N_1^1b)
At the surface, these deposits are represented by interbedded layers of marl, marly clay, sandstones, and lithothamnion limestone layers. In the lower part, they are characterized by alternating layers of sandstone and clay-silt (argillaceous-silty) deposits.

Figura 4 Geological map of the Hekal-Klos area, scale 1:50,000 (Geological Survey, 2017)

Figura 5 Geological map of the Hekal-Klos area, scale 1:50,000 (Geological Survey, 2017)



1. Quaternary Deposits (Q_{p-h}). Clayey soils and silts containing gravel, sand, and silt fractions;
2. Serravallian Deposits (N_1^2s (a)). Lithothamnion limestones interbedded with carbonate clays and carbonate sandstones;
3. Burdigalian Deposits (N_1^1b).

Alternating layers of marls, clays, and marly clays, with lithothamnion limestones.

2.3 Lithological classification of rock units

As a result of data obtained from fieldwork and archival literature related to the subject, it has been possible to decipher the lithological composition of the studied area.
In this way, the engineering-geological platforms have been identified for the areas where the following are located:

a) the Bylis Archaeological Park, and
b) the Nikaia Archaeological Park.

a) Bylis Archaeological Park

- The area consists of lithothamnion limestone rocks interbedded with carbonate clays and calcareous sandstones (Fig. 3). The thickness of the lithothamnion limestones ranges from 2–3 meters up to 10–15 meters.
- The area consists of terrigenous rocks, characterized by interbedding of marls with clays and clayey marls, together with lithothamnion limestones (Fig. 3).
- The area is also composed of soil deposits (Fig. 3).

b) Nikaia Archaeological Park

- The area is composed of rock formations represented by interbedded clay-sandstone layers with lenses and layers of limestone (Fig. 3).
- The area also includes soil deposits (Fig. 3).

2.4 Geotechnical rock classification

The geotechnical classification of rocks is primarily based on their lithological composition and physical-mechanical properties. Using these criteria, the rock groups analyzed in the previous section have been grouped into zones, dividing the studied area into:

- Medium-hard rock area;
- Soft rock area;
- Soil area;

Medium-hard rock area

This area includes lithothamnion limestones interbedded with carbonate clays and carbonate sandstones. This formation is encountered at depths ranging from the surface down to approximately 2.5 meters.

Soft rock area

In the studied area, soft rocks are represented by terrigenous rocks—interbedded marls with clays and marly clays, along with lithothamnion limestones, as well as interbedded clay-sandstone layers with lenses and layers of limestone.

Soil area

Soils with weak cohesive bonding represent this area. They consist of clays and silts, with sand and silt deposits distributed in the western part of the studied area. These soils generally have beige, beige-brown, and brown colours, are slightly to moderately compacted, and have a range of low to moderate moisture content. Within the clays and silts, fragments of limestone rocks are also found. These deposits have a thickness ranging from 1.5–2.5 m up to 3–5.0 m.

The groundwater table is sufficiently deep, ensuring it does not impact the structural integrity of the structures.

2.5 Conclusions and recommendations

1. The study area is part of the hilly morphological unit, located on the upper section of Gradisht Hill, which is composed of terrigenous Neogene formations. The terrain exhibits a rounded shape with slopes ranging from 15–35° to 45–55°, generally impacted by erosion processes.

2. From a geotechnical perspective, the ground on which the engineering structures of the ancient city of Bylis are built consists of moderately strong rock zones—lithothamnion limestone rocks interbedded with carbonate clays and calcareous sandstones—as well as soil zones with weak cohesive bonds (clays and silts mixed with sands and aleurites).

3. The ground on which the engineering structures of the ancient city of Nikaia, Klos, are built is, from a geotechnical perspective, composed of soft rock zones—terrigenous rocks represented by interbedded clay-sandstone layers with lenses and layers of limestone—as well as soil zones with weak cohesive bonds (clays and silts mixed with sands and aleurites).

4. To preserve the engineering structures built in the archaeological parks of Bylis and Nikaia from erosion and slope landslides on both hills, it is essential to implement engineering measures related to drainage and surface water management in both studied areas.

3 | Seismic analysis

3.1 Project location

The National Park of Bylis is located in the region of Mallakastër, within the Administrative Unit of Hekal, on the left side of the national road Fier – Tepelene. The ancient city of Bylis is situated on the plateau of a hill at an altitude of 547 meters above sea level, occupying a dominant and stunning geographical position overlooking the Vjosa River valley.

The area under study, **"The National Park of Bylis"** is located in the southwest of Albania (40°32'31.11''N and 19°44'16.08" E), near the Vjosa River (approximately 1.5 km away). The nearest towns are Ballsh, about 6.2 km away, and the closest village is Hekal, approximately 1.2 km away.

3.2 Project location

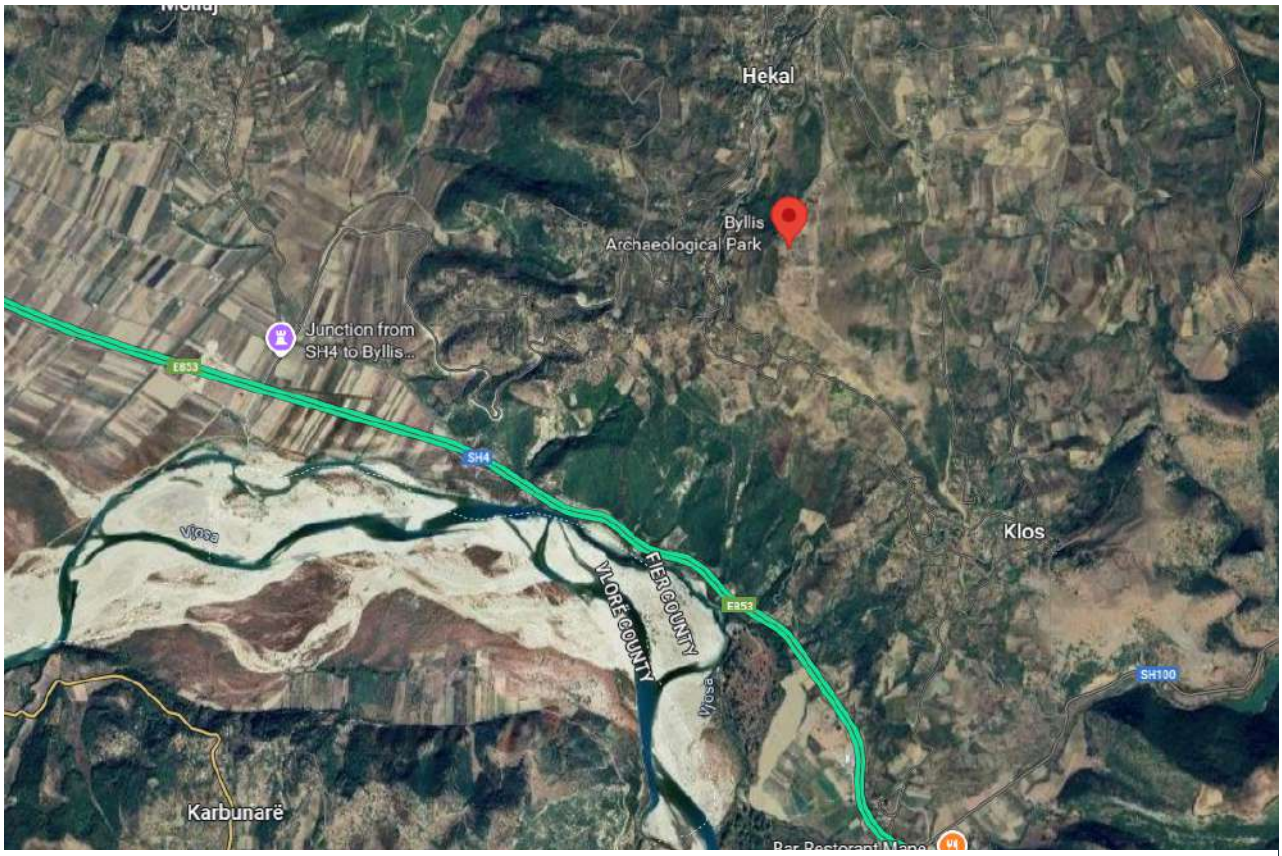


Figura 6 Location of the project "Bylis Archaeological Conservation Plan", Municipality of Mallakaster

Figura 7 Location of the project "Bylis Archaeological Conservation Plan", Municipality of Mallakaster

The probabilistic seismic hazard for hard rock conditions at the construction site of this structure, for both performance levels — the "Limited Damage State" and the "No-Collapse State" — corresponding respectively to a 10% probability of exceedance in 10 years (return period of 95 years), and a 10% probability of exceedance in 50 years (return period of 475 years) for the expected earthquake.
The seismic hazard values for this construction site, under hard rock conditions (Type A according to EC8), for both performance levels, are presented in **Errore. L'origine riferimento non è stata trovata.** (https://geo.edu.al/Natural_Hazards/Geological_Seismic_Hazard).

Administrative Unit	PGA_95_years (g)	PGA_475_years (g)
Ballsh	0.156	0.315
Qëndër Dukas	0.155	0.315
Greshicë	0.156	0.313
Aranitas	0.153	0.308
Hekal	**0.157**	**0.317**
Ngraçan	0.153	0.310
Kutë	0.163	0.325
Fratar	0.158	0.316
Selitë	0.154	0.309

Table 1 Seismic Hazard for the Municipality of Mallakaster, Hekal Administrative Unit

Table 1 Seismic Hazard for the Municipality of Mallakaster, Hekal Administrative Unit

The values presented in **Errore. L'origine riferimento non è stata trovata.** and in the corresponding national-scale seismic hazard maps represent the seismic hazard parameters (horizontal peak ground acceleration) at the bedrock level of the construction site. These values correspond to two earthquake return periods — 95 years and 475 years — which are also the recommended seismic hazard values for the project titled "Bylis Archaeological Conservation Plan", Hekal Administrative Unit.

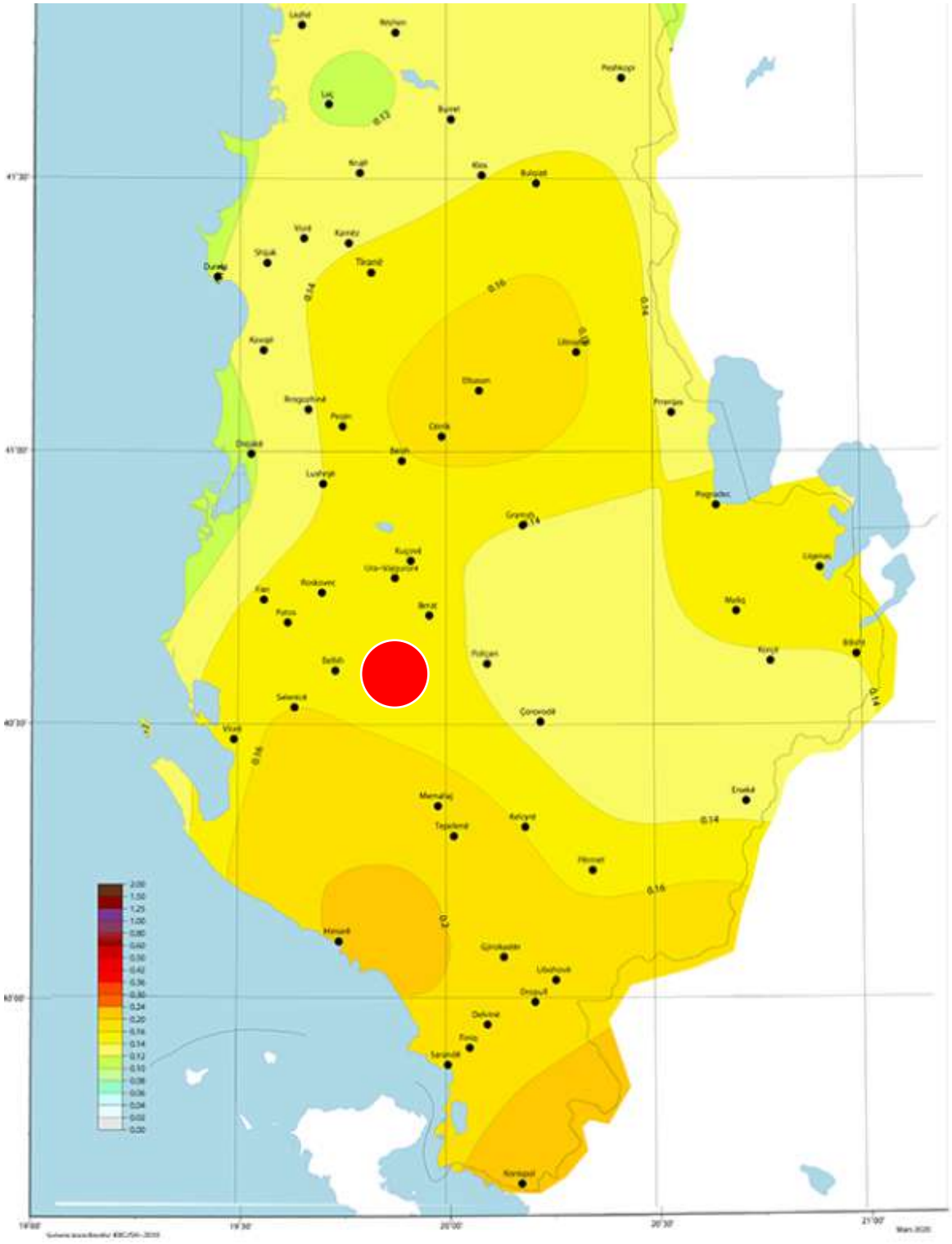
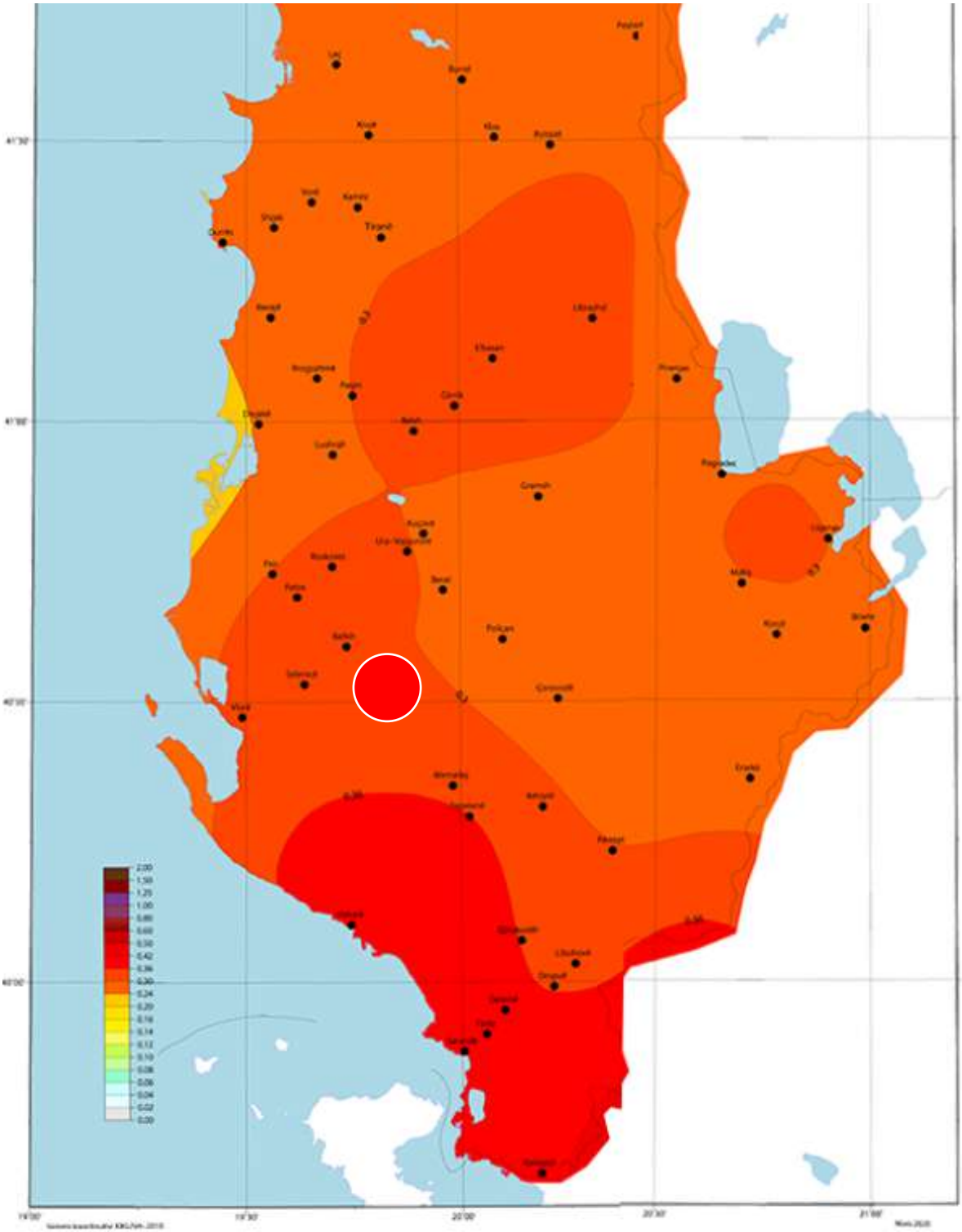


Figura 8 Section of the Probabilistic Seismic Hazard Map, for a 95-year return period (10% probability of exceedance in 10 years), above, and a 475-year return period (10% probability of exceedance in 50 years), below, based on the assessment by IGJEO

Figura 9 Section of the Probabilistic Seismic Hazard Map, for a 95-year return period (10% probability of exceedance in 10 years), above, and a 475-year return period (10% probability of exceedance in 50 years), below, based on the assessment by IGJEO



Regarding the response spectra, Eurocode 8 describes two distinct design spectra to account for seismic hazard in areas of high and low seismicity, respectively. Spectrum Type 1 describes the hazard in areas with high seismicity. The code recommends using this design spectrum precisely if the earthquakes that contribute most to the seismic hazard in the area where the construction site is located have surface wave magnitudes MS ≥ 5.5. Meanwhile, Spectrum Type 2 is recommended if the earthquakes contributing most to the seismic hazard have surface wave magnitudes MS < 5.5. **Seismic data for the Mallakaster area and the surrounding region suggest the presence of earthquake sources with a magnitude MS ≥ 5.5** (Figure 6).

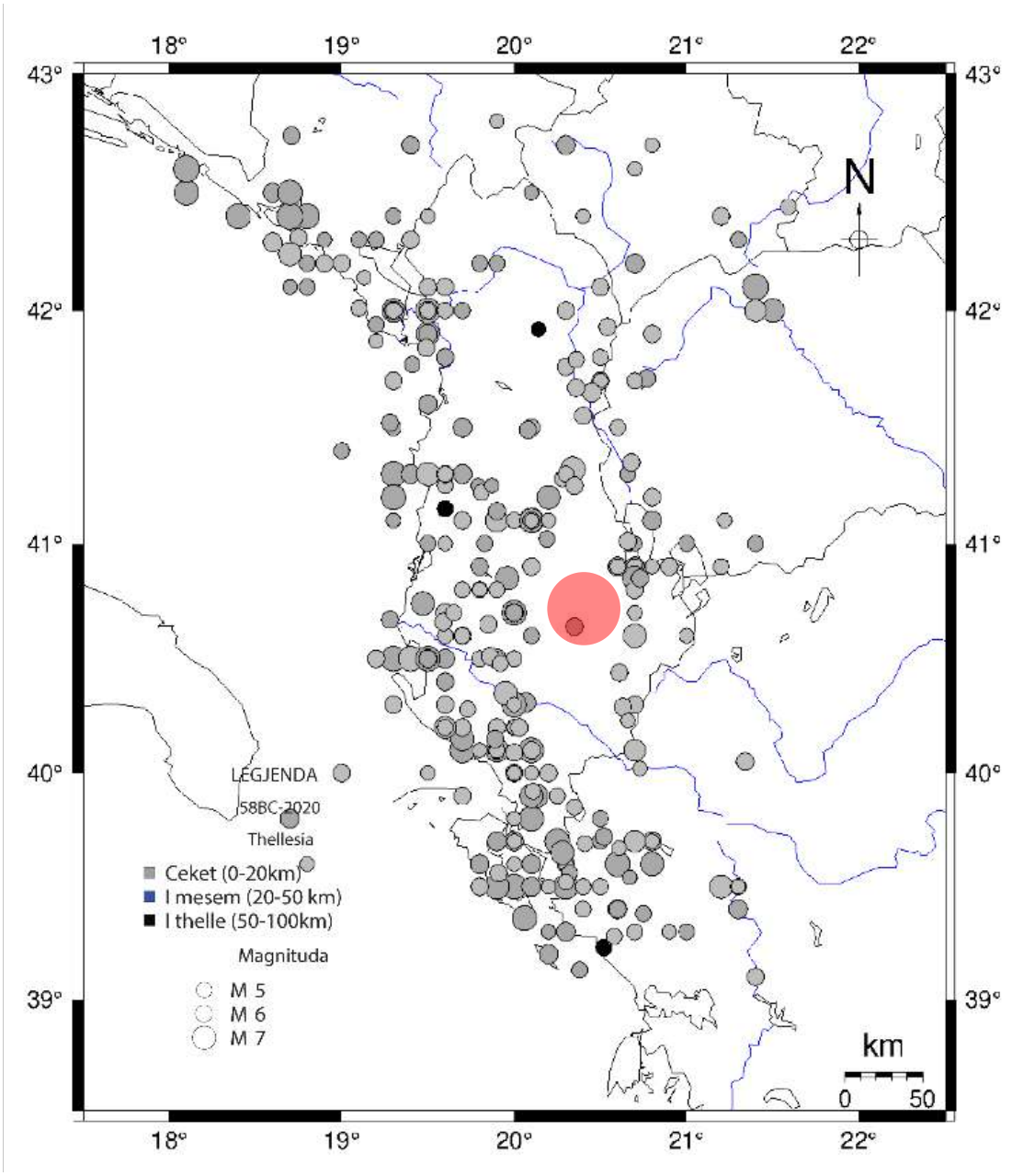


Figura 10 Seismicity of Albania (MS ≥ 5.0) for the period from 58 AD to 2020

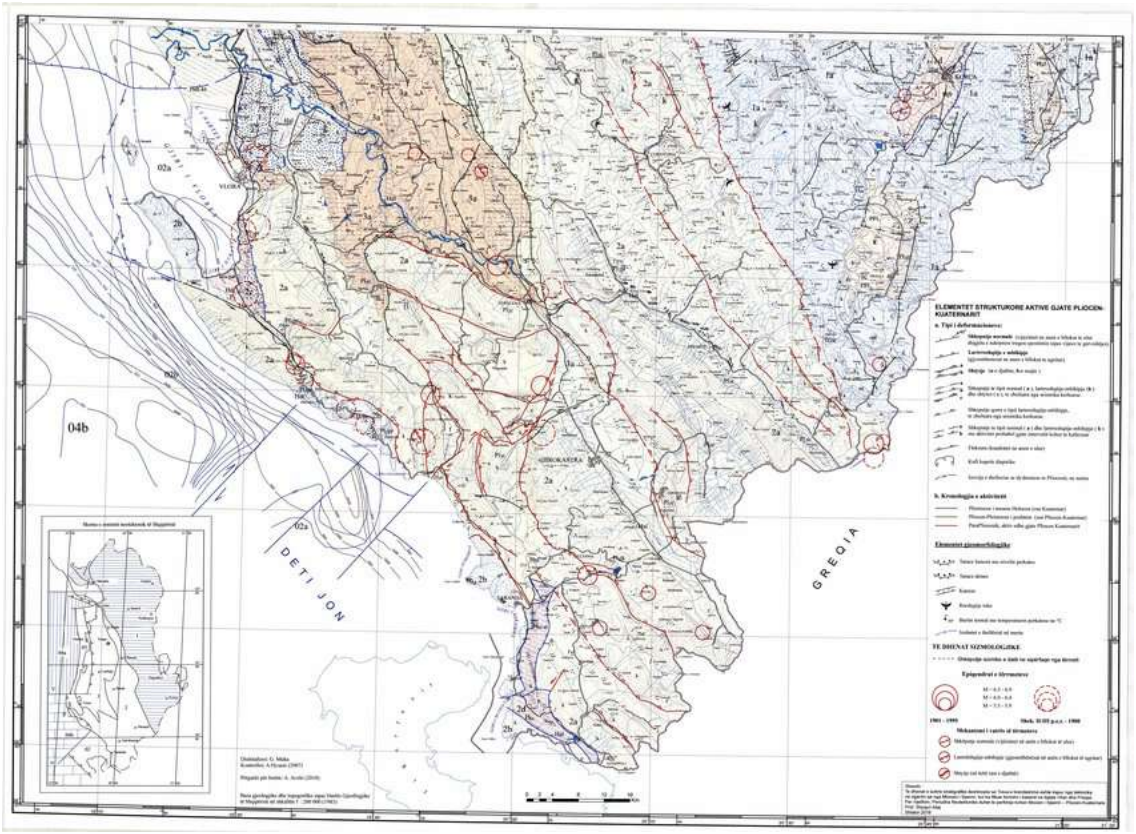
Figura 11 Seismicity of Albania (MS ≥ 5.0) for the period from 58 AD to 2020

Below is a brief overview of the seismotectonic characteristics of the region, which is a generator of earthquakes with MS ≥ 5.5.

According to studies conducted to date (Aliaj, 1998; 2002; 2010), the Albanian orogen, which forms the southwestern part of the Eurasian Plate and converges with the Adria microplate, is divided—based on the current tectonic regime—into two zones: (1) The external zone, under a compressional regime, which includes the Pre-Adriatic Depression, and the Sazan, Ionian, and Kruja tectonic zones and (2) **The internal zone**, under an extensional regime, located inland (i.e., tectonic zones to the east and northeast of the Kruja zone). The study area is located in the **Hekal Administrative Unit**, part of the **Ionian Zone**, which occupies a significant area.

More recently, the Ionian Zone has been subdivided into: Inner Ionian Zone (extending from the Berati anticlinal belt and further east), and Outer Ionian Zone. The paleogeographic evolution of this zone is as follows: It begins with the Permian-Triassic evaporitic formation, followed by a neritic carbonate formation from the Upper Triassic to the Middle Lias (representing a neritic platform). Starting from the Toarcian, evidence of continental rifting appears. From that point until the Eocene, during the accumulation of the carbonate formation, the area functioned as a pelagic basin. Beginning in the Oligocene, flysch sedimentation begins, developing until the Upper Oligocene in the Inner Ionian Zone and continuing until the early Middle Miocene (Langhian) in the Outer Ionian Zone.

Figura 12 Fragment from the neotectonic map of Albania (Aliaj et al., 2000), including the study area



The aforementioned faults are active and responsible for earthquakes. In the 3rd–2nd centuries BC, there is evidence that Apollonia was struck by strong earthquakes which caused casualties and significant damage. Some of the seismic events that have affected Bylis and the surrounding region include:

- The 1851 earthquake in the city of Vlora (Io=IX, MSK-64)
- **The 1865 earthquake in the Tepelena region**, in the villages of Rabije and Klos (Io=VIII, MSK-64)
- **The 1893 earthquake in the Himara region**, (Io= IX, MSK-64)
- The 1930 earthquake in the Vlora, (Io=X, MSK-64)
- The 1962 earthquake in the Fier region, (M=6, Io= VIII, MSK-64)
- The 1969 earthquake in the Mallakastra, Fier, and Berat regions (M=6, Io= VII, MSK-64)
- The 1982 earthquake in the Fier region, (M=5.7, MSK-64)

References

[1] Eurocode 8 “Design of structures for earthquake resistance; Part 1: General rules, seismic actions and rules for buildings”.
[2] Eurocode 8 “Design of structures for earthquake resistance; Part 2: Bridges”.
[3] IGEO, 2021, Hartat probabilitare të rrezikut sizmik dhe vlerat e tyre për çdo njësi administrative, 2021.
[4] VKM Nr. 1162, 24/12/2020 “Për përcaktimin e procedurave dhe të afateve për pajisjen me vërtetim për riskun të subjekteve, të cilat kërkojnë të pajisen me leje zhvillimi/ndërtimi”
[5] Studimi Gjeologo - Inxhinierik i sheshit të ndërtimit
[6] Sizmiciteti, sizmotektonika dhe vlerësimi i rrezikut sizmik në Shqipëri

4 | Hydrological analysis

4.1 Project location

The Bylis Archaeological Park development project is part of the "Contribution Agreement - Instrument for Pre-Accession (IPA) 2018" signed between the European Commission and the Government of the Republic of Albania. In particular, the project is in line with the "Contribution Agreement for IPA 2017 - 'Tourism-Led Model for Local Economic Development Support Programme" signed with the EBRD on 14 December 2018.

The Bylis Archaeological Park is located in the Mallakastra region, on the left side of the Fier - Tepelenë national road, 1.5 km from the village of Hekal . The ancient city of Bylis lies on the plateau of a hill 547 m above sea level, with a dominant and stunning geographical position over the Vjosa river valley.

Figura 13 Project Location

The study area (12.5 ha) " Bylis National Park is located in the South-West of Albania (40°32'31.11''N Latitude and 19°44'16.08" E Longitude) near the Vjosa River (about 1.5 km). The nearest towns are Ballshi about 6.2 km and the nearest village is Hekal about 1.2 km.

Regarding the hydrography of the area , the Study Area is located on the top of a hill, at the bottom of which in the southwestern part lies the Vjosa River.

The entire Study Area drains in all directions, being part of the entire hilltop, and then the waters go through small natural streams to the Vjosa River which discharges into the Adriatic Sea.

4.2 Project location

According to the climate classification of Albania, the study area falls under the Central Field Mediterranean and Southeastern Hilly Mediterranean subzones .

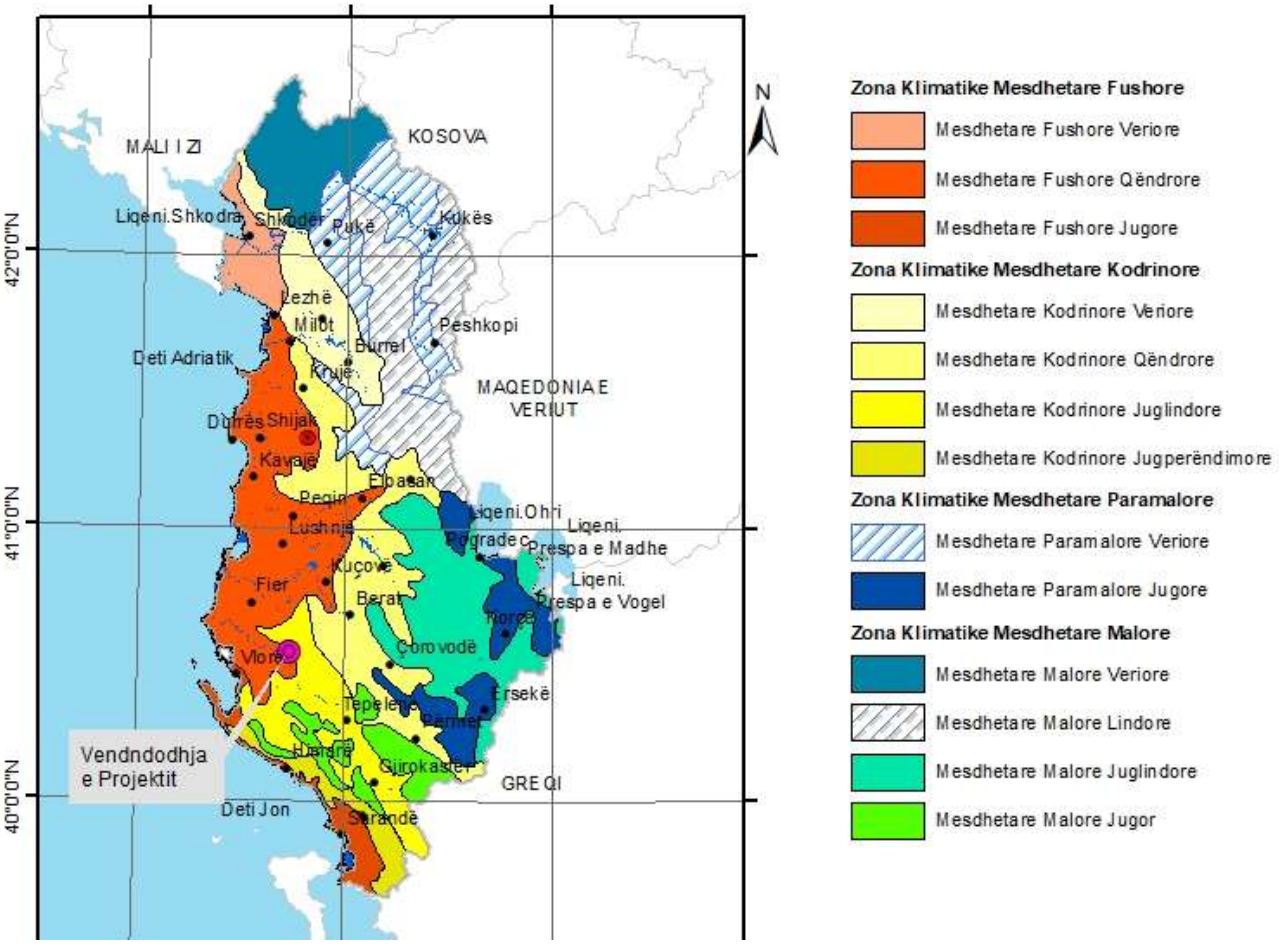


Figura 14 Climatic zones

Central Field Climatic Subzone This subzone encompasses the coastal lowlands and a series of hills with elevations generally **< 500 m above mean sea level**. Annual precipitation ranges from **920 to 1,200 mm**, increasing in the northern reaches up to **1,500–1,700 mm**. The number of precipitation days per year is **85–100**. Rainfall is not markedly torrential; **snowfall is not an annual occurrence**. When snow does occur, typical snow-depths are **5–10 cm**, occasionally reaching **15–17 cm**.
The mean annual air temperature is **15–16 °C**, exhibiting only minor variation from north to south or from west to east. Winters are mild, under a pronounced maritime influence. The average

temperature in January (the coldest month) ranges from **5.6 to 7.5 °C**. Absolute minimum temperatures generally vary between **–3 to –5 °C**; during particularly cold winters, between **–4 to –9 °C**, and in rare extreme cases down to **–13 °C**. The frost period is brief; icy days are few, approximately **15–30 days per year**, most concentrated in January and February. During the colder half of the year, southeasterly winds dominate (and in certain localities, northwesterly winds also occur). In the warmer half of the year, the prevailing wind is from the northwest, consistent across the subzone; this aligns with the broader wind circulation patterns for this period.

Southeastern Hilly Mediterranean Subzone. This subzone includes the Drino Valley, extending into the Vjosa Valley as far as Kotë, the Shushica Valley, and the western slopes of Mount Shpirag up to Mount Lungara. The Adriatic Sea exerts a noticeable climatic influence; the influence of the Ionian Sea is negligible. In the warm half of the year, winds are predominantly from the northwest; in the cold half, from the southeast.

Mean annual temperature in the lower elevations is **14–15 °C**, decreasing to **11–13 °C** in the higher terrain. The mean January temperature remains above **5 °C**. Absolute minimum temperatures range from **–3 to –5 °C** in the lowest parts and **–5 to –6 °C** in higher areas. In exceptionally cold winters, minima may drop to **–15 °C**. Days with sub-zero temperatures number about **30–40 per annum** in the lower areas, increasing to **45–55** in the upper elevations. Frosts may occur up to early April.

Precipitation is plentiful but unevenly distributed. In inland portions of the subzone (e.g., up to Sevaster) annual precipitation amounts to **≈1000–1100 mm**; in the Drino Valley **1,500–1,700 mm**; in the Shushica Valley, **2,500–2,700 mm**. Precipitation events are often intense and frequently accompanied by thunderstorms. The number of precipitation days per year lies between **110–120**. Typical snow depths are **10–15 cm**, but in some instances may reach **30–40 cm**.

4.2.1 Sushine

Understanding the characteristics of **solar radiation** is essential, especially when assessing its temporal and spatial regularity for energy utilization. In hydrological and climatological studies, the quantification of sunshine is typically based on three key parameters:

1. **Actual duration of sunshine**
   This is the number of hours during which direct solar irradiance exceeds a defined threshold and thus the sun casts a distinct shadow or the sunshine recorder is active.

2. **Relative duration of sunshine**

This is the ratio of the actual sunshine hours to the maximum possible daylight hours under clear‑sky conditions. This relative measure is often used in empirical models to estimate solar radiation when direct measurements are unavailable.

3. **Number of sunny days**
   This is the count of days in a given period (e.g. monthly, yearly) during which sunshine conditions are met (i.e. direct irradiance above threshold for a minimum duration). It is a measure of the frequency of clear or "sunny" days in the climate regime.

Actual Duration of Sunlight

In the study area, **July** exhibits the greatest monthly sunshine duration, exceeding that of **June**, even though June possesses the longest astronomical day. August similarly surpasses June in terms of sunshine hours. The reason for this is that **July and August** experience more frequent **stable, anticyclonic** conditions—with minimal cloud cover—resulting in more clear-sky periods. Thus, sunshine duration is less dependent on daylight length alone and more on weather conditions (cloud cover, atmospheric stability).

Relative Sunlight Duration

The relative duration of sunshine is numerically equal to the ratio of the actual duration to the potential duration of sunshine.

Number of Sunny Days

The number of "sunny days" is a climatic indicator of practical importance for applications such as coastal tourism, agriculture, and solar energy generation. A "sunny day" is typically defined by a threshold for actual sunshine duration or by meeting minimum criteria of direct irradiance or cloud cover.

4.2.2 Wind

Wind Direction

The influence of the sea on wind-direction regimes is more pronounced during the summer season. In summer, prevailing winds over the territory are from the western quadrant, especially north-west. Conversely, in winter the eastern quadrant winds occur more frequently.

Wind speed

The seasonal variation in average wind speeds over the Western Lowlands is significant and reflects the prevailing synoptic and thermo-baric (pressure-temperature) fields.

- **Winter:** Average wind speeds fluctuate between **1.6–5.7 m/s** in the Western Lowlands.

- **Summer:** Wind speeds are lower due to the dominance of anticyclonic, stable weather. Within the Western Lowlands, summer average speeds lie approximately in the range **1.5–4.1 m/s**.

- **Spring & Autumn:** During these transitional seasons, the thermo-baric field undergoes marked changes. Baric gradients are smaller than in winter but larger than in summer, producing wind speeds intermediate between the two. (Specific numerical values for spring and autumn are not always available in the source, but similar patterns are reported in the literature.

4.2.3 Air

Air Temperature

The air temperature throughout the study area is strongly moderated by the Adriatic Sea. One of the key parameters is the average temperature.

At the Fier meteorological station, the regime is typical of the region: the minimum mean temperatures occur in January, while maxima are reached in July–August. The absolute minimum temperature recorded has been approximately –9 °C, and the absolute maximum near 41 °C in summer.

Overall, air temperature patterns in the study area are consistent with a **hot-summer Mediterranean climate,** characterized by relatively mild winters, hot summers, and reduced extremes compared to more continental climates.

Air Humidity

The relative humidity of air in this region exhibits strong seasonality, closely related to the progression of air temperatures, local topography, sea influence, and the prevalent circulation of air masses in each season.

- Relative humidity tends to be highest in winter months (November–January) when cooler air, lower temperatures, and more frequent moisture sources (sea, precipitation) increase saturation.
- The lowest relative humidity is observed in summer (July–August), when high temperatures and anticyclonic stability reduce moisture content.

- Diurnally, humidity is greatest during night and early morning, and lowest around midday or early afternoon, generally inversely correlated with peak air temperature

For example, monthly averages for Fier show relative humidity near **60-70 %** during winter and autumn months, dropping to about **55-60 %** (or lower) in summer

4.2.4 Precipitation

The precipitation regime in the study area is strongly controlled by the interplay of **cyclonic and anticyclonic circulation**, as well as by topography and the influence of the Adriatic Sea. The sea's position and the surrounding relief exert a major control over moisture transport, orographic uplift, and cloud formation.

From analyses of **annual**, **seasonal**, and **monthly** precipitation totals, a characteristic spatial pattern emerges, shaped by local relief. In the study zone, precipitation tends to **increase from west to east**, a gradient that is reversed when considering the entire national territory (i.e. in other regions precipitation declines eastwards).

During the **warm half** of the year, **sea breezes** further influence precipitation distribution. The occurrence of breezes disturbs thermal convection over the western portion of the lowland, reducing the potential for deep vertical cloud development. As a result, in summer, precipitation in the western lowland can be **up to two times lower** than in the eastern parts of the same zone. Although breezes are also present in the eastern parts, they weaken convection to a lesser degree there.

Atmospheric circulation shows a strong **seasonal modulation**. Over the winter months (particularly **November–February**), **cyclonic activity** dominates, driving moisture advection and precipitation. In contrast, during summer, **anticyclonic conditions** become prevalent, significantly reducing precipitation. Spring and autumn represent transitional periods, when cyclonic activity weakens. Consequently, the **months with highest precipitation** are **November, December, January, and February**, with **November** often being the wettest. Among all months, **July** generally records the **lowest precipitation**.

Table 2 Different rainfall height for different duration times and returning period

T(min)/ n(%)	5 min	10 min	20 min	30min	60 min	120 min	720 min	1080 min	1440 min
10%	19	23	29	32	40	49	84	96	104
5%	22	27	34	38	47	57	98	111	120
2%	27	33	40	45	55	68	115	130	141
1%	30	37	45	50	62	76	128	144	157

4.2.5 Snow

In Albania, during the winter season, a substantial fraction of precipitation in mountainous zones falls as snow; in lowland and coastal areas, however, snowfall is rare.
Within the study area, **snowfall is an exceptional event**, not a regular occurrence. The maximum number of days with snow is typically **3–5 days** per winter season (based on local station records). The data indicate that **January** has the highest average number of snowy days (≈ 1.3 days), followed by **February** and **December**.
Because of the moderating influence of the Adriatic Sea, conditions for snow-layer formation are generally unfavorable. When snow does fall, it seldom persists; only under rare cold winter episodes with prolonged, sustained subzero temperatures can a snow layer form and endure.

4.2.6 Hail

Hail is a form of solid precipitation and may occur at any time of the year, though it is more frequently associated with convective storms. In the study area:

- Hail events typically last 3–5 minutes per episode (typical duration of hailstorm pulses).
- Hail is more common during periods of atmospheric instability, often observed in late spring, summer, or transitional months when convective activity is stronger.
- The fewest hail days occur in the hot summer months when stable anticyclonic conditions suppress strong convection.

4.2.7 Fog

Fog is an atmospheric phenomenon characterized by suspended water droplets near the ground, reducing visibility. It is most pronounced when relative humidity is high and ventilation is low.
In Albania generally, fog is relatively rare—especially in the lowlands and coastal zones—and is more frequent in valleys and interior regions where cold air pools. Because of its relative rarity nationwide, the study area is seldom strongly affected by fog
From station observations for the study area:

- Fog typically **develops in the early hours after midnight** (around 02:00–03:00) and often **dissipates by 09:00–10:00** local time.
- Occasionally, fog may occur later in the morning, especially during transitional seasons.
- In the warm months, fog formation is uncommon, and when it does occur, it usually persists for a very short duration.

4.2.8 Dew

Dew forms when surfaces (ground, vegetation, objects) cool by radiative heat loss to the point their temperature falls below the ambient dew point. Under calm or light wind conditions and clear skies, dew formation is favored during nighttime and early morning hours.

Based on your data,dew occurs throughout all months of the year in your study area. The greatest number of dew days is typically concentrated from April to October, when anticyclonic weather predominates and nighttime cooling is more effective.

5 | Index of figures

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4
PART

Survey

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This document is considered an integral part of the Conservation Plan. Specifically, it provides a complete geometry (plans, sections, and elevations) and high-resolution orthophotos (see section **8.5 Terms and References - ToR**).

These elements were preparatory to the assessment of the site's situation. These documents are the result of the new processing of points (see section **8.4 Terms and References - ToR**).

1 | Introduction

The **Bylis and Klos** Archaeological Park is located in southern Albania, in the Mallakastër region, on hills overlooking the Vjosa River valley. The site's morphology is characterized by hilly reliefs with natural slopes, terraces, and adjacent plains, which confer significant scenic and archaeological value. The average altitude is around 500-600 meters above sea level, with significant differences between the monumental areas and the peripheral areas.

Figura 1 Aerial view of a portion of the Bylis site

The total area of the archaeological complex is approximately **300,000 m²** for the wider Bylis area, to which is added approximately **40,000 m²** for the ancient settlement of Klos (ancient Nikaia), for a total protected area of approximately **340,000 m².**

Within this area are included numerous monuments, the most notable of which are:

- The **Bylis Theatre,** built in the Hellenistic period, with a well-preserved cavea and steps carved into the natural slope.
- The **early Christian basilicas,** at least five structures with apses, mosaics, liturgical walls, evidence of late-antique Christian worship.
- **The Agora** with porticoes, civil spaces, administrative buildings.
- The **Stadium** or spaces for public/athletic activities.
- The perimeter **wall ,** with towers, city gates, thick walls relevant.
- Housing structures, warehouses, houses, minor civil architecture.
- In the Klos / Nikaia area: remains of a more modest theatre, residential and defensive buildings, fortifications, perimeter walls, gates.

This complex archaeological site is stratified over time (from its Illyrian origins through the Hellenistic, Roman, and Late Antiquity periods) and features morphological variations dictated by natural morphology.

2 | Survey methodology: the two combined methods

To obtain precise and complete documentation, the survey was conducted using a **multi-method approach,** integrating aerial surveying (photogrammetry with drones) and high-precision terrestrial surveying (laser scanning). This allows for coverage of different scales—from land surveys to wall details— ensuring geometric, visual and chromatic accuracy.

2.1 Photogrammetric aerial survey with drone

During the aerial phase, a drone with a **DJI Zenmuse P1** camera, mounted on an RTK platform, was used to acquire aerial images of the entire archaeological area (Bylis + Klos). The images were taken following missions planned with flight grids, allowing for high longitudinal and transverse overlaps (≥ 80%) to ensure that every point on the terrain was seen from multiple angles useful for the photogrammetric process.
The flight altitude was chosen based on the complexity of the terrain and the level of detail required; on average, it was 60-80 meters above ground, with adjustments made in the presence of significant elevation changes or natural obstacles. The images were georeferenced using a GNSS RTK system to minimize positioning errors.

This mode allows you to acquire a dataset capable of returning:

- Topographic terrain models (DEM)
- High resolution orthophoto of the entire surface
- Floor plans and contour lines
- Territorial frameworks useful for the overall management of the site

Figura 2 Example of frame sequence

2.2 Targeted terrestrial laser scan survey: specific monuments

At the same time, a **3D laser scanner** survey was conducted , specifically a Leica BLK360, focusing on individual monuments: basilicas, surrounding walls, the theater, and towers. The goal was to document in detail the geometry, masonry texture, state of preservation, and internal and external surfaces.

The procedure was:

- Locating scanning stations: multiple points around the building for full coverage
- Acquisition of scans with high density (many points per square meter on the visible surface.
- Each scan also includes RGB photographs that will be mapped onto the point cloud to provide color, surface detail.

The raw data obtained from multiple scans for each structure then allows the scans to be aligned with each other, obtaining a unified cloud for each monument, with good coverage of all visible sides and even interiors if accessible.

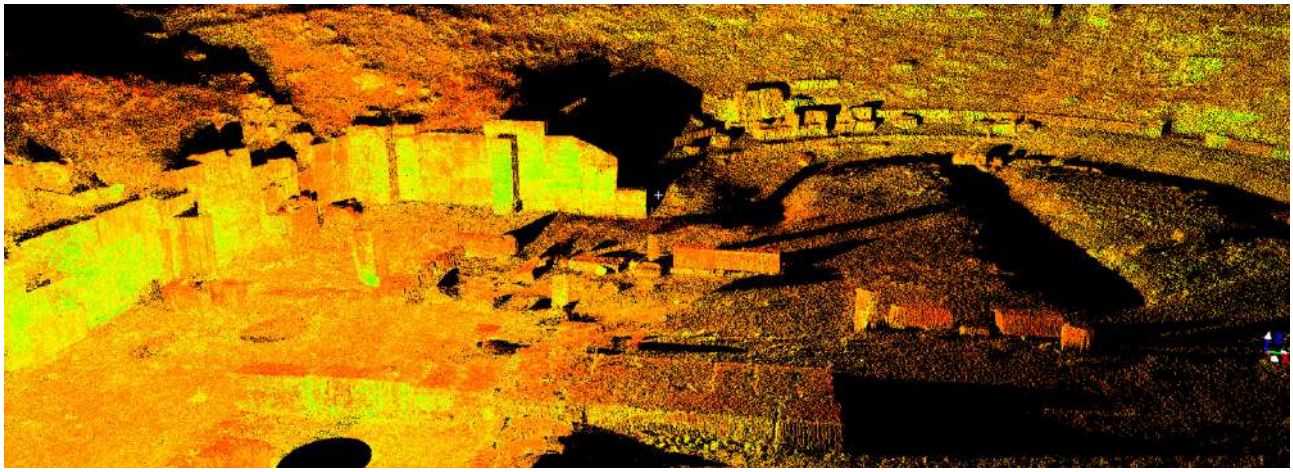

Figura 4 Example of laser scanner scanning in reflectance scale

Figura 3 Example of laser scanner scanning in RGB colors

3 | Three-dimensional rendering: models, processing and derived products

After acquisition, the data were processed separately for the two modalities, with distinct technical procedures, and then integrated into the results useful for graphic and scientific documentation.

3.1 3D restitution from the photogrammetric survey

From the drone images the following was done:

1. **Photogrammetric alignment:** image matching, calculation of orientation parameters (bundle adjustment), quality verification (average error per point, residual deviations).

2. **Dense cloud generation:** processing of correspondences between images to obtain a dense cloud of the terrain and emerging artifacts.

3. **Construction of a three-dimensional mesh (mesh model):** triangular geometry representing surfaces, with the photographic texture applied.

4. **High-definition orthophotos:** orthogonal projection of visible surfaces, obtaining georeferenced photographs with fine resolution (in the order of centimetres per pixel).

5. **DEM and contour lines:** filtering to distinguish natural terrain from structures, creation of the digital terrain model; extraction of contour lines (e.g., every 0.50 m) useful for morphological studies and future planning.

These products allow for a complete overview: from the site's extension, to the general topography, to the analysis of spatial relationships between monuments, morphology, accesses, and visibility.

Figura 5 Example of a comprehensive orthophoto of the Bylis site

Figura 6 Example of a complete orthophoto of the Klos site

Figura 7 Example of a detail of a portion of an orthophoto

3.1 3D restitution from the laser scanning survey

For each significant monument:

1. **Scan alignment:** Single scans (from multiple stations) were recorded with appropriate software, either by recognizing visible targets or by using automatic alignment algorithms (ICP or similar).

2. **Cloud Coloring:** RGB photographs integrated into the scans are mapped onto points, to obtain colored surfaces with visual fidelity, useful for reading materials, decorations, and deterioration.

3. **Unified point cloud for each monument:** each monument has its own complete, very dense, well-ordered cloud by layers, with high metric/detail resolution (typically tolerances in the order of a few millimeters).

4. **Compatible export formats:** LAS, E57, PLY, etc., for interoperability with modeling software, for metric and visual analysis, for conservative use.

4 | 2D graphic rendering: sections, elevations, technical drawings and final documentation

Graphic documentation is the phase in which three-dimensional data is valorized for practical use in archaeological research, conservation, and design interventions.

4.1 Designed sections and related extractions

- Before restitution, the **vertical and horizontal cross-sections** of each monument were defined, according to structural, architectural, and conservation criteria: for example, along the main axis of the building, at the points of maximum height, and in the perimeter walls with greatest interest or criticality.

- Using the colored point clouds, slices are created that return the sections: these are precise polylines that show thicknesses, internal relationships, divisions, openings, and any evidence of lesions or previous interventions.

4.2 Orthographic elevations and orthoprojections of the wall portions

- For each significant section, the affected wall portion is identified and the **orthographic projection** of the elevation is obtained from it corresponding. This projection is obtained directly from the RGB point cloud, so it retains the original color and texture.

- The texture (visual texture) is rendered with **sufficient definition to allow for the reading of the masonry structure,** i.e., the arrangement of the blocks, the surface finish, traces of restoration, and any cracks or subsidence. Typical resolutions are in the order of 1 cm/pixel or slightly more, depending on the distance and size of the building/elevation.

4.3 Traditional scale technical drawing

- Starting from the sections and elevations created with digital techniques, we proceed with **manual/CAD redrawing,** following the classic methodology of architectural representation.
- Typical scales adopted: **1:20** for monumental buildings, to ensure sufficient visual and metric detail.

- The drawings show: wall thicknesses, construction materials, wall types, openings (doors, windows), structural elements (arches, vaults), cracks/defects, additions, walking surfaces.

4.4 Production of final PDF tables for documentation

All the material produced (models, orthophotos, sections, elevations, general plans) has been organised into **technical tables in PDF format,** which cover:

- General site plans (top view)
- Georeferenced orthophotos of the entire site
- Contour lines and DEM models in useful visualizations
- Sections and elevations of each significant monument, scale 1:20
- Garden projections of walls / wall elevations with textures / colors, highlighting the texture and the condition of the surface
- Annotations, legend, metric and cartographic references

5 | Set of pictures Representing Existing Site Conditions

Figura 8 Level of Details from 3D Model

Figura 9 Level of Details from 3D Model

Figura 11 Ground Extraction from LiDAR Processing

Figura 10 RGB LiDAR Point Cloud Model

6 | Registration Report

Cyclone REGISTER 360
Registration Report

Leica Geosystems

Jul 18, 2025

Certified by:

SiteMap 1

Overall Quality

Error Results for Bundle 1

Setup Count:	112
Link Count:	372
Strength:	51 %
Overlap:	50 %

Bundle Error 0.010 m ✓	
Overlap 50 % ✓	Strength 51 % ✓
Cloud-to-Cloud 0.010 m ✓	Target Error --

Max error of 0.015 m. Max error of 0.100 m. Error greater than 0.100 m.

Link-Quality Matrix #1 -

7 | Annex

00 POINT CLOUD

01 TECHNICAL DRAWINGS GEOMETRIC SURVEY: SITE CONTEX

02 TECHNICAL DRAWINGS GEOMETRIC SURVEY: BASILICA A - STOA A
(KRTK CODE: 40766 - 40765)

03 TECHNICAL DRAWINGS GEOMETRIC SURVEY: CISTERN - STADION - JUSTINIAN THERMAE - PRYTANEION - ARSENAL - AGORA WALL
(IKRTK CODE: 40755 - 40756 - 40754 - 40751 - 40752 - 40773)

04 TECHNICAL DRAWINGS GEOMETRIC SURVEY: BASILICA B - BAPTISTERY - EPISCOPAL COMPLEX
(IKRTK CODES: 40768 - 40769 - 40770)

05 TECHNICAL DRAWINGS GEOMETRIC SURVEY: BASILICA C

06 TECHNICAL DRAWINGS GEOMETRIC SURVEY: BASILICA D
(IKRTK CODE: 40771)

07 TECHNICAL DRAWINGS GEOMETRIC SURVEY: BASILICA E
(IKRTK CODE: 40763)

08 TECHNICAL DRAWINGS GEOMETRIC SURVEY: THEATRE - PROEDRIA - KLIN
(IKRTK CODES: 40760 - 40797 - 40774)

09 KLOS (AMPHITHEATRE, GATE, WALL)
(IKRTK CODES: 40760 - 40797 - 40774)

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5

PART

Archaeological investigations

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This document is to be considered an integral part of the Conservation Plan. Specifically, it provides a comprehensive overview of the landscape components, with attention to constraints, environmental issues, and landscape issues.

The surveys in the development area should aim to answer several questions in relation to the archaeological heritage of the construction area and the surrounding territory. The results of the survey within the reconstruction area of the workers' camp are an important piece of information for the evolution of the settlement from the Hellenistic period to that of late antiquity. It is important to enable a better dating of the period when this area was first inhabited, re-inhabited and abandoned. To define as clearly as possible the urban structure of this village of the late antiquity period, which will be an added value not only for the archaeology of this period. The data collected from the surveys will shed light on the history of the village of this period.

1 | Geographic description of the area where the project will be developed

Based on the Management Plan of the Bylis – Klos Archaeological Park approved by Decision of the Council of Ministers dated 2.08.2024, in the "Terms of Reference of the Bylis Archaeological Conservation Plan" it is determined that: "Conservation projects will be preceded by at least 5 archaeological surveys, to ensure that all necessary information has been collected and that it has been incorporated into the final projects".

Mallakastra

The region of Mallakastra, which begins immediately after the Coastal Lowland, with its low hills and a large number of valleys, Gjanica , Molishti , Luftinja and on the border that of Vjosa and Osumi, has been very suitable for building a large number of communication routes, not only between its territory, but also as arteries of the main roads. Mallakastra is the largest hilly area of our country with an area of about 1000 km ^{2} . In the physical-geographical and ethnographic sense, it lies between the Myzeqe plain, the Vjosa river (Memaliaj- Frakul e Vogël), the Molishti stream and the Luftinja stream , respectively in the west, south and east. In the north and northeast it reaches the elbow of the Seman and the lower course of the Osumi (from Berat to the confluence with Devolli). It consists mainly of flysch. Paleogene and Molasses Miopliocene , while Quaternary deposits emerge in the lower parts of the valleys. The karstified limestones of the Jurassic - Oligocene , with limited distribution, constitute the oldest basement of its structures. This basement emerges in several anticlines (Kremenar , Shpirag, Kalivaç, Plasnik , etc.). The terrigenous rocks consist of clay, siltstone , sandstone, conglomerate, marl , limestone layers.

The relief of Mallakastra is low hilly, where the main forms are hills, hill ranges and valleys, while plains are few. Hills and hill ranges with high altitude (over 700 m) are generally located in the east and southeast, those with medium altitude (300 - 700 m) in the central part, while the lowest ones in the northwest and north. Among the ranges we can mention the Shpirag mountain range (the peak of Shëndëllë 1198 m, the mountain of Molisht , the mountain of Plasnik i Madh), Mbjeshovë - Osmanzezë - Çërrilë - Rabie ; Ura e Kuçit- Donofrosë - Allambres (Krotinë); Krapës - Margëlliç - Cfir -Aranitas-Gjerbës- Rabie ; Peshtan - Buzmadh ; Apoloni- Kreshpan -Gurët e Zinj- Belishovë - Drenovë- Gradishta e Hekalit -Gradishta e Klosit; Kremenar -Kalivac and the Gorica hill (the peak of Shëndëllija 712 m). Among the hill ranges there are numerous passes (Kosovicës Pass, Stefanit Pass , Shkalës Pass, Ngraçani Pass , etc.), but among them we can single out those of Sinjë and Gllavës , which have facilitated the passage on the caravan and herd routes.

Mediterranean climate, with average annual temperatures of 15 ^{0} C, January 6-7 ^{0} C and August 22-24 ^{0} C

Precipitation. It falls more in the east (Shpirag 1300 mm) and less in the north of Mallakastra (1000 mm).
The largest river is the Gjanica , with a length of 67 km and a watershed of 234 km ^{2} . Karst springs: Ura Vajgurore, Poçem , Kalivaç.
Soils: Two types, gray-brown and brown, as well as alluvial on the sides of rivers.
Vegetation. Mediterranean shrubs and oaks. The largest valleys are those of Gjanica , Luftinja and Molisht and together with the valleys of the Vjosa and Osumi rivers, have enabled not only movement but also better conditions for economic development. Among the areas we can mention those of Kutë
- Çorrushi and Cakran.
The low relief and mild Mediterranean climate have enabled the inhabitants to cultivate olives, vines and many other fruit trees, as well as cereals, legumes, vegetables and herbs . In different periods, man has made the best use of what nature offered, making it very densely populated and with a very high economic level in some prehistoric and historical periods. Among them we can highlight the Paleolithic period , the period of Hellenistic cities and the medieval period.
The Vjosa Valley has had an important role in connecting the coast with the interior throughout all historical periods. Through its lower valley and the Drinos Valley has passed the southern route mentioned by the 12th century Arab geographer Al- Idrizi (Vlorë, Drinopolis , Janina, Kosturi , Trikalla , Larisa , Almiros). It has also served as an important route for various armies moving from the east to the Gulf of Vlorë or vice versa. The lower Vjosa Valley from Dragoti to Poçem is inextricably linked to the Mallakastra region, while the middle valley (Gryka e Këlcyrës) and the upper one from the border with Greece (Mesare) and up to Këlcyrë are connected to the Përmet area. The upper Vjosa Valley is wide, where the most important morphological element is the river terraces, where the most developed are on the right slope of the valley. The slopes are asymmetrical, the right one falls more gently and is interrupted by a dense network of rivers and streams such as the Lengarica , Lemnica , Dëshnica rivers , etc.
The province of Mallakastra, not only the largest, but also the most defined in the physical-geographical and ethnographic sense, appears very late in written sources. For the first time we find the toponym "Mallakastra" in the Ottoman defter as a district name, but earlier, in 1338, a tribe named Malakas (Μαλακάσιοι) is mentioned who lived together with the tribes of Mazreks and Buajs in the highlands between Epirus and Thessaly.
Based on the etymology of "Mallakastër", this name must have been in use, at least since the Middle Ages. (From an ethnographic point of view, it is also a transitional area between Myzeqe and Labëria), when in fact it is part of the proper area of Toskëria that starts from Shkumbini to Vjosa/ Drinos , and east to Ohrid-Prespa.
In prehistoric periods, the Mallakastra region is primarily known for the Paleolithic, starting with the lower and ending with the upper (Rusinje , Kraps , Peshtan , Konizbaltë , Kryegjatë, Kalivaç, Graçie

, Bylis, Qesarat, Leshnje), Neolithic (Cakran, Lalar , Mollaj , Leshnje, Qesarat), Bronze-Iron (Margëlliç , Patos Fshat, Mashkullor, Lofkënd , Drenovë, Aranitas, etc.)

In the ancient period, its inhabitants had a general name, the Atintans, while in specific territories the inhabitants were also called bylin. In the 3rd – 2nd centuries BC . in the territory of Mallakastra, special administrative units were also created, the so-called koinones , where the Bylins and Balaites can be mentioned , but the Dimalas also remains in the form of a hypothesis . In the province of Mallakastra, a very important place is occupied by the cities of Apollonia, Bylis, Nikaia , Dimal , Gurzeza , and the towns of Margëlliç , Kalivaç, Mbolan , Gorica , Plasnik , Rabie (Alkomena), as well as a large number of open settlements, making this province one of the most developed in the ancient period, within the territory of Albania.

During the Roman period, alongside Apollonia and Bylis (*Colonia Julia Bylidensis*) are added important centers and monuments such as that of Qesarat, the two stone dams on the Gjanica River, the village villa of Krapës , the road station in Kutë , etc. Also during late antiquity, if Bylis were alone, it would be enough to show the high level of development of the region, but besides it there are a number of castles (Margëlliçi , Cfiri , Mbjeshova , Rabia). With the churches of the city of Bylis, many others can be listed, scattered throughout the region: Ballsh, Panahor , Aranitas, Kraps , Margëlliç , Dimal , Luar , Kafaraj , Vjosë, Gorishovë , Rromës , Kreshpan , ranking it within the territory of Albania as the area with the largest number of paleochristian churches .

For the medieval period, several castles can be counted (Myli , Mashkjeza , Margëlliçi , Mbjeshova, Gradishta e Drenova, the castle of Glavinica , Rabia), monasteries (Apolonia, Glavinica , Sinja , Mbrezhdan), churches and a large number of villages. For the latter, in addition to archaeological data, the Ottoman registers of the 15th-16th centuries can be helpful, where a large number of villages are counted, and among them some have 200-500 families. Among the most important episcopal centers of the Middle Ages, Glavinica (Ballsh) can be listed.

2 | Project information and Proposed Surveys

The completion of the surveys will provide reliable data for the drafting of the relevant conservation-restoration projects of Stoa A and Basilica B, as well as will assist architects in the optimal solution of the visitor entry route through Gate No. 6 and the location of the Bylis Archaeological Park Ticket Office.

The object of surface archaeological surveys by the group of archaeologists engaged in this task was first the track where the project of " IMPLEMENTATION OF FIVE SURVEYS PLANNED IN THE PREPARATION OF THE BYLIS-KLOS ARCHAEOLOGICAL PARK CONSERVATION PLAN" will be located, Ballsh Municipality, as well as a considerable area around it.
In the impossibility created by the impassable terrain in almost the entire area where the construction project will be located and in the surrounding area, we took into consideration all the data collected over the years, starting from 1917 and onwards, until recent years. The data collected came mainly from excavations carried out as well as observations during various works carried out in the area outside the city of Bylis. The city of Bylis, outside its enclosure, is occupied by various archaeological monuments, where the largest part is occupied by various necropolises starting from the 4th century BC and up to the beginning of the Ottoman period. The necropolises have been identified near the entrances to the city or on the roads connecting the city with the surrounding area. In the eastern and southern parts, there are mainly necropolises belonging to the Illyrian antiquity period. They are located near entrance no . 2, no . 3, no . 4 and 5, while those of the Roman imperial period are found in the northern part, near entrance no . 6 and along the road connecting Bylis with Gurëzezë . During late antiquity, in addition to the burials that were carried out within the city, most of them reused the monumental tombs of Illyrian antiquity. Medieval necropolises have been discovered in two different areas, the first around the Shinjon tap , and the other northwest of the cemetery of the village of Hekal
. In the southern part near entrance no . 10, traces of a quarry are preserved, which was used for a long time to provide, mainly, architectural elements. In the northern and western parts of the city, connected to gate no . 1, 6 and 7, in addition to the cemeteries, various findings and monuments have been identified, among which two dwellings with floors paved with colorful mosaics, another dwelling where a white marble statue is found, a fountain and two different settlements from the Bronze Age are distinguished. In the area where the project will be developed, there have also been various detached archaeological findings (tombs, stelae, architectural parts, ceramic objects, jewelry, etc.).

1. Dwelling with hypocaust and mosaic floor southwest of the Hekal village cemetery
2. Apartment with mosaic floors, near the Shënjoni tap.
3. The apartment where Prashniker discovered the marble statue
4. Fountain near the Stratull tap , at the entrance to the school yard
5. Cemetery of the 2nd-3rd century BC southwest of the cemetery of the village of Hekal
6. Cemetery of the 4th century BC along the road to entrance no . 6
7. The medieval cemetery around the Shënjoni fountain
8. Medieval-Ottoman cemetery northwest of the Hekal village cemetery
9. Archaeological finds from the Bronze Age, near the Shënjoni fountain
10. Bronze Age settlement at the football field
11. Findings of architectural elements of a sanctuary , north of the round tower.

Some of them are within the territory where the project will be developed or the access roads: no. 1, no. 5, no. 6, no. 10, no. 11, while the others are located either nearby or at a close distance. This archaeological asset identified in this area requires increased attention during construction works.

2.1 Project Objectives

Based on the Management Plan of the Bylis – Klos Archaeological Park approved by Decision of the Council of Ministers dated 2.08.2024, in the "Terms of Reference of the Bylis Archaeological Conservation Plan" it is determined that: "Conservation projects will be preceded by at least 5 archaeological surveys, to ensure that all necessary information has been collected and incorporated into the final projects".
Based on this orientation, 5 surveys have been selected, which will be conducted in the second half of September:

1. The southwestern part of the corridor of Gate No. 6 as a preliminary preparation of the visitor path in the monumental area of the Archaeological Park. A survey will be carried out in the dimensions: 1x 3 m m .
2. The area north of Basilica B, where the new enclosure of the Basilica will be installed to secure the mosaics. Two surveys will be carried out with dimensions: Survey 2: 2 x 3 m = 6m ^{2} , Survey 3: Dimensions 3 x 1 = 3 m^2 .
3. The area in front of the eastern wing of Stoa A, where there will be conservation interventions to clean up piles of stones and excavation soil, to create space for visitors to move around. Two surveys will be carried out with dimensions: 2 x 3 m^2 .

Total area of 5 surveys of 24 m ^{2} excavation

PROJECT DIRECTOR:
Prof. Neritan Ceka

PROJECT COLLABORATORS
Prof. Skënder Muçaj Surveys of Basilica B; Gate no. 6
Dr. Olgita Ceka Surveys of Stoa A; Gate no. 6
Dr. Suela Juice Basilica Surveys B; Stoa Surveys A
Excavation documentation: Studio ICE

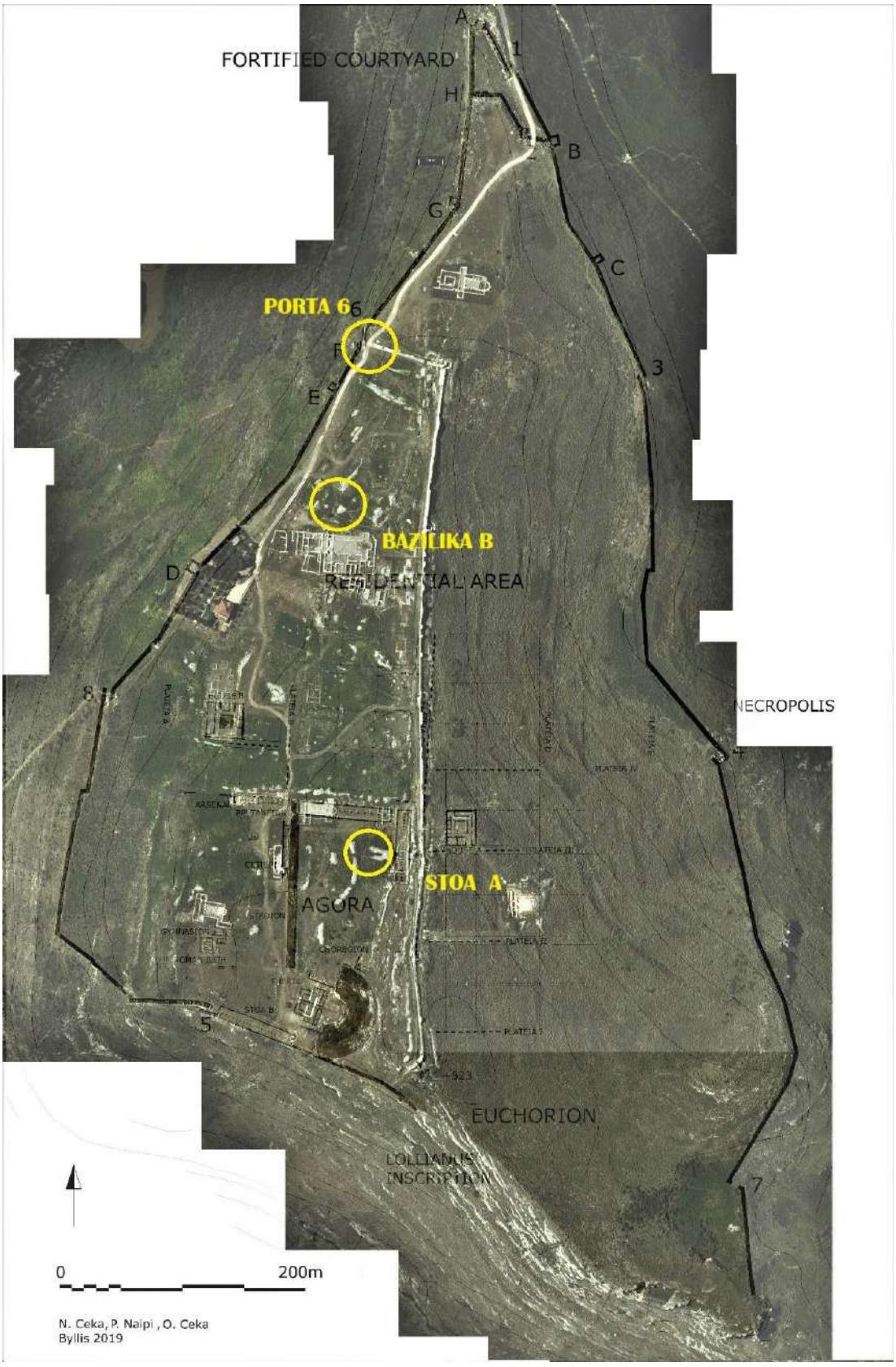


Figura 1 Bylis. Polling locations

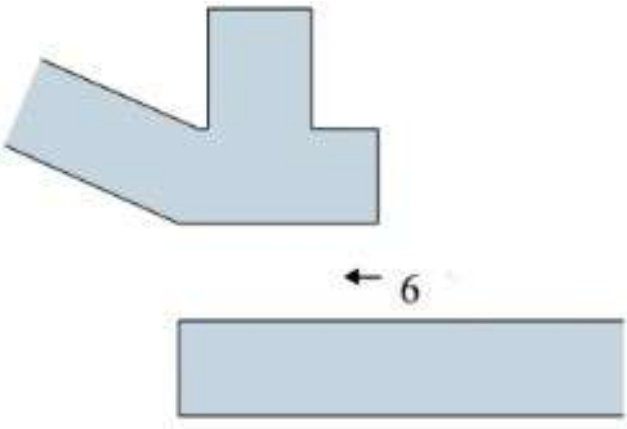
GATE NO. 6

According to the Inception Plan, it is recommended that visitors enter the closed monumental area of the Bylis Archaeological Park through Gate No. 6, where the ticket office will also be located.

In its current state, the gate is preserved at the level of the excavations and restoration interventions undertaken by N. Ceka and L. Papajani in the 1980s. Only the central and northwestern parts of the corridor, as well as the tower on its right side, have been fully excavated and restored, while the inner part of the entrance and the wing of the surrounding wall on its western side have been excavated only in the upper part and have not had any real conservation interventions. This has also been hindered by the fact that the only entrance route is through the Victorine Wall right next to this gate, where a dry stone wall has reinforced the terrace on which the road rests.

The excavation will clear the entire terrain on the inner side of the gate and the inner side of the surrounding wall on its left side, creating the necessary ramp for the passage of visitors. The depth of the survey in its southern part, where it follows the line of the surrounding wall, will go up to 2 m.

Figura 2 - Gate 6



BASILICA B

As one of the five objects selected for the preparation of detailed conservation and restoration projects, the Basilica will have an extension of the area of movement around it, as well as a new metal fence, to ensure the preservation of the mosaics during periods when there is no direct supervision. In this perspective, the entire northern side of the Basilica presents some unknowns, since it has only been excavated to a distance of about 2 m from the wall of the northern nave. Data on the possible existence of underground structures that could be damaged during the conservation works should be made available to the designers.

Figura 3 Bylis. Basilica B. Photo of the environment where the surveys will be carried out and Orthophoto 2015

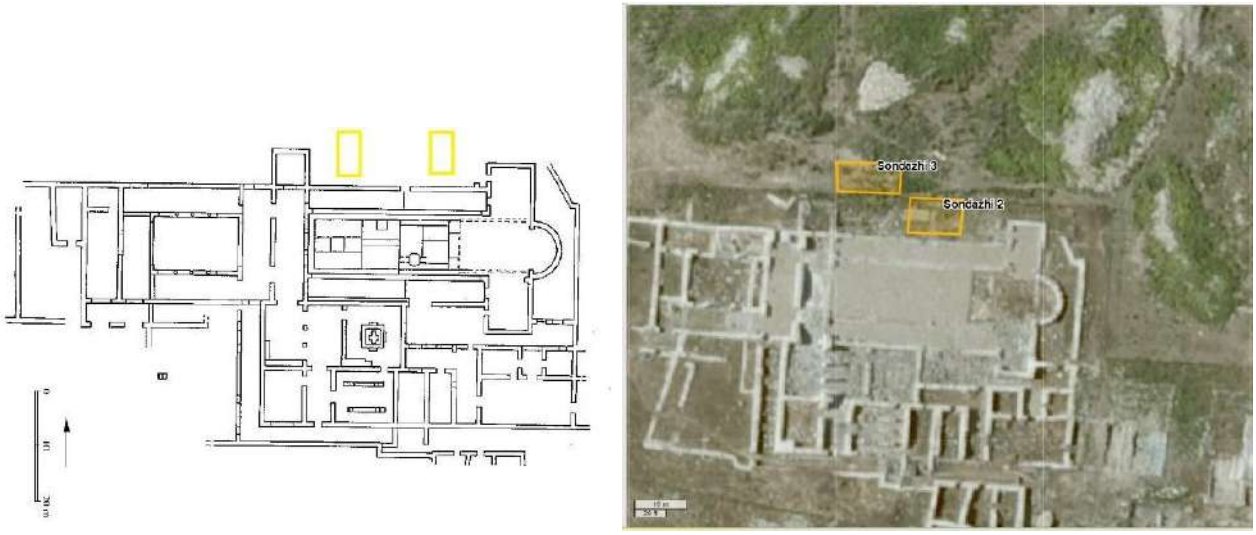


Figura 4 Bylis. Basilica B. Surveys, planimetry and orthophoto 2007

Both surveys will be carried out 15 m apart, starting 5 m from the wall of the northern nave of Basilica B, perpendicular to its direction, with a depth of 1.5-2 m.

The archaeological excavation is based on data from the geophysical study conducted by the ArkeoBylis project in 2022, which determined the existence of structures parallel to the wall of the northern nave at a distance of 6 m.

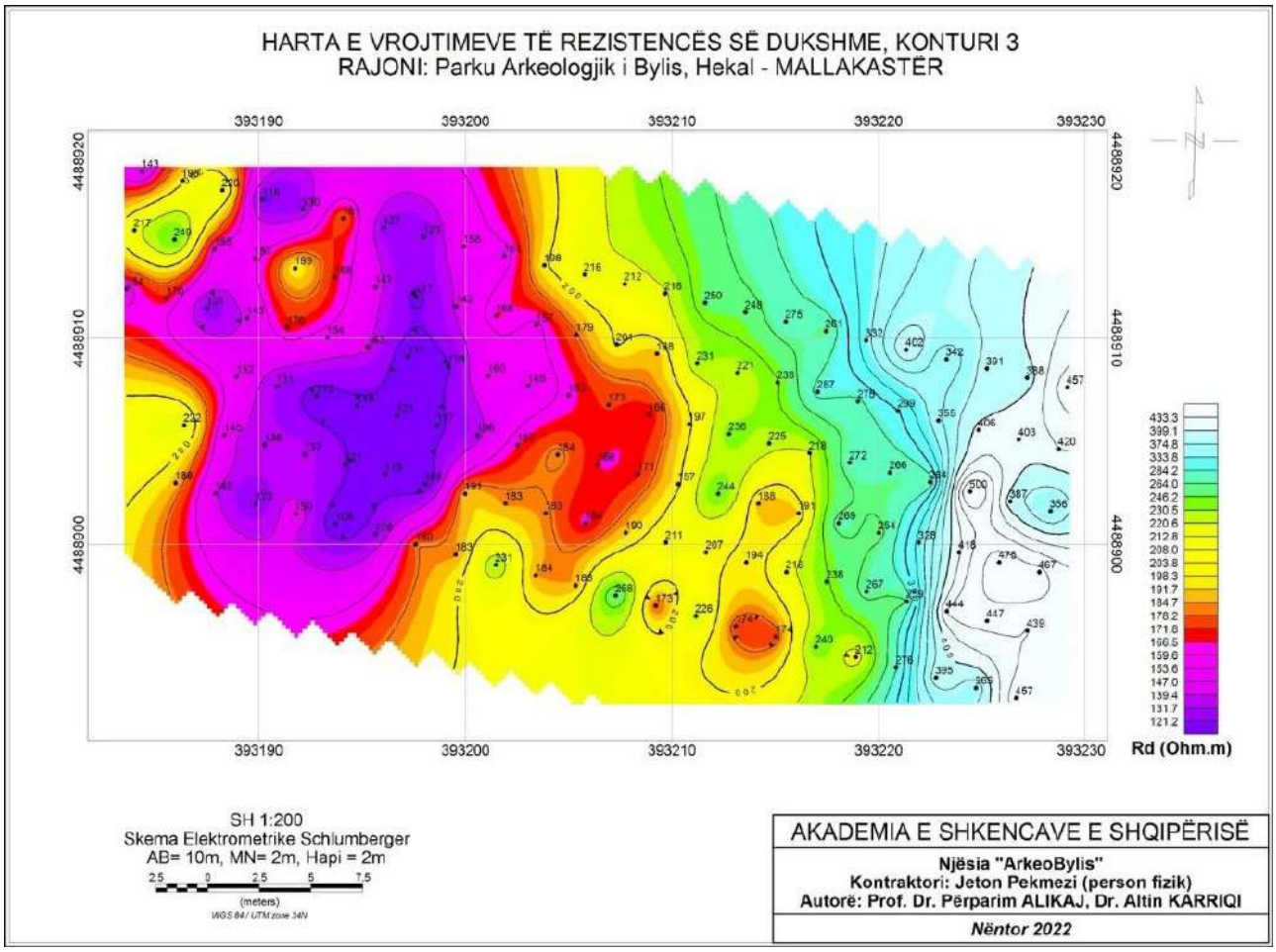


Figura 5 Geophysical study of the terrain to the north of Basilica B

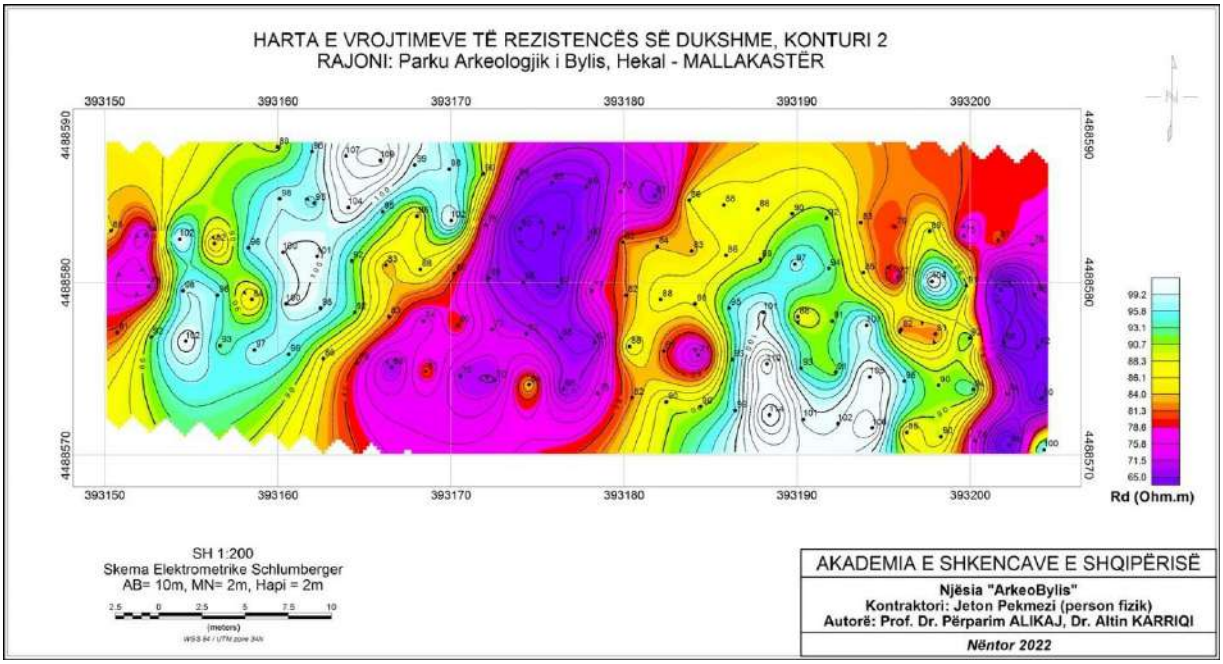


Figura 6 Geophysical study of the terrain south of the colonnade of the western wing of Stoa A

STOA A

This important monument of the Byline period of the 3rd century BC will be the subject of a group of five monuments selected for the development of detailed conservation and restoration projects. The most problematic part is the eastern wing of the monument, which has an unexcavated area along its colonnade, where piles of stones from former agricultural works and soil from the archaeological excavation of the stoa have been deposited. The cleaning of this area, as a necessary condition for the visual perception of the monument and the free passage of visitors, makes it necessary to verify possible structures located underground.

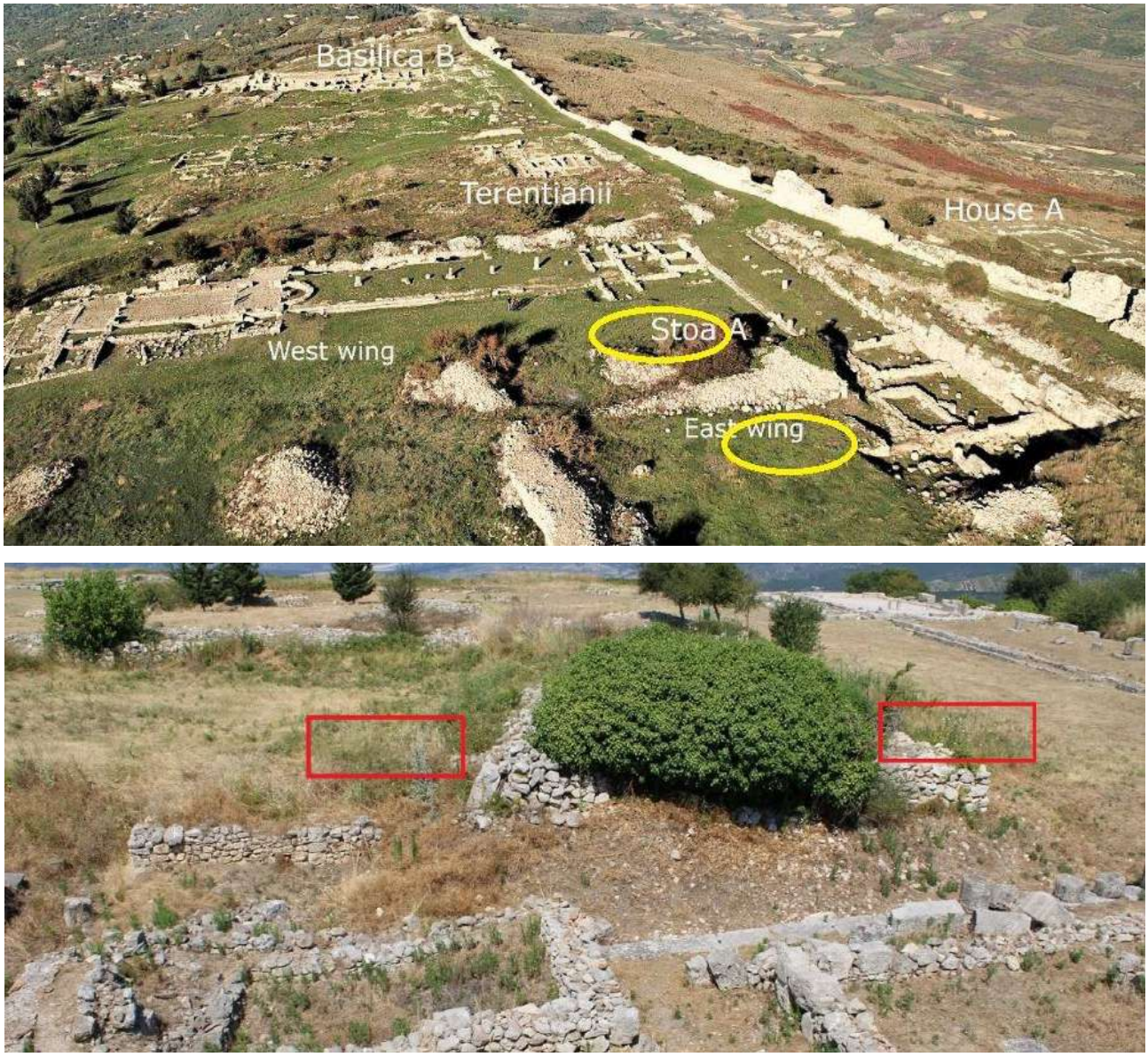


Figura 7 Stoa A. Polling locations and current situation overview

Figura 8 Stoa A. Locations of the 2007 and 2025 Orthophoto surveys

Two surveys will be carried out, on both sides of the large pile of stones and soil dumped around it. On the northern side, the survey will be perpendicular to the colonnade of the western wing of the stoa and will be deepened to approximately 1.50 m, which was the depth of the excavation during the discovery of the stoa's crepis.
On the south side of the pile, the survey will be perpendicular to the wall of the east wing and can reach a depth of 1.50-2 m.
The development of the surveys will be based on data from the geophysical study conducted under the ArkeoBylis 2022 project.

2.2 Project Expectations

The completion of the surveys will provide reliable data for the drafting of the relevant conservation-restoration projects of Stoa A and Basilica B, as well as will assist architects in optimally resolving the visitor entry route through Gate No. 6 and the location of the Bylis Archaeological Park Ticket Office.

2.2.1 - Area where surveys will be conducted

First, we would like to emphasize the legal basis for drafting this concept document for conducting archaeological surveys, which are:

- Law 27/2018 on Cultural Heritage and Museums
- Regulation on the practice of the profession of archaeologist approved by the KKA on 30.01.2009

Service Contract concluded between the ITALIAN AGENCY FOR DEVELOPMENT COOPERATION (IN ACRONYM AICS), as contracting authority and ILLYRIAN CONSULTING ENGINEERS shpk, as contractor.

In the areas where the project will be developed, visibility was at a percentage of almost 0-50% and did not allow us to look for archaeological remains that would bring the material to the surface, but all of the selected surveys are located near important and already excavated monuments within the park.
Based on the results achieved during the archaeological survey conducted in the development areas: **" IMPLEMENTATION OF FIVE SURVEYS PLANNED IN THE PREPARATION OF THE CONSERVATION PLAN OF THE BYLIS-KLOS ARCHAEOLOGICAL PARK ",** the Municipality of **Ballsh** concludes as follows.
In the development area where the parking lot, museum and auxiliary infrastructure will be built, 3 surveys will be carried out, covering an area of 24 m ^{2}
The coordinates for each survey are:

Survey 1

KRGJSH 2010 / TM λ=20 °	477852.42	4490038.57
KRGJSH 2010 / TM λ=20 o	477854.92	4490038.56
KRGJSH 2010 / TM λ=20 o	477851.62	4490035.63
KRGJSH 2010 / TM λ=20 o	477854.12	4490035.51

Survey 2

KRGJSH 2010 / TM λ=20 °	477841.95	4489893.51
KRGJSH 2010 / TM λ=20 o	477849.22	4489893.04
KRGJSH 2010 / TM λ=20 o	477841.59	4489888.53
KRGJSH 2010 / TM λ=20 o	477848.86	4489888.28

Survey 3

KRGJSH 2010 / TM λ=20 °	477831.51	4489898.52
KRGJSH 2010 / TM λ=20 o	477840.71	4489898.04
KRGJSH 2010 / TM λ=20 o	477831.72	4489894.33
KRGJSH 2010 / TM λ=20 o	477840.36	4489894.08

Survey 4

KRGJSH 2010 / TM λ=20 °	477873.84	4489611.61
KRGJSH 2010 / TM λ=20 o	477877.71	4489611.93
KRGJSH 2010 / TM λ=20 o	477877.69	4489604.80
KRGJSH 2010 / TM λ=20 o	477873.94	4489604.93

Survey 5

KRGJSH 2010 / TM λ=20 °	477866.98	4489635.51
KRGJSH 2010 / TM λ=20 °	477873.91	4489635.15
KRGJSH 2010 / TM λ=20 °	477866.74	4489631.77
KRGJSH 2010 / TM λ=20 o	477873.79	4489631.75

Dimensions: Surveys 1-5: Survey 1: 1x 3 m; Survey 2: 2 x 3 m, Survey 3: Dimensions 3 x 1 =3 m ^{2}, Surveys 4 and 5 with dimensions 2 x 3 m ^{2} . Total area of the 5 surveys of 24 m ^{2} excavation, until reaching the natural base (which does not reach more than 1.5 m).

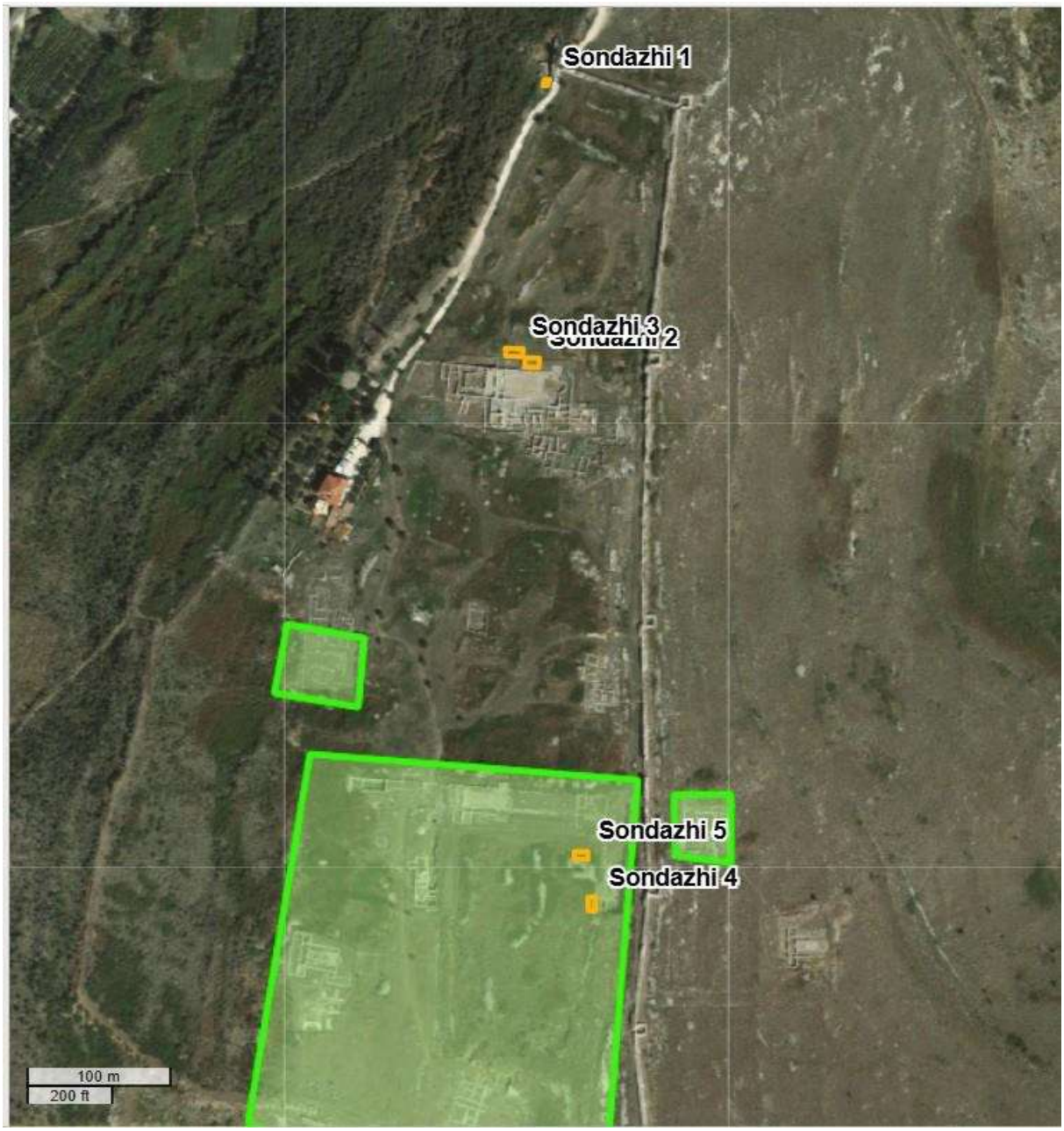


Figura 9 Fig. Placement of surveys 1-5. Orthophoto 2015, according to the Webgis system

Figura 10 Location of surveys 1-5. Orthophoto 2007, according to the Webgis system

All proposals for archaeological surveys No. 1-3 are given with coordinates in the coordinate system. The coordinates are taken in the clockwise direction, given with numbers from the northwest corner "point 1" and ending at the southwest corner "point 4".

Archaeological intervention task : Archaeological surveys will be carried out from the surface level until reaching the sterile base (which, from the experience of archaeologists, does not reach more than 1.5 m depth).

2.2.3 - The methodology to be followed for digging the surveys

1. Excavation by layers and documentation by intensity.
2. The depth of the survey will reach the clay bed, which in the area reaches up to 1.5 m.
3. Determining scientific expectation.

Archaeological surveys are carried out according to the Regulation on the Criteria for the Practice of the Archaeology Profession approved by the KKTKM with a decision dated 30.01.2009.
The start of archaeological surveys, which will receive a serial number, will be reported to the Directorate of Archaeological Service - DSHA, 2 (two) days before it begins and documented with a report of the start of works, which is signed by representatives of the National Institute of Cultural Heritage, DSHA, and " ILLYRIAN CONSULTING ENGINEERS " sh.pk.
The completion of the archaeological activity will be reported within 3 days to the National Institute of Cultural Heritage (DSHA), which will present the preliminary or final conclusions at the next meeting of the KKTKM and document the completion of the archaeological excavation in the minutes.

4. Archaeological Surveys – Work processes to be carried out by our Entity and reporting methods

The scale used for the drawings will be:

a) Plans and Profiles 1:20
b) General plan 1:50 - 1:500
c) Details 1:1 to 1:10

- Topographical situation, information on soil content and current use of the area where archaeological surveys will be conducted.
- Description with technical data of the place where the operation will be performed, the surface and depth, the type, and the purpose of the intervention.
- Presentation of data on surface areas and in depth (within the surface of the archaeological operation).
- The work process, foreseen by the Licensed Entity, detailed step by step.
- The technical director of the project is Mr. Neritan Ceka. He will not change, except in major cases (in cases where conditions or circumstances make it impossible to continue the project such as accidents, illnesses, etc.).
- Our entity will prepare a biweekly and monthly report informing about the progress and results of the surveys in electronic (e-mail) and written form.

- The monthly report also includes an annex with an inventory list of findings, as well as digital photos from the surveys.
- Field consultations must be justified and can be conducted at any time, at the request of the project manager or the director of the DSHA.
- The preliminary survey report is submitted to the Technical Secretariat of the KKA 3 (three) months after the completion of the project and within a period of 3 months, 6 months or 1 year (determined depending on the scale of the project), the final documentation is also submitted.

2.2.4 - Processing and evaluation of archaeological survey documentation

The processing and evaluation of the documentation of the archaeological operation for submission to the Archives begins in parallel with the archaeological work in the field and ends after it, and includes:

a) Checking and completing all documentation resulting from the archaeological operation, such as:
- Stratigraphic Unit Cards.
- Hand-drawn drawings in A3, A4 format and those on cards (such as profile drawings, etc.)
- Measurement reports with the coordinate system.
- Compilation of lists of archaeological finds, photos, drawings, samples for laboratory analysis from documentation.
- Processing of archaeological finds through their washing, drying, labeling (inscription with ink), packaging, all according to the Regulation and their reconciliation with the documentation lists. These processes will be directed by the leading archaeologist.

b) Cataloging of Archaeological Units and Finds in the Database:
Registration of finds according to stratigraphic units and dating of stratigraphic units. Catalog of small/special finds. This scientific work is carried out by a highly qualified archaeologist. In particular, for the compilation of the Catalog of Archaeological Units, in the best case, the one who directed the archaeological operation.

c) Digitization of hand drawings (plans, views and profile sections, and in special cases even three-dimensional). They will be carried out by specialists with experience in processing drawings of archaeological operations.

d) Drafting of the Excavation Report, which is carried out by an archaeologist with editing skills.

All **archaeological objects** discovered during archaeological surveys are the property of the Albanian state pursuant to Law No. 27/2018, "On Cultural Heritage and Museums. Their registration and storage are carried out in accordance with the provisions of this law.
Archaeological materials will be deposited near designated facilities as approved by the KKTKM.
All findings will be handled with care and kept in secure facilities with guards or a camera system.

- All findings will be properly cleaned to ensure their longevity.

- The findings will be recorded on a database according to the model set out in the KKTKM Regulation.
- The finds will be deposited and will be properly labeled and accompanied by an accompanying file. They will also be packaged with materials that ensure their longevity.
- Conservation will include both *in situ structures* and removable finds, which can be restored.
- The maximum deadline for submitting findings will be 1 (one) year.
- The inventory list of findings will be submitted each month as an annex to the monthly report.

The personnel of the archaeological rescue excavation project will include a team of professionals who will make it possible to fully carry out the excavation from the beginning to its final phase, that of publication.

Personnel should include, depending on the capacity required by the survey:

a-) Project Manager (Archaeologist)	**(1)**
b-) Experienced archaeologists (excavation technicians).	**(4)**
c-) Staff for processing findings	**(2)**
d-) Geodesy	**(1)**
e-) Conservation specialist	**(1)**
f-) Sketcher	**(1)**
h-) Workers	**(3)**

Detailed schedule and implementation timelines:

- Archaeological surveys (30 days)**
- Documentation (10 days)
- Conservation/restoration (after excavation), 10 days)
- Inventory of finds (simultaneous with the excavation situation, 5 days)
- Drafting of periodic and final reports (after completion of documentation, 30 days)
- The schedule will also provide for necessary deadlines for which approval from the KKTKM will be required.
-

days are working days

****the time of clearing the square affects the duration***

List of tools and machinery to be used in excavation with relevant specifications:

- Hand tools (picks, shovels, carts, small trowels, archaeological picks and shovels, brushes and small tools, square nets, sieves).
- Mini excavator with knife bucket for removing any layer without archaeological material
- The positioning of the findings will be done with a total station.
- Getting points and level quotes.

The materials will be stored in the premises that will be provided by the investor during the survey period, which will also be used as an office space for the processing of archaeological documentation.

Publishing and copyright

The publication of the "Final Report" is the exclusive right and obligation of the project leaders, whose financing is covered 100% by the investor. The project leaders have the copyright.
The project leaders also have the copyright for the documentation and material submitted to the archive or funds. They have exclusive rights to publish the material within the deadlines mentioned below. The project leaders lose the copyright over the deposited documentation and material in case of non-publication within a period of 3 years.
After the publication of the Final Report, the right to monographic publication is open to all researchers and state and private institutions, which provide funding for the study and publication.
The claiming author/institution must address the KKTKM, which has the authority to grant this right.

2.2.5 - Scientific expectation of archaeological surveys

The surveys in the development area should aim to answer several questions in relation to the archaeological heritage of the construction area and the surrounding territory. The results of the survey within the reconstruction area of the workers' camp are an important piece of information for the evolution of the settlement from the Hellenistic period to that of late antiquity. It is important to enable a better dating of the period when this area was first inhabited, re-inhabited and abandoned. To define as clearly as possible the urban structure of this village of the late antiquity period, which will be an added value not only for the archaeology of this period. The data collected from the surveys will shed light on the history of the village of this period.

2 | Index of figures

Financuar nga
Bashkimi Evropian

MINISTRIA E EKONOMISË, KULTURËS DHE INOVACIONIT

ITALIAN AGENCY FOR DEVELOPMENT COOPERATION

ARCHAEOLOGICAL CONSERVATION PLAN
ARCHAEOLOGICAL PARK OF BYLIS
ancient cities of Bylis and Klos

PART 6

Condition Assessment

ILLYRIAN CONSULTING ENGINEERS

AGATE

B5 s.r.l ENGINEERING

MEDITERRANEA ENGINEERING

1 | General Introduction

The Archaeological Park of Byllis and Klos represents an exceptional urban complex of the Roman period, extending over a territory rich in historical and archaeological stratifications. The site includes fortified walls, public buildings, residences, theaters, and mosaic pavements, predominantly constructed using local stones and lithic materials.

Over the years, exposure to atmospheric agents, rainwater action, deposition of biological materials, and colonization by invasive vegetation have contributed to the degradation of structures, compromising both their physical stability and historical readability. For this reason, conservation interventions must be planned to be minimally invasive, compatible with original materials, reversible, and supported by accurate scientific documentation and continuous monitoring.

The current phase is dedicated to the Archaeological Conservation Plan, which includes a series of core activities essential for understanding and safeguarding the site. These activities include detailed surveys of the structures and their contexts, assessments of conservation status, definition of operational strategies, and a five-year plan for conservation interventions. The objective is to develop a coherent and sustainable vision for the medium- to long-term management of the site, aligning preservation needs with enhancement and accessibility objectives.

The subsequent phase will build upon this Conservation Plan, focusing on the preparation of Detailed Conservation Projects. These projects will include targeted archaeological test excavations, cost estimates for interventions, and the complete design of five executive projects selected based on representativeness and conservation urgency. This stage translates the strategic vision of the Plan into concrete, measurable, and implementable actions, fully compliant with national regulations and international conservation standards.

2| Methodological Approach

The methodological approach for drafting the Archaeological Conservation Plan and the Detailed Conservation Projects for the Byllis and Klos sites is based on the synergistic integration of rigorous scientific methods, a commitment to cultural enhancement, and a sustainable heritage conservation vision. This methodology goes beyond purely technical and restorative interventions, embedding conservation within a broader framework of protection, promotion, and informed public engagement, aimed at transforming the sites into living, accessible, and widely recognized heritage assets.

The work is structured as a comprehensive, coherent, and articulated plan that respects the historical, environmental, and cultural values of the sites, while promoting an innovative, participatory, and interdisciplinary vision of conservation.

In the case of the Byllis archaeological site, we are dealing with a complex historical palimpsest extraordinarily representative of the site's historical evolution. Its significance lies in the presence of idiosyncratic elements: each monument preserves unique features that define its material, historical, and territorial identity. This highly stratified complex demonstrates layered historical periods not by erasure, but by accumulation—leaving tangible traces of settlement continuity and cultural transformation.

Despite centuries of dismantling, damage, and alteration, the site still preserves archetypal elements that allow identification of each building's original features and intended function within the ancient urban context. These fragmentary traces are significant enough to confer recognizability and uniqueness to every architectural element, wall, and construction detail, giving the site a strong identity that demands a thoughtful conservation approach.

For these reasons, the methodology firmly rejects arbitrary reconstruction or historical falsification. Instead, it embraces authentic conservation that respects original materials and the site's historical narrative. Conservation aims not to recreate an idealized past but to safeguard and render legible authentic traces of history, preserve the specificity of forms and materials, consolidate what endures, and enhance elements that remain legible.

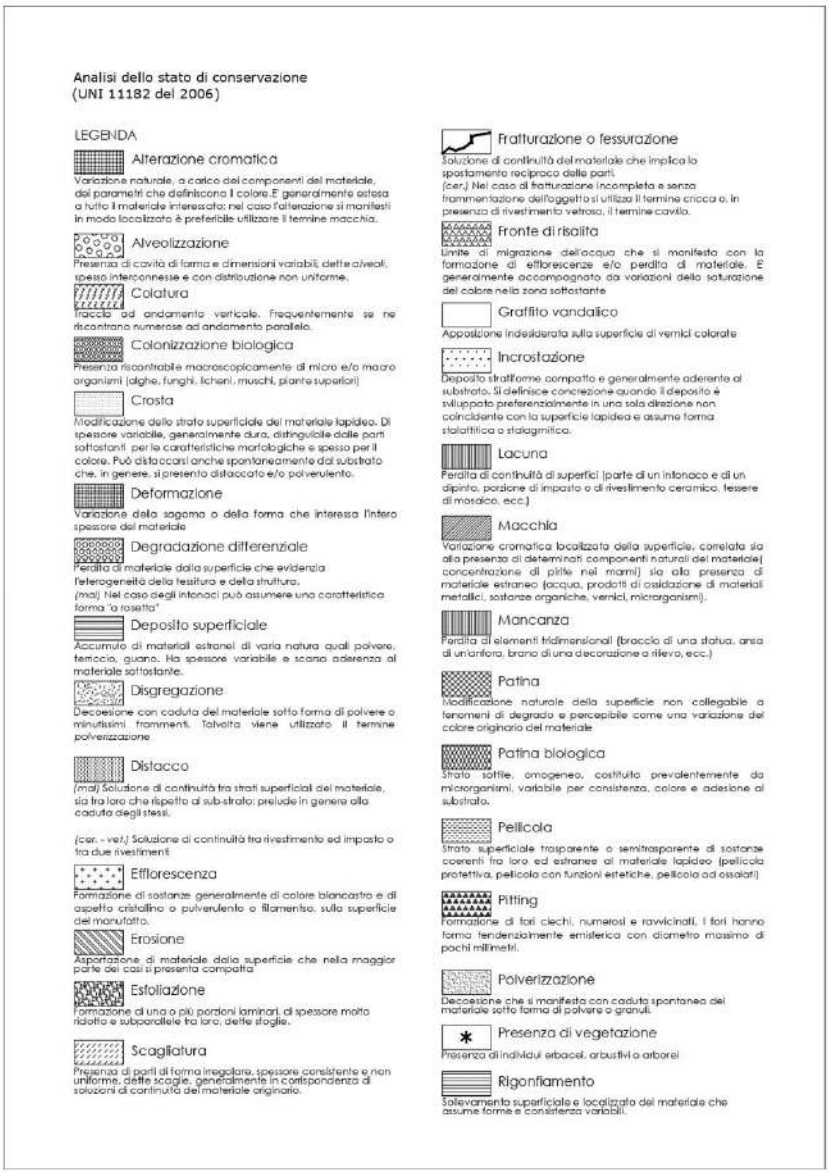
The interventions are based on a knowledge- and operations-driven strategy integrating high-precision surveys, material and structural studies, diagnostic analyses, and environmental assessments. Each action will be carefully calibrated, tested preliminarily, and guided by principles such as physico-chemical compatibility, potential reversibility, and discreet distinguishability. The aim is to develop a conservation project consistent with the site's unique characteristics while addressing management, accessibility, and cultural engagement needs.

The site's fragmented yet evocative identity calls for an interpretation integrating both tangible and intangible heritage: each preserved stone is a fragment of memory, a trace of historical continuity

connecting the ancient landscape to contemporary life. Conservation is conceived as an ethical and cultural act, preceding technical considerations, and forms the core of the project proposal for Byllis and Klos.

3| Graphic Coding and Legibility of Technical Drawings

To ensure consistency between the methodological vision and the operational practices adopted, graphic representations relating to the state of conservation, detected pathologies, and proposed interventions will be coded using a specific legend, developed in accordance with the technical terminology of the **NorMal 1/88 standard, as incorporated and updated by UNI 11182:2006**. This coding will serve as **an essential tool for the accurate reading and interpretation of technical documents**, **promoting uniformity in understanding among the various stakeholders involved in the analysis, design, and implementation phases**.



The graphic hatchings, used to indicate different types of deterioration or to convey diagnostic information, will be designed with an appropriate scale of representation and associated with clearly defined colors. These measures will not only ensure high legibility of the drawings—avoiding visual interference with the underlying architectural elements—but will also support clear, effective, and interdisciplinary communication. In this way, graphic documentation will become an integral part of the broader process of knowledge, protection, and enhancement of the heritage.

The description of the state of conservation according to UNI 11182 of 2006 is reported:

Color Alteration

Natural variation affecting the components of the material, altering the parameters that define its color. It generally extends over the entire affected material; when the alteration appears in a localized manner, the term stain is preferable.

Alveolization

Presence of cavities (alveoli) of variable shape and size, often interconnected and unevenly distributed.

Run Mark

Vertically oriented streak. Multiple streaks often appear parallel to each other.

Biological Colonization

Macroscopic presence of micro- and/or macro-organisms (algae, fungi, lichens, mosses, higher plants).

Crust

Alteration of the stone material's surface layer. It has variable thickness, is generally hard, and can be distinguished from underlying layers by morphological features and often by color. It may spontaneously detach, leaving the substrate powdery or separated.

Deformation

Alteration in shape or form affecting the entire thickness of the material.

Differential Degradation

Material loss from the surface, highlighting heterogeneity in texture and structure. (*In plaster, it may form a characteristic "rosette" shape.*)

Surface Deposit

Accumulation of foreign materials such as dust, soil, or guano. Varies in thickness and usually has poor adhesion to the underlying material.

Disintegration

Loss of cohesion, with the material falling away as dust or very small fragments. The term powdering is sometimes used interchangeably.

Detachment

(*General*) Separation between surface layers or between the surface and the substrate; often precedes material loss.
(*Ceramics/Glass*) Separation between the coating and the body, or between two coatings.

Efflorescence

Formation of generally whitish crystalline, powdery, or filamentous substances on the surface of the artifact.

Erosion

Removal of material from the surface, which typically remains compact in appearance.

Exfoliation

Formation of one or more thin, sub-parallel laminar portions, known as flakes.

Scaling

Presence of irregularly shaped, thick, and uneven pieces, known as scales, usually located at discontinuities in the original material.

Fracturing or Cracking

Discontinuity in the material involving mutual displacement of the parts. (*Ceramics*) When incomplete and without fragmentation, the term craze or crackle is used, especially for glazed surfaces.

Rising Damp Front

Limit of water migration, typically marked by efflorescence and/or material loss. Often accompanied by color saturation changes in the area below.

Vandalism Graffiti

Undesired application of colored paints on the surface.

Encrustation

Compact, stratified deposit generally adherent to the substrate. When the deposit develops predominantly in a direction not aligned with the stone surface and takes a stalactitic or stalagmitic form, it is termed concretion.

Lacuna

Loss of surface continuity (e.g., part of plaster, painting, ceramic body or glaze, mosaic tesserae, etc.).

Stain

Localized color variation of the surface, due to natural material components (e.g., pyrite in marble) or foreign substances (e.g., water, oxidation products, organic materials, paint, microorganisms).

Loss

Loss of three-dimensional elements (e.g., a statue's arm, amphora handle, relief decoration segment, etc.).

Patina

Natural surface modification not related to degradation processes, perceived as a change from the material's original color.

Biological Patina

Thin, homogeneous layer mainly composed of microorganisms, varying in consistency, color, and adherence to the substrate.

Film

Transparent or semi-transparent surface layer composed of cohesive substances foreign to the stone material (e.g., protective film, aesthetic coating, oxalate film).

Pitting

Formation of numerous, closely spaced blind holes. The holes are typically hemispherical with a maximum diameter of a few millimeters.

Powdering

Loss of cohesion resulting in spontaneous shedding of the material as powder or grains.

Presence of Vegetation

Presence of herbaceous, shrubby, or arboreal plant individuals.

Swelling

Localized, raised deformation of the surface material, with varying shapes and consistencies.

4| Fundamental Principles and Objectives

The foundation of this methodology lies in a clear intention to preserve the historical and material identity of the sites, fully respecting the principles universally recognized in the field of cultural heritage conservation. The entire methodological framework is inspired by international ethical and regulatory codes, foremost among them the **Venice Charter of 1964**, the founding document of ICOMOS, which establishes the principles of protection and restoration as critical and scientific acts, never as processes of arbitrary reconstruction. In line with this vision, the project adheres to the **principle of minimal intervention**, aimed at minimizing any alteration of the original structures and prioritizing conservation actions that strengthen the existing fabric without introducing foreign elements.

The proposed methodology also adopts the criteria of **material compatibility**, ensuring that every intervention respects the chemical and physical characteristics of the historical artifacts, avoiding negative interactions or processes that could accelerate degradation. The techniques and materials used will be selected based on their potential reversibility, allowing, if necessary, the removal of future interventions without compromising the original integrity of the structures. This approach aligns with the recommendations of the **Italian Restoration Charter (1972)** and the more recent standards **UNI 11182:2006** and **UNI 11270:2007**, which provide operational guidelines for material analysis, classification of degradation, and the evaluation of the most appropriate technical solutions.

Another foundational aspect of our methodology is the respect for authenticity, a central concept in all international conventions for heritage protection, starting with the **1972 UNESCO Convention** on World Heritage, which broadens the concept of authenticity to include cultural and interpretive contexts. Every intervention will therefore be conceived to ensure the **legibility and recognizability** of the changes made, without ever altering the historical narrative or the original aesthetic perception of the artifacts.

Finally, special attention is given to the principle of **sustainability**, which, in our view, goes far beyond environmental respect. Sustainability also means ensuring the technical durability of the interventions, promoting responsible use of the site by local communities, and fostering integrated management that ensures economic continuity, social cohesion, and cultural enhancement. This translates into project actions capable of integrating the site into the current fabric of the territory, supporting virtuous processes of local development, public participation, and inclusive accessibility, fully aligned with the **European Guidelines for Integrated Conservation of Cultural Heritage and the principles of the Culture of Maintenance promoted by UNESCO and ICCROM.**

In summary, **the regulatory and methodological framework underpinning the project is not only a technical reference but represents a true ethical and cultural framework within which every**

design choice will be reviewed and validated. This approach ensures the consistency and quality of the interventions, as well as the cultural legitimacy of our work, making conservation an act of responsibility towards history, the landscape, and future generations.

Moreover, all interventions will be carried out in **full compliance with Albanian cultural heritage legislation**, first and foremost **Law No. 27/2018 "On Cultural Heritage and Museums"**, which establishes the fundamental principles for the protection, conservation, and management of archaeological and historical assets. This regulatory framework mandates, among other obligations, the proper **conservation, documentation, and safeguarding of excavated materials**, ensuring that every action undertaken respects national protocols and preservation standards. The project will therefore align its procedures, methodologies, and operational choices with these legal requirements, integrating them harmoniously within the broader international conservation principles described above. This dual adherence—both to global charters and to local legislation—ensures that the proposed approach is not only scientifically rigorous and ethically grounded, but also institutionally coherent and fully compliant with the governance system of cultural heritage in Albania.

5| Conservation Assessment

The areas of conservation intervention related to the deterioration conditions of the archaeological complex of Bylis and Klos can generally be classified into the following operational categories.

1. Removal of Invasive Vegetation

Intervention Description:
The presence of roots, shrubs, lichens, and moss on stone surfaces and within masonry poses a direct threat to the stability of the site. Roots penetrate joints and micro-cracks, causing lifting, fractures, and detachment of stone blocks. This intervention aims to eliminate these sources of degradation, protecting the structures without compromising the archaeological stratigraphy.

Operational Outline:

- Preliminary inspection to identify invasive species and hazardous roots.
- Manual removal of roots using joint knives and stainless-steel spatulas.
- Cutting of shrubs and low vegetation with pruning shears and hand saws.
- Removal of mosses and lichens using soft brushes and deionized water.

- Localized biocide treatment applied with a brush or syringe to cut roots.
- Final rinsing with demineralized water.

Responsible Personnel:

- Archaeologists and conservators supervise stratigraphic integrity.
- Specialized operators carry out physical removal and cleaning.
- Botanical technician determines biocides and methods of application

1. 1 Weeding and Disinfestation

- **Manual weeding**
  Manual weeding and cleaning as part of restoration works, including cutting of woody species, complete removal of embedded roots, sealing of cavities with hydraulic mortar at full depth. The operation shall be carried out using small tools and with the utmost care, including removal of debris and transport to an authorized landfill (excluding landfill disposal tax), in areas with earthen circulation surfaces.
- **Disinfestation by biocide application**
  Disinfestation by applying biocide and manual removal of superficial vegetation; excluding costs related to securing surrounding surfaces at risk of detachment, on all types of stone structures located outdoors: shallow-rooted vegetation.
- **Shrub disinfestation**
  Disinfestation of shrubs by cutting aerial parts, rapid infiltration of biocide into the cut areas, final elimination of the devitalized root system or its reduction;
- **Disinfection of microorganism colonies**
  Disinfection of autotrophic and/or heterotrophic microorganism colonies by applying biocide followed by subsequent mechanical removal, on structures located both outdoors and indoors;

2. Cleaning and Consolidation of Stone Surfaces

Intervention Description:

Stone surfaces are prone to the accumulation of dirt, biological crusts, and saline crystallizations, which can compromise the cohesion of the material. The cleaning and consolidation intervention aims to gently remove these deposits, restore the cohesion of the stones, and prevent further deterioration.

Operational Outline:

- Preliminary cleaning using low-pressure sprayers and deionized water.
- Mechanical removal of incoherent crusts using stainless-steel spatulas and micro-chisels.
- Application of consolidants (ethyl silicate or nanolime) with brush or syringe until saturation.
- Removal of any excess consolidating product.

Responsible Personnel:

- Stone conservators carry out the cleaning and consolidation.
- Archaeologists supervise the preservation of the materials.
- Materials specialists select compatible consolidants.

2.1 Pre-consolidation

- **Partial re-establishment of cohesion**
  Partial re-establishment of cohesion (pre-consolidation) by impregnation with brush, syringe, or pipette, as a preparatory step for cleaning operations; including the removal of excess consolidating product; case of disaggregation, using ethyl silicate.
- **Partial re-establishment of cohesion**
  Partial re-establishment of cohesion (pre-consolidation) by impregnation with brush, syringe, or pipette, as a preparatory step for cleaning operations; including the removal of excess consolidating product; case of pulverization, using ethyl silicate.
- **Temporary sealing with mortar**
  Temporary sealing with mortar in the case of exfoliation, fissures, chips, fractures, or lesions, in order to prevent washing effects caused by water-based cleaning.
- **Application of support bandages**
  Application of support and protective bandages in cases of fracture, fissure, or chipping, to allow subsequent consolidation in safe conditions;
- **Removal of support bandages**
  Removal of old or recent support and protective bandages on consolidated areas; including identification of the suitable solvent for adhesive softening and cleaning of any surface residues;

2.2 Cleaning

- **Removal of superficial deposits**
  Removal of partially adherent superficial deposits (such as soil, guano, etc.) using water,

sprayers, irrigators, brushes, sponges, for all types of stone both indoors and outdoors; applicable to roughly worked surfaces.

- **Removal of coherent deposits of significant thickness**
  Removal of coherent deposits of significant thickness, such as black crusts or carbonate layers, using manual mechanical methods and/or precision equipment; includes any necessary temporary protection of adjacent objects; on flat surfaces: with micro-sandblasting.

- **Extraction of soluble salts**
  Extraction of soluble salts, including residues from previous cleanings, through applications of demineralized water, repeated until complete extraction; to be assessed per square meter on all types of stone both indoors and outdoors; includes testing to identify suitable absorbent materials: in suspension with absorbent clays and possible addition of cellulose paste.

3. Masonry Stabilization and Safety Interventions

Intervention Description:

The masonry structures exhibit cracks, detachments, and unstable blocks that require targeted structural interventions. Stabilization aims to prevent collapses, ensure visitor safety, and preserve the integrity of archaeological remains. All interventions are designed to maintain historical legibility and employ materials compatible with the original construction.

Operational Outline:

- Temporary shoring using metal frames or wooden beams to support unstable sections.
- Careful removal of deteriorated blocks and reintegration of compatible replacement stones.
- Repointing of joints with natural lime mortar and locally sourced sand.
- Reinforcement of deep fractures using stainless steel or GFRP bars.
- Sealing of joints with fluid mortar.
- Geometric and structural monitoring to verify stability and alignment.

Responsible Personnel:

- Qualified masons and conservators carry out masonry and stabilization work.
- Structural engineers supervise shoring and reinforced interventions.
- Archaeologists ensure historical consistency of reintegrated elements.

3.1 Temporary Shoring

- **Temporary support shoring**
  Temporary shoring to support detached or unstable parts at risk of falling, using wooden or metal elements combined with cushioning layers. Includes surface preparation prior to installation.

3.2 Filling and Micro-Filling of Joints

- **Removal of previous joints (plaster/mortar)**
  Careful removal of joints from earlier interventions where materials have altered or lost their conservation or aesthetic function. Carried out mechanically or chemically, with protection and consolidation of surrounding stone surfaces.
- **Removal of previous joints (cement/resins)**
  Removal of joints from past interventions carried out with cement-based or resinous materials incompatible with stone. Performed with mechanical or chemical methods, ensuring the safeguarding of adjacent stone edges and surfaces.
- **Micro-grouting with mortar**
  Localized filling with mortar to address exfoliation, micro-cracks, chips, or surface pitting, aimed at reducing water and moisture penetration. Includes testing and preparation of mortars compatible in color and texture, with careful surface finishing and cleaning of nearby areas.

3.3 Repointing

- **Repointing**
  Renewal of joints through the removal of deteriorated or incompatible mortar while preserving sections that remain in good condition. Gaps are refilled with lime-based mortars prepared to match the original stone in tone and grain, followed by surface treatment and cleaning.

3.4 Reintegration of Stone Materials

- **Removal of applied elements**
  Removal of stone inserts or other added elements from past restoration campaigns, in order to restore authenticity.
- **Integration of missing parts**
  Reconstruction of missing stone portions to recover the overall legibility of the monument or to restore essential architectural and decorative elements. Work includes shaping and finishing new stone elements to harmonize morphologically and chromatically with the original surfaces, in collaboration with specialized artisans when needed.

Structural Consolidation

- **Consolidation of cracks and fractures**
  Stabilization of cracks and fractures in stone through the insertion or replacement of metal anchors or the use of resin bridges, combined with mortar injections. The process involves cleaning, protecting, and preparing the fissure before treatment, followed by accurate finishing to preserve the appearance of the stone.

3.5 Safety Measures

- **Removal of applied safety devices**
  Dismantling of bands, clamps, or other reinforcement systems installed during previous interventions, when no longer effective or necessary.
- **Counter-buttresses**
  Installation of temporary external support structures, such as tube-and-joint systems, to stabilize walls or architectural elements at risk of collapse. Includes assembly and placement of the system as well as transport and positioning of materials.

4. Mosaic Conservation

Intervention Description:
The mosaics are affected by detached tesserae, surface erosion, and color alterations. The intervention aims to stabilize the tesserae, protect gaps, and prevent further deterioration, ensuring the legibility of the original design while respecting the archaeological stratigraphy.

Operational Outline:

- Dry cleaning using HEPA vacuum and soft brushes.
- Temporary protection with cotton gauze and Paraloid B72.
- Injection of fluid mortar beneath detached tesserae using a syringe.
- Micro-filling of gaps with colored mortar, distinguishable from the original.
- Temporary protection with breathable geotextile and washed silica sand.

Responsible Personnel:

- Mosaic conservators execute the interventions.
- Archaeologists supervise documentation and stratigraphic interpretation.
- Materials chemists verify compatibility of consolidants.

5. Rainwater Management

Intervention Description:

Water stagnation and irregular drainage can accelerate material erosion and cause infiltration into masonry. The intervention involves the creation of controlled drainage systems to protect archaeological structures and ensure the site's long-term durability.

Operational Outline:

- Manual excavation of perimeter drainage channels.
- Installation of geotextile-lined perforated drainage pipes.
- Construction of local stone channels with minimal slope.
- Creation of collection pits with stainless steel grates.
- Simulated runoff testing to verify drainage efficiency.

Responsible Personnel:

- Specialized archaeological excavation operators carry out the work.
- Hydraulic engineers supervise slopes and functionality.

- Archaeologists ensure stratigraphic integrity and site preservation.

Additional measures and strategies to be implemented to ensure the protection, stabilization, and long-term management of the archaeological heritage of the site.

6. Systematic Cataloguing of Architectural and Erratic Elements

Alongside the conservation and restoration works, a systematic cataloguing process will be undertaken for all architectural and erratic elements present within the archaeological site. This activity will follow rigorous scientific criteria, using a standardized nomenclature designed to precisely identify each element based on its original context and its morphological, material, and functional characteristics. Every fragment or structure, whether in situ or displaced, will be codified with reference to its environment of origin, specific location (walls, floors, vertical elements, decorative features), historical-artistic value, and state of preservation. This cataloguing will form the basis for the creation of a digital, georeferenced database, integrated with photographic documentation, diagnostic data, and historical information, to support intervention planning and ensure coherent and transparent heritage management. This tool will be essential not only for future monitoring and project planning but also for the site's enhancement, aiding public understanding and engagement through scientifically grounded and up-to-date interpretative materials.

7. Vegetation Management and Environmental Impacts

The conservation of archaeological sites also requires careful **vegetation management**. A strategy for weeding and biological control will be implemented not only on the monuments themselves but also in the surrounding areas, particularly those designated for construction logistics. Vegetation control operations will be carried out selectively, in order to preserve any tree species of landscape or symbolic value. The approach involves the use of low environmental impact methods, integrating botanical monitoring tools and digital technologies—such as QR codes and computerized databases—to track the condition of vegetation and conservation works. In addition, a scheduled maintenance plan will be developed to ensure the long-term durability of the conservation interventions, including activities such as microclimate control, structural monitoring, and periodic maintenance of surfaces and structures.

8. Site Enhancement and Accessibility

A distinctive element of the approach adopted is the focus on the **accessibility and sustainable enhancement of the site**, understood as an integral and inseparable part of the conservation process. The material protection of the structures is not conceived as an end in itself, but as a prerequisite for restoring meaning, legibility, and accessibility to places of memory. In this way, conservation becomes part of a broader strategy of integrated enhancement, aimed at reintegrating the monuments into the living fabric of contemporary society, while maintaining full respect for their historical identity.

In this perspective, particular emphasis will be placed on the design of **fully accessible visitor pathways**, both **physically and cognitively**. This will include the installation of multilingual explanatory panels, interactive digital tools, and immersive technologies. The use of augmented reality (AR) and virtual reality (VR) applications will allow for an in-depth exploration of the site—including remotely—offering visitors a more comprehensive understanding of its history and evolution without compromising the physical integrity of the context. These tools, developed in accordance with the principles of universal accessibility, will broaden the site's cultural and educational offerings, making it accessible to audiences with motor, sensory, or cognitive disabilities.

In parallel with enhancement efforts, the **highest level of attention is given to the safety of the site and its visitors**, particularly in anticipation of increased tourist flows. Certain structures, such as the Walls of Victorinus, present critical conditions that compromise their stability and safety. Specifically, localized structural failures have been observed in correspondence with masonry arches, disaggregated wall sections, and unstable stone blocks. These situations require urgent and high-priority intervention to secure the hazardous areas through structural consolidation measures and, where necessary, temporary provisional works, pending the implementation of definitive restoration actions.

The objective is to ensure that all areas intended for public access comply with the **highest standards of full accessibility and complete safety**. This will be achieved through the upgrading of existing infrastructure, careful control of visitor pathways, and the installation of static monitoring systems. Every access and interpretation element will be designed to blend harmoniously into the landscape, with minimal visual impact and seamless functional integration, in accordance with the most advanced international standards for conservation and open-air musealization.

Ultimately, the site's accessibility will not merely be an outcome of the conservation process, but its natural continuation. Making the monuments accessible and understandable means strengthening their social value, encouraging the active participation of local communities, and fostering new forms of shared stewardship—where knowledge becomes the primary tool for heritage protection.

9. Community Engagement and the Value of Intangible Heritage

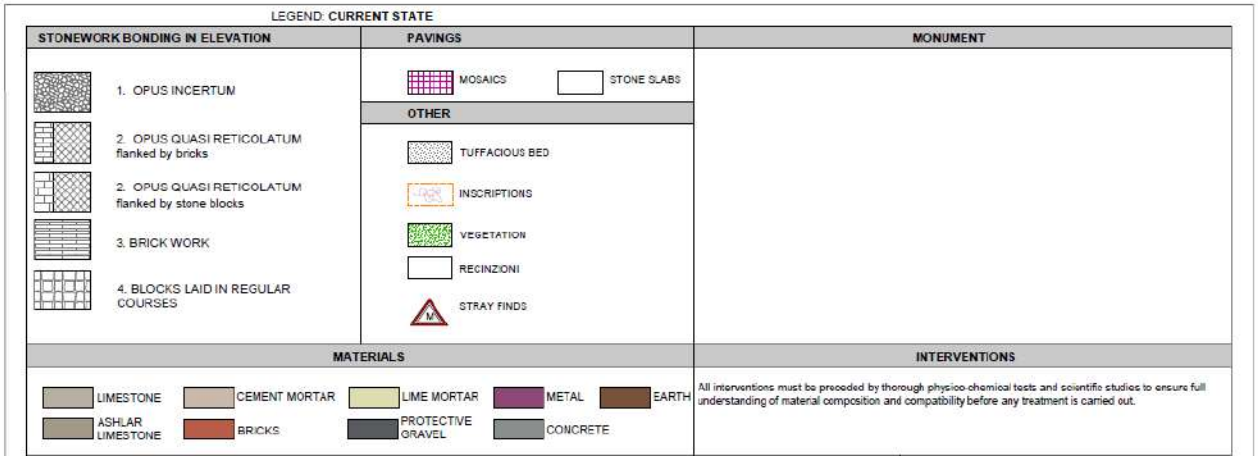
The approach adopted acknowledges the value of **intangible heritage and the collective memory** associated with the sites of Bylis and Klos. These are not merely archaeological landmarks, but lived spaces deeply rooted in the historical and cultural narrative of the local community. The project includes active community engagement initiatives such as public archaeology workshops, educational programs for schools, and collective moments for sharing and interpreting the cultural significance of the sites. In addition, cultural activities and events will be promoted to help preserve local traditions and foster the recognition and transmission of intangible heritage through oral history and other community-based valorization practices.

10. Sustainability and Long-Term Planning

Finally, the methodology includes the definition of a long-term management plan. This plan will encompass scheduled maintenance, structural and environmental monitoring, and the management of natural and anthropogenic risks. A risk assessment and environmental monitoring system will be developed, ensuring the sustainability of the interventions and the resilience of the site, allowing the preservation of the heritage for future generations, while respecting international and national regulations regarding cultural heritage protection.

6| Detailed Conservation Assessments

Based on these guidelines, the legend has been designed to graphically represent the current condition and conservation status of each monument within the site, and to propose appropriate interventions for both the pre-consolidation and consolidation phases. (see PART 6 ANNEXES CONDITION ASSESSMENT)



LEGEND: STATE OF CONSERVATION - STONEWORK BONDINGS			PRE-CONSOLIDATION/CLEANING	CONSOLIDATION
CRACK AND DEFORMATION	 CRACK	Individual fissure, clearly visible by the naked eye, resulting from the separation of one part from another.	Temporary sealing with mortar in the case of exfoliation, fissures, chips, fractures, or lesions, in order to prevent washing effects caused by water-based cleaning.	Conservative 'cuci e scuci' method employing lime mortar and stone blocks, for the coherent restoration of missing sections and overall stonework readability.
	 HAIR CRACK	Minor crack with width dimension <0,1 mm.		Micro-grouting with mortar. Localized filling of micro-cracks to reduce water and moisture penetration with mortars compatible with the existing material by color and texture.
DETACH AND MATERIAL LOSS	 HONEYCOMBING	Formation of cavities of varying shapes and sizes. The pits are often interconnected and display a non-uniform distribution.	Pre-consolidation to partially restore cohesion is performed by impregnating the surface with ethyl silicate using a brush, syringe, or pipette. The entire surface is later thoroughly cleaned, through the removal of dust and loose debris using soft brushes, low-pressure vacuum, or gentle compressed air, to ensure a uniform and stable condition.	Selective filling of cavities with mortar, applied using a spatula, brush, or pipette. The mortar is then shaped to blend seamlessly with the surface, ensuring material consistency in texture and colour with the surface.
	 EROSION	Loss of material from the surface caused by different processes.		Application of a compatible consolidant, typically ethyl silicate or another silicate-based product, over the eroded areas, ensuring chemical and physical compatibility with the stone. The product is applied by brush, syringe, pipette, or low-pressure spray until refusal, and any excess is removed from the surface to avoid gloss or residues.
	 MORTARS' DISGREGATION	Decoherence characterized by the detachment of grains or crystals under minimal mechanical stress.	Stabilization of movable stones through the carefil application of hydraulic lime-based mortar, combined with micro/nano-metric consolidants (e.g., ethyl silicate) to restore adhesion. Voids are filled with hydraulic lime mortar as a preparatory measure, ensuring both compatibility with the original surface and materials and the long-term stability of the masonry bonds.	Removal of deteriorated mortar (where considered irrecoverable). Safeguard of sections where a conservative intervention is possible; refilling of joints with lime-based mortar and suitable aggregates. The interventon includes the preparation of test samples to define mortars appropriate in color and granulometry, surface finishing of the new mortar, and cleaning of any residues from adjacent stone surfaces. The treatment includes re-establishing the cohesion of mortar sections that are preserved.
	 MORTARS' POWDERING	Granular decohesion characterized by the spontaneous falling of material as dust or small particles.		
	 MISSING PART	Fall and loss of parts. This term is used when this form of degradation cannot be described by other entries in the terminology.	Careful removal of stone inserts or other additions from previous restoration campaigns, aimed at restoring the original authenticity and historical integrity of the masonry. All interventions are carried out with minimal impact on the surrounding material, documenting the process and preserving any elements of archaeological or structural significance.	Repositioning of existing stones (or case by case reconstruction of missing parts, only where historical documentation is available) to certify the significance of the lost element in alla cases interventions are carried out using compatible materials, ensuring they are fully reversible and visually distinguishable while maintaining respect for the authenticity and integrity of the structure.
DEPOSITS	 DEPOSIT	Accumulation of exogenic material of variable thickness, lackind adhesion to the stone surface.	Removal with low-pressure vacuum, or gentle compressed air.pre-consolidation on more frail areas using a compatible consolidant (e.g., ethyl silicate) applied with brush, syringe, or pipette.	Application of a compatible consolidant, typically ethyl silicate or another silicate-based product, over the eroded areas, ensuring chemical and physical compatibility with the stone. The product is applied by brush, syringe, pipette, or low-pressure spray until refusal, and any excess is removed from the surface to avoid gloss or residues.
	 ENCRUSTATION	Stratified, compact deposit, generally adherent to the substrate, composed of inorganic substances or biologically derived structures.		
BIOLOGICAL	 BIOLOGICAL PATINA	Homogeneous layer, adherent to the surface and of biological nature. Mainly composed of microorganisms to which dust, soil, and other particles may adhere.	Disinfestation and removal of biological growth on stone structures through the application of biocides followed by manual or mechanical removal. This includes treatment of shallow-rooted vegetation on outdoor structures as well as colonies of autotrophic and/or heterotrophic microorganisms on structures located both outdoors and indoors. Excludes costs related to securing surrounding surfaces at risk of detachment.	
	 VEGETATION	Term used to indicate the presence of mosses, lichens, and plants.	Manual weeding and cleaning as part of restoration works, including cutting of woody species, complete removal of embedded roots, sealing of cavities with hydraulic mortar at full depth. The operation shall be carried out using small tools and with the utmost care, including removal of debris and transport to an authorized landfill (excluding landfill disposal tax), in areas with earthen circulation surfaces.	

LEGEND: COLUMNS, CAPITALS, FRIEZES			PRE-CONSOLIDATION/CLEANING	CONSOLIDATION
CRACK AND DEFORMATION	 CRACK	Individual fissure, clearly visible by the naked eye, resulting from the separation of one part from another.	Temporary sealing with mortar in the case of exfoliation, fissures, chips, fractures, or lesions, in order to prevent washing effects caused by water-based cleaning.	Installation of non-invasive or minimally invasive metal hoops, bands, or internal rods (stainless steel, bronze, fiberglass, or carbon fiber). Hoops and bands are placed at key points (top, middle, base) with connection points embedded in compatible grout to ensure load transfer without damaging the stone. Material selection and anchoring methods are designed to be compatible with the original stone and reversible.
	 HAIR CRACK	Minor crack with width dimension <0,1 mm.		Micro-grouting with mortar. Localized filling of micro-cracks to reduce water and moisture penetration with mortars compatible with the existing material by color and texture.
DETACH AND MATERIAL LOSS	 HONEYCOMBING	Formation of cavities of varying shapes and sizes. The pits are often interconnected and display a non-uniform distribution.	Cleaning of stone surfaces by carefully removing dust, dirt, loose fragments, and other superficial deposits using soft brushes, low-pressure vacuum, or gentle aqueous cleaning methods, avoiding any aggressive action that could worsen the degradation. The intervention may be preceded by localized pre-consolidation of fragile areas with compatible consolidants (e.g., ethyl silicate or lime-based micro/nano consolidants) to stabilize friable surfaces. All operations are carried out with attention to preserving the original texture, color, and material integrity of the stone, and include the careful cleaning of surrounding areas to avoid contamination or accidental detachment of weakened elements.	Selective filling of cavities with mortar, applied using a spatula, brush, or pipette. The mortar is then shaped to blend seamlessly with the surface, ensuring material consistency in texture and colour with the surface.
	 EROSION	Loss of material from the surface caused by different processes.		Application of a compatible consolidant, typically ethyl silicate or another silicate-based product, over the eroded areas, ensuring chemical and physical compatibility with the stone. The product is applied by brush, syringe, pipette, or low-pressure spray until refusal, and any excess is removed from the surface to avoid gloss or residues.
	 DISGREGATION	Decoherence characterized by the detachment of grains or crystals under minimal mechanical stress.		
	 MISSING PART	Fall and loss of parts. This term is used when this form of degradation cannot be described by other entries in the terminology.	Careful removal of stone inserts or other additions from previous restoration campaigns, aimed at restoring the original authenticity and historical integrity of the masonry. All interventions are carried out with minimal impact on the surrounding material, documenting the process and preserving any elements of archaeological or structural significance.	Repositioning of existing stones (or case by case reconstruction of missing parts, only where historical documentation is available) to certify the significance of the lost element. in alla cases interventions are carried out using compatible materials, ensuring they are fully reversible and visually distinguishable while maintaining respect for the authenticity and integrity of the structure.
DEPOSITS	 DEPOSIT	Accumulation of exogenic material of variable thickness, lackind adhesion to the stone surface.	Removal with low-pressure vacuum, or gentle compressed air pre-consolication on more frail areas using a compatible consolidant (e.g., ethyl silicate) applied with brush, syringe, or pipette.	Application of a compatible consolicant, typically ethyl silicate or another silicate-based product, over the eroded areas, ensuring chemical and physical compatibility with the stone. The product is applied by brush, syringe, pipette, or low-pressure spray until refusal, and any excess is removed from the surface to avoid gloss or residues.
	 ENCRUSTATION	Stratified, compact deposit, generally adherent to the substrate, composed of inorganic substances or biologically derived structures.		
BIOLOGICAL	 BIOLOGICAL PATINA	Homogeneous layer, adherent to the surface and of biological nature. Mainly composed of microorganisms to which dust, soil, and other particles may adhere.	Disinfestation and removal of biological growth on stone structures through the application of biocides followed by manual or mechanical removal. This includes treatment of shallow-rooted vegetation on outdoor structures as well as colonies of autotrophic and/or heterotrophic microorganisms on structures located both outdoors and indoors. Excludes costs related to securing surrounding surfaces at risk of detachment.	
	 VEGETATION	Term used to indicate the presence of mosses, lichens, and plants.	Manual weeding and cleaning as part of restoration works, including cutting of woody species, complete removal of embedded roots, sealing of cavities with hydraulic mortar at full depth. The operation shall be carried out using small tools and with the utmost care, including removal of debris and transport to an authorized landfill (excluding landfill disposal tax), in areas with earthen circulation surfaces.	

LEGEND: MOSAIC FLOORING			CONSOLIDATION
DETACH AND MATERIAL LOSS	 MISSING PART	Loss of mosaic pavement fragments, exposing the deeper preparatory layers, with joints left unsaturated.	ntegration of lacunae using materials and mortars compatible in color, texture, and composition with the original tesserae. The work may involve the preparation of test samples to define appropriate mortar composition, the careful surface finishing of the integrated areas, and the cleaning of any residues from surrounding surfaces. Local removal of deteriorated sections may be carried out where consolidation by infiltration is not possible, including careful detachment and protection of adjacent areas. Re-establishment of cohesion of tesserae and/or interstitial mortar is performed in cases of disaggregation through impregnation with ethyl silicate, nanolime, or other suitable consolidants applied by brush or syringe until refusal, with removal of any excess product. Grouting and finishing of joints and gaps between tesserae are completed using lime-based mortars, to improve the stability of the mosaic and slow further deterioration, with subsequent cleaning and sponging of the surface. All interventions are carried out only on areas actually affected by degradation, respecting the original materials and structural integrity of the mosaic.
	 DETACHMENT	Detachment between the support and the superficial layers of the material, both among themselves and with respect to the substrate; generally a precursor to the loss of these layers.	Restoration of the cohesion between the mosaic and the support through impregnation with suitable materials such as mortars or epoxy resins, using brushes, syringes, pipettes, following or during the cleaning phases.
DISCOLORATION AND DEPOSITS	 DEPOSIT	Accumulation of foreign materials of various types, with variable thickness and poor adhesion to the underlying material.	Removal of coherent and incoherent surface deposits, and soluble stains, through careful surface cleaning using manual tools such as brushes, scalpels, sprayers, and sponges.
	 STAINING	Alteration manifested as accidental and localized pigmentation of the surface; presence of materials foreign to the substrate (rust, copper salts, organic substances, paints).	
BIOLOGICAL	 BIOLOGICAL PATINA	Homogeneous layer, adherent to the surface and of biological nature. Mainly composed of microorganisms to which dust, soil, and other particles may adhere.	Disinfestation of autotrophic and/or heterotrophic microorganism colonies through the application of a biocide, followed by mechanical removal. Applicable to structures located both outdoors and indoors, to be carried out only on areas actually affected by the phenomenon. The treatment may be performed by brush, spray, or syringe, with up to two applications as needed.
	 VEGETATION	Occurrence of sparse or strongly rooted vegetation on the surface.	Disinfestation of shrubs through the cutting of aerial parts, immediate infiltration of biocide into the cut areas, and final removal or reduction of the devitalized root system.

Complementing the graphic documentation (see PART 6 ANNEXES CONDITION ASSESSMENT), developed based on a specific legend and a detailed analysis of degradation patterns through orthophotos, surveys, and mapping, the following presents a descriptive summary focused on conservation interventions for the monuments of Bylis and Klos.

1. Theatre of Bylis

Dating back to the 3rd century BC, the theatre is the largest and architecturally most sophisticated monument of the ancient city. It reflects the cultural transitions from Greek dramatics to Roman gladiatorial games and Late Antique modifications.

Condition and Issues

The cavea suffers from erosion of structural fill materials, resulting in partial collapses and scattered seating blocks. Cracks and displacements in retaining walls threaten the overall stability of the monument. Vegetation infiltration aggravates degradation through root growth and biological colonization. Ineffective drainage maintains moisture that accelerates decay. There is significant presence of scattered archeological elements which need to be catalogued and eventually moved to avoid ulterior damage.

Conservation Procedures

- **Structural consolidation:** Micro-grouting with breathable lime-based hydraulic mortars compatible with original materials will stabilize stones and fill voids, preventing moisture entrapment.
- **Architectural reassembly:** Displaced seating blocks will be documented and reinstated where feasible, based on sufficient historical evidence and documentation, while preserving identifiable modern interventions to maintain authenticity.
- **Surface cleaning:** Disinfestation and removal of biological growth through the application of biocides followed by manual or mechanical removal.
- **Drainage installation:** Design of discreet drainage channels to divert water away from foundations and seating structures.
- **Temporary protective reburial:** Partial coverage to shield vulnerable materials from environmental exposure during conservation works.

- **Archaeological soil removal:** Controlled stratified excavation to uncover original architectural elements may be evaluated.

Monitoring
Implement annual structural and moisture inspections, seasonal vegetation clearance, and biannual 3D laser scanning for dynamic management within the GIS system.

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2. Late Antique Fortification Wall (Victorinus Wall)

Constructed in the 6th century AD under Justinian, embodying the defense adaptation of the city post-Illyrian decline. The circuit wall with towers is largely preserved but suffers from widespread material degradation.

Condition and Issues

Signs of mortar loss, cavity formation, block destabilization, root penetration, and surface erosion reducing structural cohesion and authenticity. Looting activities have further depleted masonry components.

Conservation Procedures

- **Vegetation removal:** Manual and biocidal treatments to remove intrusive flora while preserving the archaeological substratum.
- **Mortar repointing:** Application of breathable lime mortars aligned with historic mortars in texture and composition.
- **Structural reinforcements:** Stainless-steel micro-reinforcements within towers, facilitating load support and reversibility.
- **Protective capping and consolidants:** Installation of cappings to protect wall crests and nanocalcareous consolidants to hinder stone erosion.

Maintenance
Scheduled seasonal clearance of biological growth, drone inspections for detailed monitoring, and moisture sensors integrated into GIS workflows.

3. Stoa A and Basilica A

A monumental L-shaped structure forming the southwestern edge of the agora, combining Doric and Ionic architectural elements. Basilica A, integrated within Stoa A, assumes the Late Antique evolution of the space toward ecclesiastical functions.

Condition and Issues

Erosion of foundational stylobates, wall instability due to soil pressure, obscuration by soil and intrusive Late Antique constructions, and accumulation hindering comprehensive structural reading.

Conservation Procedures

- **Archaeological soil removal:** Controlled stratified excavation to uncover original architectural elements may be evaluated.
- **Masonry stabilization:** Consolidation using lime hydraulic mortars and reversible stainless steel reinforcements.
- **Drainage improvement:** Engineering subsurface systems to mitigate hydrostatic pressure and soil movement.
- **Protective coverings:** Shelter installation during conservation to reduce weathering impacts.

Monitoring

Routine biannual condition surveys, vegetation control, and triennial detailed 3D structure recording.

4. Monumental Cistern

An advanced hydraulic feature from the Hellenistic period that supplied water to civic amenities.

Condition and Issues

Arches and walls are partially collapsed, plaster linings are eroded or missing, excavation incomplete exposing materials to risk.

Conservation Procedures

- **Archaeological soil removal:** Controlled stratified excavation to uncover original architectural elements may be evaluated.
- **Plaster rehabilitation:** Relining with waterproof hydraulic lime mortars maintaining vapor permeability.
- **Structural stabilization:** Micro-grouting and steel support installation.
- **Drainage improvement:** Engineering subsurface systems to mitigate hydrostatic pressure and soil movement.
- **Masonry stabilization:** Consolidation using lime hydraulic mortars and reversible stainless steel reinforcements.
- **Architectural reassembly:** Displaced stone blocks will be documented and reinstated where feasible, based on sufficient historical evidence and documentation, while preserving identifiable modern interventions to maintain authenticity.

Maintenance

Annual infiltration evaluation, plaster condition survey, and biannual laser scanning.

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5. Basilica B, Baptistery and Episcopal Complex

The largest Late Antique religious complex holds exceptional mosaics and architectural elements.

Condition and Issues

Floor subsidence, unstable mortar walls, mosaic tesserae detachment, and fragmentation limiting visitor access.

Conservation Procedures

- **Structural reinforcement:** Lime mortar stabilization and reversible supports for stability.
- **Mosaic conservation:** Dry cleaning, tesserae consolidation, and lacunae filling with compatible mortars.
- **Protective sheltering:** Installation of breathable protective covers onto the mosaics.
- **Architectural reassembly:** Displaced stone blocks and erratic decorated elements will be documented and reinstated where feasible, based on sufficient historical evidence and documentation, while preserving identifiable modern interventions to maintain authenticity.
- **Protective capping and consolidants:** Installation of cappings to protect wall crests and nanocalcareous consolidants to hinder stone erosion.

Maintenance

Seasonal cleaning, environmental monitoring, and periodic protective coating renewal.

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6. Basilicas C, D, E and Gymnasium

Similar problems with fractures, vegetation-induced damage, erosion, and degraded cementitious past repairs.
Consolidation, erratic element cataloging, removal of incompatible repair materials, and vegetation and biocide treatments form the recommended approach.

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7. Houses A, B, and Stoa B

Exhibited structural failures, missing blocks, biological colonization, and wall deterioration.
Focus on compatible mortar repointing, invasive vegetation exclusion, and safeguarding archaeological integrity is advised.

8. Klos Archaeological Complex

An important Illyrian urban site with fortifications, theatre, stoa, stadium, and dwellings showing considerable deterioration due to vegetation, erosion, and partial burial.
Structural consolidations, selective theatre cleaning, inscription preservation, fragile dwelling stabilization, and visitor infrastructure improvements are priorities.
Ancient walls of Klos largely illegible due to insufficient maintenance and site management; significant illegibility of the archaeological remains due to the complete lack of continuous vegetation maintenance on the site.

Maintenance and Monitoring

A long-term strategy involving regular inspections, vegetation management, environmental data logging, 3D digitization, and visitor management frameworks is vital for sustainable preservation.

7| Detailed Structural Assessments

1. Introduction

The Archaeological Park of Bylis, located in southwestern Albania, represents one of the most significant urban centres of ancient Illyria and the Roman provincial period. Among its key architectural remains are the Wall of Victorinus. The structure, dated to around 550 AD, represents a characteristic example of late antique construction practices marked by the extensive reuse of spolia. Building materials were repurposed from the remains of earlier structures, including the theatre, Stoa A, the diateichisma, and several private buildings. The masonry was bound with lime mortar produced from the calcination of ancient architectural fragments, mixed with coarse river sand. Notably, only the lower portion of the wall—up to approximately two meters in height—was constructed using these reused elements, displaying a heterogeneous composition of architectural pieces, small stones, tile fragments, and pithoi, all set within a robust lime mortar matrix. In general, the mortar used in the construction is white, produced from the burning of architectural elements, sculptural fragments, and parts of the theater stairs. The aggregate consists of coarse sand sourced from nearby streams. Notably, in the northern section of the wall, tile dust was added to the mixture, imparting a pinkish hue and enhancing the mortar's resistance to weathering. The surrounding wall, measuring approximately 2.20 meters in width, is composed of two distinct faces—an inner and an outer—filled with small stones set in abundant mortar. On the exterior façade, however, the mortar joints have largely eroded over time, leaving the stone courses prominently visible. In contrast, within the towers, which have been better protected from atmospheric exposure, the original surface finish remains intact, with the mortar still extending over and partially covering the faces of the stones.
Several columns are fixed to their bases through the use of studs; however, a number of them remain unsecured, increasing the risk of instability and potential overturning.

2. Existing condition

2.1 Victorinus wall

The structural degradation of the Victorinus Wall is evident across both the outer and inner faces, exhibiting a relatively uniform pattern of decay throughout the preserved sections. The mortar joints have undergone significant erosion on both sides, resulting in the loosening and partial detachment of smaller stones. This has diminished the overall cohesion of the masonry, particularly in the lower courses where gravitational stress and

surface runoff exert greater pressure. Although no large-scale collapses are currently observed, localized instability is present in several areas, characterized by minor bulging, stone displacement, and the loss of original alignment. The deterioration pattern indicates a generalized weakening of the wall's structural fabric rather than isolated failures, suggesting that both faces have been equally affected by long-term exposure to environmental and mechanical factors.

In certain sections, the degradation reaches a level that poses significant structural risk. Here, mortar erosion, stone displacement, and internal emplekton disintegration combine to create highly unstable conditions. These areas show pronounced bulging, voids, and weakened bonding between stones, making them particularly susceptible to local collapse or failure under minimal external stress. Immediate intervention is recommended in these zones to prevent further damage and ensure the stability of both the wall and associated columns.

Figure 1 Structural condition of the Victorinus Wall located in the Section S-T from the external side, highlighting area of material loss, deterioration and large displacements

Figure 2 View of the Tower T entrance, featuring a semicircular brick arch above a stone lintel

The masonry wall shows signs of weathering and material loss, indicating the need for a conservation intervations.

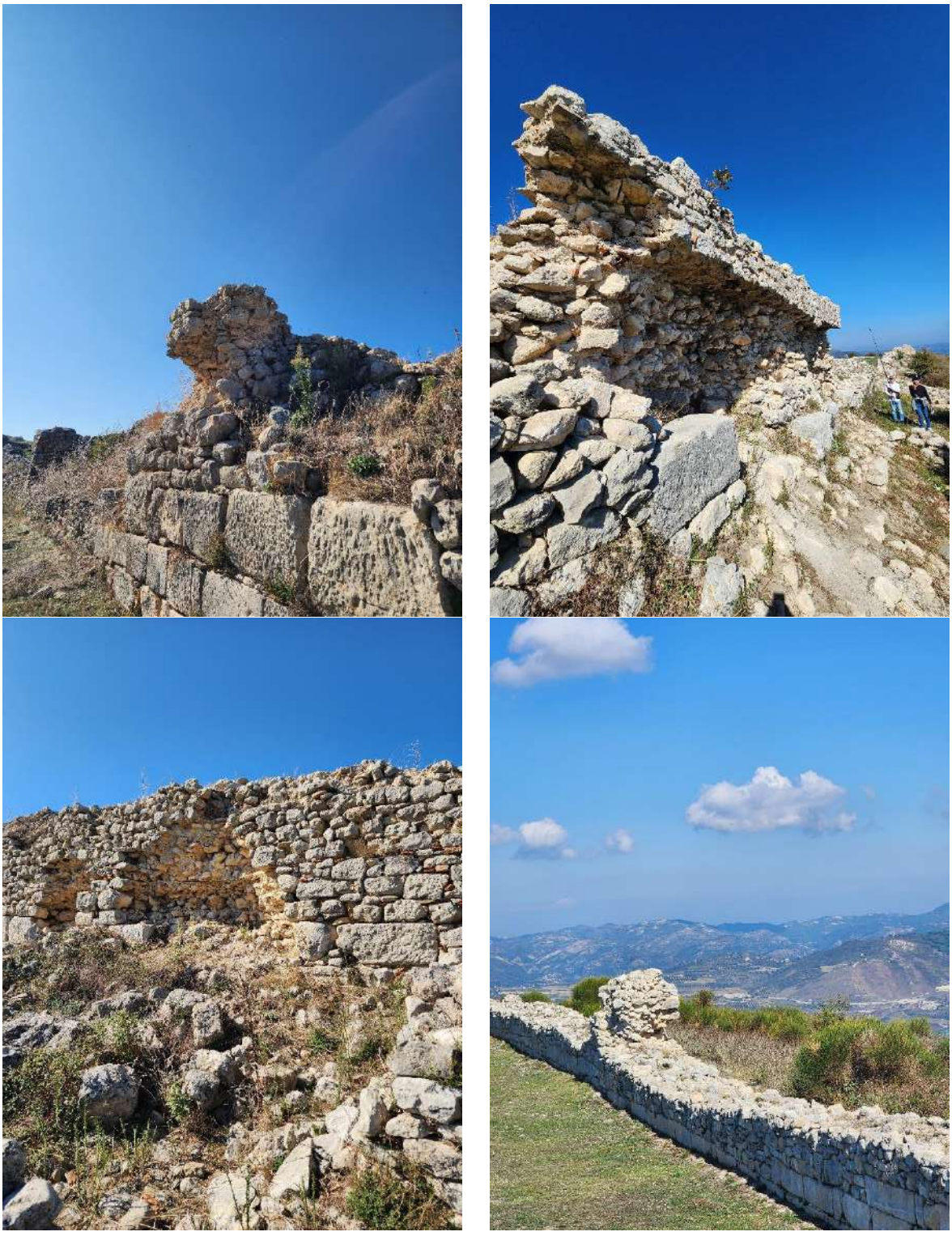


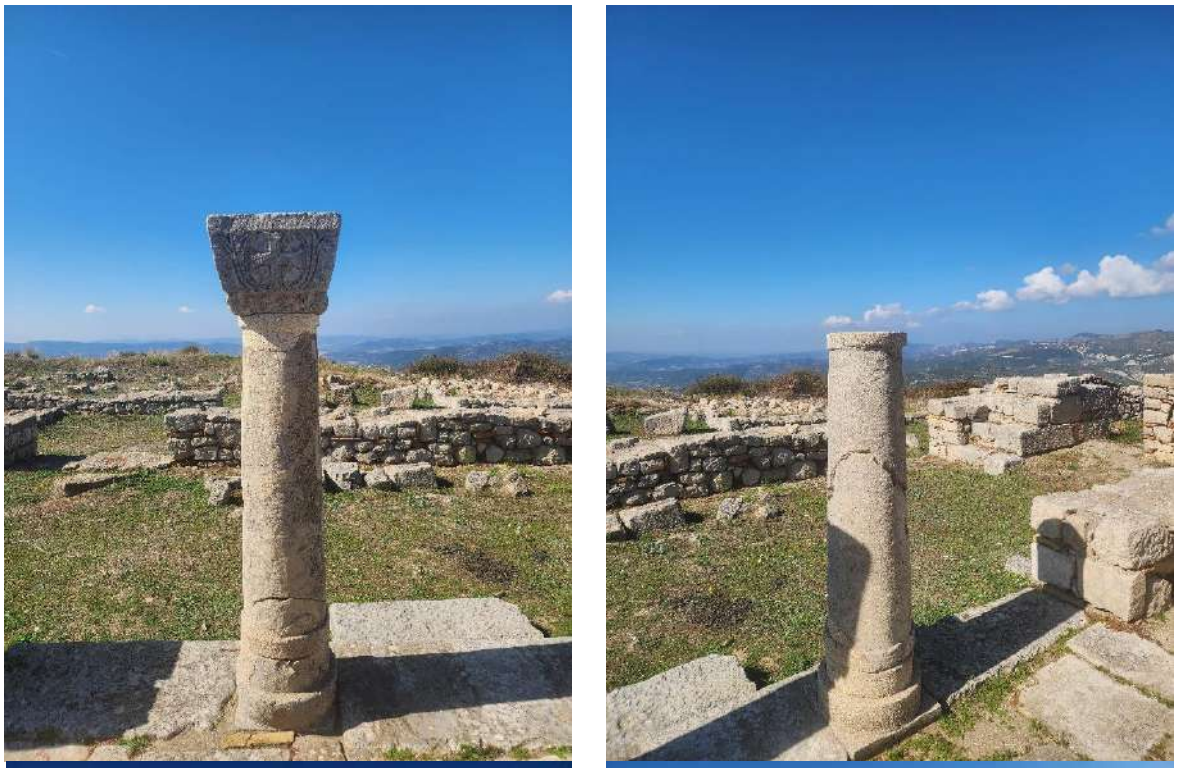
Figure 3 Structural condition of the Victorious Wall, highlighting the high risk of collapse

The use of low-strength mortar has weakened the overall integrity of the wall, compromising the bond between the cobbles. While vegetation growth accelerates material decay.

Figure 4 Exterior frontal view of the Victorious Wall located in the Section T-U, highlighting diagonal cracking, indicating the risk of imminent collapse

Figure 5 Critical condition of the Victorious Wall in front of the Big Stoa from the internal side

Figure 6 Critical condition of the Victorinus Wall in the entrance of the Gate no.6



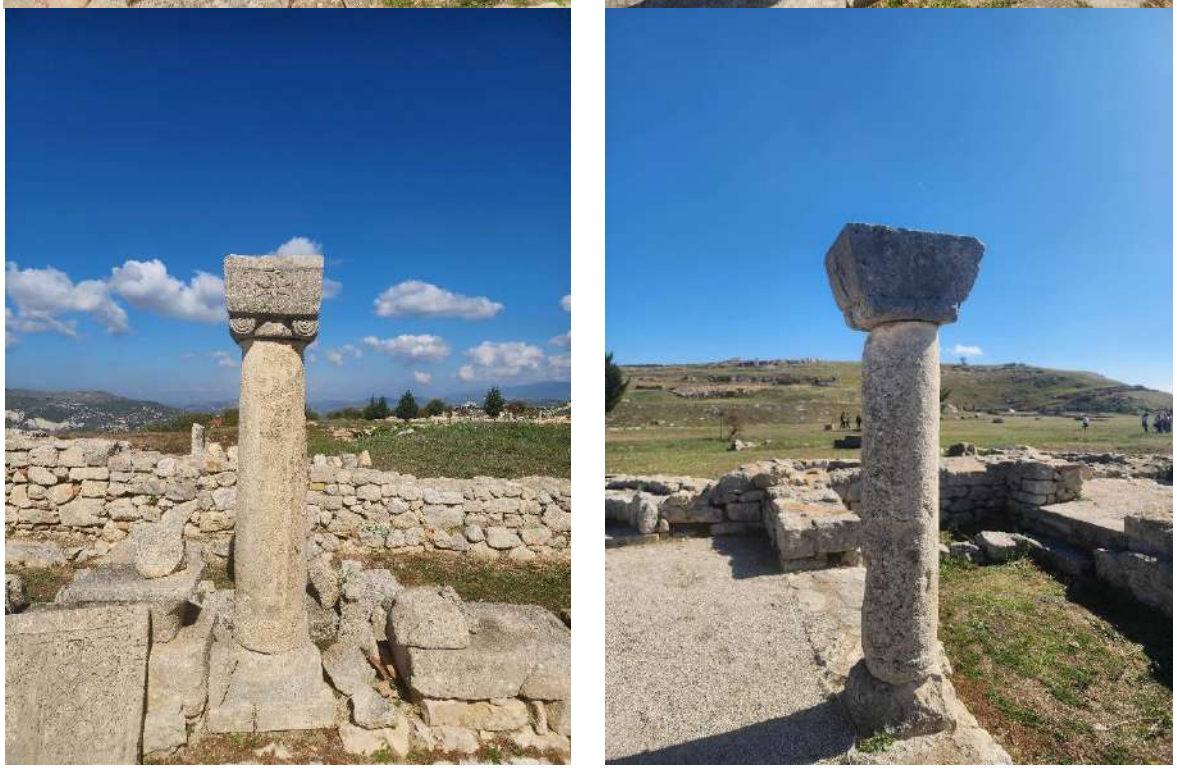


Figure 7 Critical condition of the colonnades at Basilica C presents a risk of overturning and detachment from their capitals

Figure 8 Critical condition of colonnades at Basilica B present a risk of overturning and detachment from their capitals

Figure 9 Arsenal after restauration. A risk of colonnades overturning has been observed

Figure 10 Critical cracks of the lintel in the entrance of the Tower X

Figure 11 Structural intervention to be carried out on the arch bridge located at the Cystern area, involving crack injection procedure

2.1.1 Material decay

The lime mortar, originally produced from the burning of architectural fragments and mixed with coarse sand, shows extensive decay across the entire wall thickness. The degradation results from prolonged exposure to moisture, temperature fluctuations, and biological activity, leading to a loss of bonding capacity and surface cohesion. The mortar has become friable, with evident powdering and detachment from the stone surfaces. This condition is consistent on both the inner and outer faces, demonstrating that moisture infiltration and weathering processes have acted symmetrically over time. In some areas, remnants of the original pinkish mortar, enriched with tile dust, are still visible, indicating sections that were better protected from direct runoff. However, the general condition reflects a widespread reduction in mechanical strength and adherence between the stones and binder.

2.1.2 Loos of surface integrity

The wall's surface integrity has been substantially compromised on both faces. The erosion of the mortar has exposed the edges of the stones, creating deep joints and voids that facilitate further infiltration of water and vegetation. The original smooth finish—where the mortar extended slightly over the stone faces—is largely lost, surviving only in limited areas. The overall visual and structural coherence of the masonry has thus been reduced, with both faces displaying similar textural roughness and irregularity. This consistent

pattern of decay indicates that prolonged exposure to environmental factors, such as rain, sunlight, and temperature fluctuations, is the primary driver of deterioration.

2.1.3 Biological colonization

Vegetation growth is widespread and affects both faces of the wall almost equally. The colonization by grasses, shrubs, and mosses is concentrated in the joints and cavities formed by mortar loss, as well as in the upper sections where organic material accumulates. Root penetration has caused local displacement of stones and contributed to the fragmentation of already weakened mortar. The dense vegetation cover also retains moisture within the masonry, prolonging wet conditions and accelerating salt crystallization and microbial activity. The symmetry of biological colonization further confirms that both faces are subjected to comparable environmental and microclimatic conditions, amplifying the wall's vulnerability to continued mechanical and chemical deterioration

2.1.4 Disintegration of fill material

The internal emplekton—the core fill of small stones and abundant lime mortar—shows partial disintegration and void formation throughout the structure. The internal cohesion has been reduced due to the washing out of fine aggregates and the crumbling of mortar under prolonged moisture exposure. This degradation is continuous across the wall section, as infiltration from both faces has progressively weakened the inner fill. The loss of mass within the emplekton decreases the wall's ability to distribute vertical and lateral loads, increasing the risk of local collapses or settlement. Although the wall retains its general form, the internal decay represents a latent structural hazard that requires stabilization through compatible grouting and reinforcement techniques.

2.2 Free-standing stone columns

The column, located within the architectural complex of Bylis, is composed of a monolithic limestone shaft surmounted by a decorated Ionic or possibly Corinthian capital, and positioned on a stylobate formed of well-cut stone blocks. While the column generally retains its vertical alignment, it displays visible surface fissures and minor displacement at the base, likely resulting from cumulative ground settlement and seismic activity over time. Some columns are secured to their bases with metal studs, whereas others remain unanchored, making them more vulnerable to instability and potential overturning.

Immediate intervention is recommended for free-standing columns to prevent further deterioration and ensure structural stability.

2.2.1 Surface weathering

The limestone surface exhibits advanced granular disintegration, primarily resulting from long-term exposure to environmental agents and repeated thermal fluctuations. These processes have led to the gradual loss of surface cohesion, micro-fragmentation, and a roughened texture, particularly evident in the upper and more exposed sections of the shaft. The weathering pattern indicates progressive material fatigue, which may accelerate under continued climatic stress and inadequate drainage conditions.

2.2.2 Fracturing

The column exhibits both vertical and horizontal cracks along the shaft, with localized widening and partial detachment at the base. The vertical fractures are likely associated with long-term mechanical stress and seismic activity, while the horizontal ones suggest stress redistribution within the shaft due to differential thermal expansion and aging of the stone material. The combined cracking system has significantly weakened the column's monolithic behavior, reducing its capacity to resist lateral and axial loads.

2.2.3 Structural vulnerability

The cumulative effects of weathering, fracturing, and biological colonization have compromised the column's structural integrity. The observed base detachment and progressive crack propagation have reduced its overall stiffness and load-bearing capacity, increasing susceptibility to instability. The column is at risk of tilting or partial collapse not only under seismic or wind-induced actions but also when subjected to minor horizontal forces, such as accidental contact or human support. Immediate stabilization and conservation measures are therefore essential to prevent further deterioration and to ensure the long-term preservation and safety of the structure.

3. Structural conservation plan

The proposed interventions adhere to internationally recognized conservation standards, including the Venice Charter (1964) and the ICOMOS Guidelines for the Conservation of Monuments and Sites, emphasizing principles of minimal intervention, material compatibility, and reversibility wherever technically feasible. The overarching objective is to stabilize and safeguard the structural integrity of the archaeological elements while preserving their historical authenticity, material fabric, and architectural character. Conservation measures prioritize the use of materials and techniques that are sympathetic

to the original construction, ensuring that interventions do not alter the visual, tactile, or chemical properties of the historic masonry.

All interventions are to be preceded by comprehensive documentation and condition assessment, including high-resolution photographic records, 3D laser scanning, and non-destructive testing, to allow for continuous monitoring and evaluation of the structure's response over time.

3.1 Victorinus wall conservation measures

3.1.1 Documentation and cleaning

1. Recording of Existing Conditions: High-resolution photogrammetry combined with 3D laser scanning will be employed to capture precise geometric data and surface morphology. This documentation will serve as a baseline for planning interventions, monitoring structural behavior, and guiding future restoration.
2. Vegetation and Deposits Removal: Biological growth, moss, and lichens will be carefully removed using gentle mechanical techniques to prevent further surface erosion. Any loose or friable deposits will be collected for laboratory analysis to inform material compatibility in consolidation.
3. Loose Stone Management: Detached or unstable masonry units will be temporarily removed, labeled, and stored under controlled conditions for subsequent reintegration, ensuring minimal disturbance to the original fabric.

3.1.2 Structural stabilization

1. Masonry Consolidation: Detached masonry sections will be re-bonded using lime-based mortar (NHL 3.5) with aggregate closely matching the original in color, texture, and particle size. This approach ensures mechanical compatibility while maintaining permeability.
2. Repointing: Eroded joints will be repointed using a lime–sand–crushed brick mortar where historical evidence indicates previous use of tile dust or similar additives, maintaining the authenticity of the material composition.
3. Injection Grouting: Voided areas within the core will be carefully injected with compatible lime grout to restore internal cohesion and redistribute stress without altering the wall's external appearance.

4. Selective Reconstruction: Any fallen or severely unstable sections will be reconstructed strictly based on archaeological evidence, including alignment, bonding pattern, and material composition, avoiding conjectural interventions.

3.1.3 Drainage and environmental protection

1. Ground Drainage Improvement: Measures will be implemented to channel surface water away from the wall base, reducing capillary rise and mitigating moisture-induced deterioration.
2. Protective Capping: Discreet capping with breathable lime mortar will be installed on exposed wall tops to limit rainwater infiltration while allowing vapor diffusion.
3. Vegetation Management: Root systems and invasive vegetation near the wall perimeter will be carefully removed to prevent mechanical damage to masonry joints and foundations.

3.2 Stone columns conservation measures

3.2.1 Structural support and stabilization

1. Condition Assessment: Column verticality and foundation integrity will be evaluated using geotechnical analysis, ground-penetrating radar (GPR), and other non-destructive techniques to detect hidden fractures, voids, or foundation irregularities.
2. In cases of detected instability, stabilization may be achieved through the installation of concealed stainless-steel support pins or collars at the base, designed to minimize visual impact and ensure mechanical compatibility with the stone. Alternatively, wooden supports with a three-legged tripod configuration can be employed to provide temporary or semi-permanent stabilization where necessary.
3. Crack Consolidation: Surface and sub-surface cracks will be treated with lime-based injection mortars or ethyl silicate consolidants where appropriate, carefully matching the stone's mechanical and chemical properties. These interventions aim to restore structural continuity without compromising permeability.
4. Protection Against Minor Horizontal Forces: Measures will account for both dynamic loads (seismic and wind) and minor horizontal forces, such as accidental human contact, to ensure the column's stability under foreseeable conditions.

3.2.2 Surface conservation

1. Cleaning: Biological growth, surface deposits, and particulate matter will be removed using deionized water and soft brushes, avoiding the use of abrasive methods that may exacerbate granular disintegration.
2. Consolidation: A breathable consolidant will be applied to restore surface cohesion, enhance durability, and reduce susceptibility to further granular decay while maintaining vapor permeability.
3. Monitoring: Periodic inspections will track the evolution of microcracks, biological colonization, and material degradation, enabling timely interventions if new vulnerabilities arise.

3.3 Conservation Measures for Other Structural Elements

3.3.1 Lintels and Horizontal Load-Bearing Elements

Structural Assessment and Stabilization:

- Conduct detailed visual inspections and non-destructive testing (e.g., ultrasonic pulse velocity, infrared thermography) to detect internal cracks, voids, or deflection.
- Provide temporary shoring or concealed stainless-steel reinforcement where significant instability is identified.
- Consolidate microcracks and voids using lime-based injection mortar or ethyl silicate to restore structural continuity.

Surface Conservation:

- Remove biological growth, dust, and deposits using soft brushes and deionized water to prevent further surface deterioration.
- Apply breathable stone consolidants to restore cohesion while maintaining vapor permeability.
- Install discreet protective capping where needed to reduce water infiltration without affecting visual integrity.

3.3.2 Terraces, Retaining Walls, and Staircases

Structural Assessment and Stabilization:

- Assess overall stability, foundation conditions, wall inclination, and masonry cohesion.
- Inject lime-based grout into voids to restore internal cohesion in walls and steps.

- Reconstruct collapsed or unstable sections strictly following archaeological evidence, including stone alignment and bonding patterns.
- Introduce discreet anchors or ties where necessary to stabilize walls exposed to lateral soil pressure.

Surface Conservation:

- Remove vegetation and roots carefully to prevent further structural damage.
- Repoint eroded joints using compatible lime–sand mortar.
- Improve surface and subsurface drainage to prevent water infiltration and moisture-related decay.

3.3.3 Minor Masonry Features (Parapets, Low Walls, Architectural Details)

Structural Assessment and Stabilization:

- Conduct detailed condition recording, including geometry, cracks, and displacements.
- Consolidate loose or detached masonry units using compatible lime-based mortars.
- Reintegrate displaced elements only when archaeological evidence supports reconstruction.

Surface Conservation:

- Remove environmental and biological deposits with soft mechanical methods.
- Apply breathable consolidants to areas affected by granular disintegration or surface loss.
- Provide lightweight and reversible capping to protect surfaces while maintaining original appearance.

3.4 Risk assessment

The current condition of the archaeological structures within the Bylis site, including the surviving walls, free-standing columns, and other architectural elements, demonstrates a significant compromise in structural integrity resulting from the cumulative interaction of environmental, mechanical, and biological factors. Prolonged exposure to climatic variations has led to surface weathering, characterized by granular disintegration of limestone and other building materials, which reduces cohesion, diminishes mechanical strength, and increases susceptibility to progressive material loss.

Fracturing is evident throughout the structures, manifesting as both vertical and horizontal cracks in walls, column shafts, and structural joints. These discontinuities generate

localized stress concentrations and reduce the overall capacity of the constructions to resist axial, lateral, and out-of-plane loads, particularly under dynamic actions such as seismic shaking or wind-induced vibrations. The complex geometry of Bylis, including terraced walls, retaining structures, and freestanding architectural elements, amplifies the impact of these cracks, as stress redistribution along interconnected masonry can lead to cascading structural failures.

Biological colonization is widespread across shaded and moisture-retaining surfaces, with lichens, mosses, and other organisms contributing to chemical alteration of the stone, retention of moisture, and acceleration of micro-fracturing. In combination with surface erosion and fracturing, biological growth accelerates the degradation of both exterior and interior surfaces, undermining the integrity of structural units across the site.

Foundation conditions and partial detachment at the base of certain columns, walls, and other freestanding structures further exacerbate structural vulnerability, increasing the risk of localized tilting, displacement, or collapse. Even minor horizontal forces, such as accidental human contact, temporary vibrations from site activity, or maintenance interventions, could trigger further movement or propagation of existing cracks, particularly in elements already exhibiting foundational weakening.

Without prompt and targeted intervention, these vulnerabilities present a range of potential risks across the Bylis site, including:

1. Partial or Total Structural Collapse: Architectural elements, including freestanding columns, terraced walls, and retaining structures, are at risk of localized or systemic failure under seismic events or high wind loads due to reduced load-bearing capacity, propagation of fractures, and loss of internal cohesion.
2. Progressive Material Loss: Continued granular disintegration, compounded by environmental exposure and biological activity, may result in detachment of surface fragments, loss of masonry units, and degradation of decorative or functional architectural details, thereby threatening the historical authenticity and integrity of the entire complex.
3. Instability Under Minor Horizontal Forces: Even relatively low-intensity horizontal forces, including human contact or temporary vibrations, could exacerbate existing fractures, particularly in structurally compromised elements, resulting in additional displacement or partial collapse.

The cumulative effect of environmental, mechanical, and biological degradation across the Bylis complex underscores the urgency of implementing comprehensive conservation interventions. These should include stabilization of masonry, consolidation of cracks,

reinforcement of freestanding and load-bearing elements, and protection against moisture infiltration. Proactive conservation measures are essential not only to mitigate immediate structural risks but also to preserve the long-term authenticity, material fabric, and architectural significance of the site.

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ARCHAEOLOGICAL CONSERVATION PLAN
ARCHAEOLOGICAL PARK OF BYLIS
ancient cities of Bylis and Klos

PART 7

Tourism Market and Stakeholder Engagement Strategy

ILLYRIAN CONSULTING ENGINEERS

AGATE

B5 s.r.l ENGINEERING

MEDITERRANEA ENGINEERING

This document is to be considered an integral part of the Conservation Plan and contains:

- **Tourism Market Analysis**
- **Stakeholder engagement**

This document contains technical contributions prepared by individual subject-matter experts engaged in the project. Each section authored by a specific expert reflects the professional judgment, interpretations, and opinions of that contributor alone.
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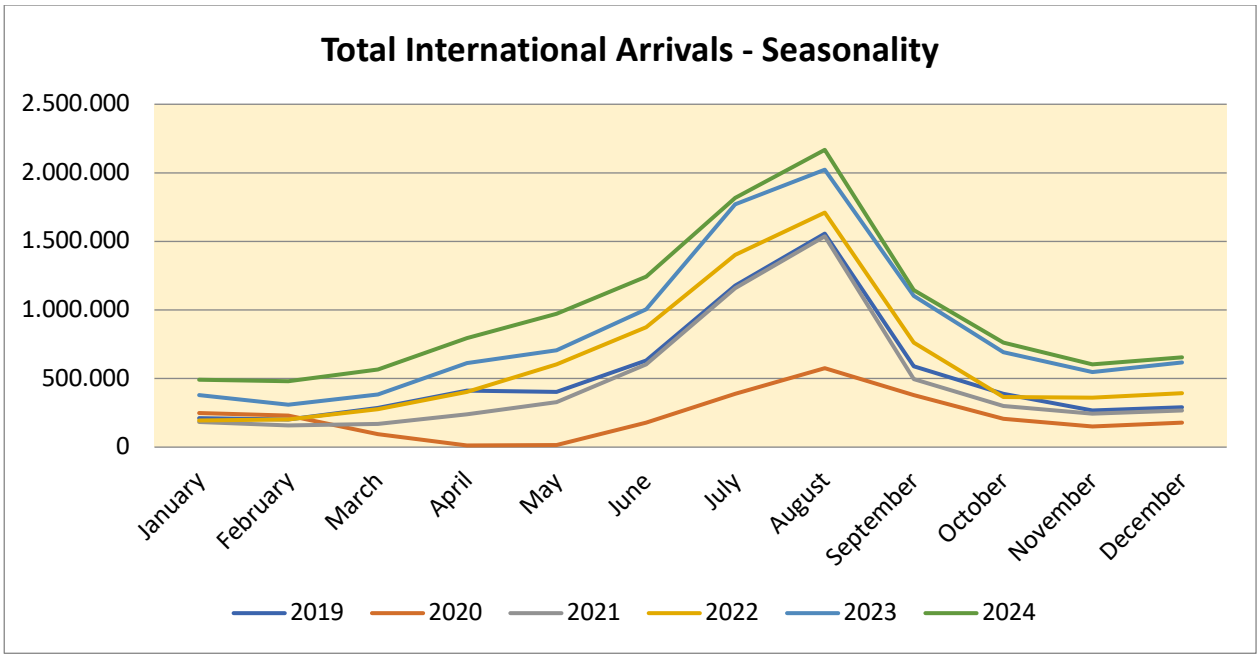
1 | Tourism Market Analysis

1.1 Tourism demand in Albania context

Albania experienced a substantial growth in the influx of international visitors, especially from 2018 with around 5.9 million international tourists and 6,4 millions in 2019. But 2020 witnessed a substantial decline in arrivals due to the impacts of the COVID-19 pandemic. 2021 showed a recovery in international arrivals with a total of 5.7 million, by continuing with a growth of around 13% in 2022 compared to 2021 with a total of 7,5 million, 10 million in 2023 and 11,7 million in 2024. The statistics show a substantial presence of the Albanian Diaspora visiting Albania every summer, too. It not only further contributes to the country's tourism growth but is a considerable segment which shows interest and pride for country's cultural heritage.

Albania heavily depends on summer tourism for many years, particularly focusing on the peak months of July and August. The graph below shows the trend in international arrivals – seasonality.

Graph 1: Total international arrivals



Source: INSTAT

From 2023 and 2024, the peak months extended from June to September, recording 58% of total international arrivals in 2023 and 54% of total international arrivals in 2024. While the shoulder

months extended from March to May and from October to December in 2024, contributing to around 37% of total international arrivals. This demonstrates that the interest of international visitors has increased in products beyond sun and beach, including cultural and nature-related activities.

1.2 Internal and tourism situation analysis at Bylis Archaeological Park

1.2.1 The location and accessibility of the national infrastructure with influence to Bylis

Bylis Archaeological Park is located close to Hekal village. Bylis has a dominant position over the hills of Mallakastra and Vjosa valley. While the antic city of Nikaia is situated close to Klos village. Hekal and Klos villages are situated close to each other, some 3.3 km away. They are part of the the Municipality of Mallakastër.
Regarding international arrivals by mode of transport[1], the predominant means of arriving in Albania are by land, followed by air and sea.

Accessibility by road
Bylis Archaeological Park is situated at a dominant hill looking over Vjosa River and the National Road E853. Bylis can be accessed from this route through a junction; from the South from Kakavija Border Entry Point with Greece and from the West it joints the national road A4 with direction towards Vlora and on the other side towards North with Fier – Durres – Tirane.
Also Bylis Archaeological Park has access from the national road with Vjosa River National Park through a local road passing the bridge over Vjosa River linking it with Shushica River valley. This valley ends at the Ionian coastline of Himara municipality, an important area of sun and beach tourism.

Road transport
The transports services, to and from the destinations and within the main cities are managed by licensed private transport companies. The public transport linking the centre of the municipalities with the villages has a very low frequency of the service or it doesn't exist at all. There is no public transport linking Bylis Archaeological Park with Fier, Vlora or Gjirokastra towns.
Tourist transportation is organized by licensed local ground operators as well as by tourist transport companies that provide services to DMC/inbound tour operators and other transport needs.

[1] *Source: Ministry of Tourism and Environment (https://turizmi.gov.al/statistikat-e-turizmit/)*

The taxi service is offered in main urban centres and cities through licensed private taxi service, organised under individual or company license. They are usually located in fix places. Internationally recognized taxi services are not yet available in Albania.

Accessibility by air

Tirana International Airport (TIA) is situated 20 km north-west of the centre of Tirana, and 155 km north from Bylis Archaeological Park. International arrivals in TIA[2] have grown substantially especially after the Pandemic. From a total of 3.3 million passengers in 2019, it reached a total of 5.2 million passengers in 2022, and over 7.2 million passengers in 2023, and a record of 10.8 million passengers in 2024. Not only the number of passengers has grown, but also there are an increase air carriers and destinations they serve through TIA. The leading low-cost carriers Wizz Air and Ryanair, followed by Air Albania, Lufthansa, Austrian Airlines, British Airways, as well as by a number of other carrier, have connected Tirana Airport with a considerate number of western and eastern European international airports, including also destinations such as Abu Dhabi, Dubai, and others. The introduction of low-cost flights by Wizz Air and Ryanir has increased the opportunity for package tours to Albania, including the heritage cultural tours, too.

Vlora International Airport is almost finished and soon it will be ready for operation of international flights and is planned to be able to handle initially up to 2 million passengers a year. It is expected to bring considerable benefits to the overall economy in the country, and especially to the tourism and hospitality industry in South Albania. Vlora International Airport is situated 48 km west to Bylis Archaeological Park.

Sea access and maritime passenger transport

There are four seaports in Albania: Durres, Vlora, Saranda, and Shengjin in north. The port of Durres is the largest in Albania. The Port of Vlora is situated 60 km west to Bylis Archaeological Park.

The passenger transport and vehicles from the above ports is as following:

- from port of Durres towards Italian ports of Bari, Ancona and Trieste
- from port of Vlorë towards Italian port of Brindisi
- from port of Sarandë towards Greek port of Corfu

Another way of maritime transport is the one through tourist cruises visiting the Albanian coastal towns. They use to stop at the port of Sarandë with the aim of visiting Butrinti Archaeological Park and Gjirokastra town.

Also, part of maritime transport is the cruising of the pleasure yachts and vessels alongside the coast and mooring in Orikum marina, in Vlora bay. Another marina resort is planned to be built in Vlora town, too.

[2] *https://www.tirana-airport.com/*

1.2.2 Present situation in Bylis Archaeological Park

The present situation of product and services offered at Bylis Archaeological Park can be summarized as following:

- There is a recently build two line road from the national road to Hekal village. This improved access to the archaeological site will influence to increase the visiting to the Park.
- The traffic signs in the national road (Levan-Tepelene direction) showing Bylis Archaeological Park are missing, except the signage at the road junction when approaching from national road towards the Park which is very visible. Another signage showing Bylis is at the entrance of Hekal village, but its colour used is the wrong one. Instead of blue this signage should be brown, the colour which indicates the heritage site.
- There is a parking space within Bylis Archaeological Park which is very limited in space and not suitable for cars and buses.
- The interpretation of the archaeological site is done through printed text and pictures in fixed tables for each of the ruins and archaeological findings of the site. They offer information for almost all of the ruins. The information includes a map that indicates the location of the ruin, as well as a layout of the ruin. The tables' displays have an outdated look. Innovative interpretation techniques such as Augmented Reality, and 3D are missing.
- The interactive display techniques, including multi-lingual self-guide systems for independent visitors, as well as Virtual Reality are missing.
- Bylis archaeological site is situated at a rural ambience with a very attractive surrounding natural landscape dominated by olive groves it at a hilly area close to Hekal and Klos villages with an outstanding view over Vjosa River and its valley.
- Online presence of Bylis Archaeological Park:
    - A newly website (https://bylisklos.al/en/) for the Archaeological Park of Bylis and Klos was launched recently in July 2025 with the support of AICS and developed as part of the overall EU program for Economic Development – Tourism and Local Economic Development with a Focus on Cultural Heritage.
    - This website for Bylis Archaeological Park will be subject of a further analysis in this report as this project represent a transitory phase towards the establishing Bylis Archaeological Park with its administration. The other website (https://apolloniaarchaeologicalpark.al/) that offers information on Bylis is managed by the administration of Apollonia Archaeological Park.
    - The website is in two languages, English and Albanian. The website gives explanation for the monuments of sites, Bylis and Klos, as well as information on park visiting.

  - Also, an Instagram page (parkuarkeologjikbylisklos), and a Facebook page (https://www.facebook.com/ByllisArchaeology) are made active for the Archaeological Park of Bylis and Klos within the same project. These pages are only in Albanian language.

- There are a number of mosaics but they remain covered and not displayed to the visitors.
- There is a printed leaflet featuring Bylis Archaeological Park, including the English, Italian and Albanian languages, but its design is of old-fashion. A map of the park associates the content of the leaflet, but it is hard to read on it. The leaflet is distributed free of charge to the visitors when they buy the ticket. No other promotional printed materials are available for sale.
- There is a simple tickets kiosk there. The price list and working hours are displaced on a table at the entrance of the site, both in Albanian and English.
- There is not a souvenir shop and there are no available printed books for sale about Bylis.
- Toilets: The visitors can use the toilets at the restaurant located within the territory of the Park, but they are insufficient and not suitable for disabled persons.
- Refreshes: The restaurant located within the territory of the Park offers service for refreshes and catering.
- Archaeological Park of Bylis offers guided tour on request for independent visitors, a service offered by the head of the park.
- The litter bins not always are situated close to the visitor movement paths. There are two kind of bins, one metallic of ugly design and colour and the other made in artisanal way by stone, but not functional.
- There are no directional signages of paths to guide visitors on their movement in the park. They can move freely everywhere, except to some signage that warn the visitors not to climb on the walls. There are no tables that warn the visitor not to walk over the covered mosaics, too.
- There are not built paths of access for people with disabilities.

1.2.3 Tourism demand in Bylis Archaeological Park

Some 2,400 visitors have visited Bylis archaeological park in 2021; 82.5% were domestic visitors and 17.5% were foreign tourists. The total numbers of visitors have increased with 54% in 2022 compared to 2021 with a total of 3701 visitors. 1300 of them were foreign visitors which almost tripled in 2022 compared to 2021. The increase has continued with 59% in 2023 compared to 2022 and reaching 7279 visitors in 2024, or 23,4% more than in 2023; 41% of them were foreigners. During the first eight months of 2025 the total recorded visitors are 6802, 2275 of them were foreigners and 4264 were domestic.
It should be mentioned that the entrance to the archaeological park is free of charge only for domestic visitors, in the last Sunday of each month and on the celebration of the following dates:

- April 18 - International day of cultural heritage and monuments
- May 18 - International day of museums
- May 21 - International day of cultural diversity for dialog and development
- September 29 - National day of cultural heritage / European days of cultural heritage
- November 28/29 – Independency and Liberation days

The ruins of the antic city of Nikaia in Klos are not visited by the visitors. The site is not managed: no interpretation, no signage, no services are available there.
By comparing the number of visits in three archaeological parks from the table below, it is clear that the visits to the Bylis Archaeological Park falls short of expectations, considering its historical and archaeological significance. It needs considering a number of measures to increase its “market readiness” and attract the interest of visitors.

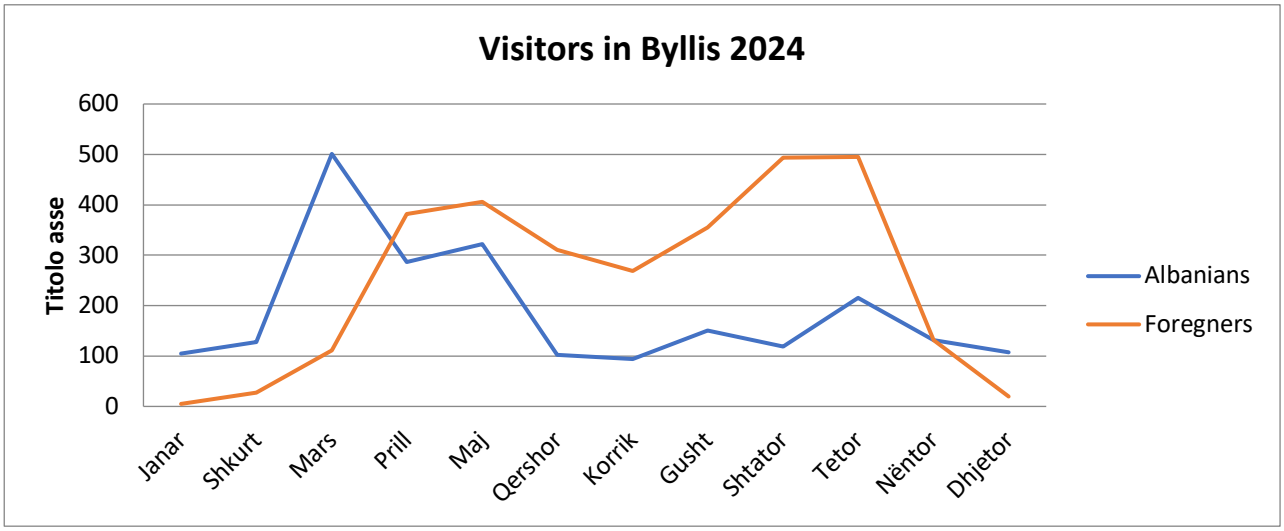
Table 1: Visitors to the national cultural attractions

Key attractions	2021	2022	2023	2024
Bylis Archaeological Park	**2,400**	**3,701**	**5,897**	**7,279**
Apollonia Archaeological Park	**30,575**	**52,244**	**82265**	**121,807**
Butrinti Archaeological Park	**52,924**	**85,409**	**119,125**	**196,897**

Source: Ministry of Culture; Ministry of Tourism and Environment

As shown in the Graph 2 bellow, the most visited months by foreign tourist in Bylis are May, September and October followed by April. The months of June and August have less visits, as well as July with the lowest numbers of the summer season. The visitor statistics of these months show that the number of foreign visitors organised in group tours are inferior to the number of the individual visitors, even in peak months.

Graph 2: Visitors in Bylis



Source: Ministry of Culture; Ministry of Tourism and Environment

Also, the Graph 1 (Total international arrivals – Sesonality) shows that even the seasonality in Albanian tourism is very high in the peak months of July and August, influenced by sun and sand tourism, the number of visits to the Archaeological Park of Bylis are lower compared with months of April, May, September and October. As it seems, the same day organised tours to Bylis are missing in these peak months from Adriatic coastal destinations. This shows that Bylis doesn't profit from tourists staying in the Adriatic and Ionian coast for summer holidays; this is influenced by high temperatures in summer, too.

In interview with inbound tour operators, which feature Bylis Archaeological Park in their tours, they highlighted that Bylis is offered as part of a wider cultural heritage tour in Albania. Tours are mainly offered from April to late October; the most frequented months are May and June, even including September too. The main impediment to feature Bylis has been mentioned unsuitable access until recently in the park as well as the parking for the buses there. The main source countries of the international tourists, participating in Bylis tours, are UK, Germany, Italy, and France, followed by Spain, Benelux countries, Israeli, etc. The most frequented group age is 50-60+. They are very well educated people with a strong interest to learn about Bylis (the inspired cultural tourists).

According to the administration of the Archaeological Park of Bylis the main source markets, the international tourists come from, are UK, France, Italy, Germany, Holland, followed by Poland, Ukraine, Spain, Czech Republic and Israel.
According to the way the visits are organised to the Archaeological Park of Bylis, the category of foreign individual visitors (individuals, families, couples, small group of friends) for the year 2024 are more than double compared to those coming as part of an organised tour. According to the visitor statistics to Bylis Archaeological Park, the individual visitors represent 68,6% against 31,4% of those organised in tours by inbound tour operators/travel agencies.

1.2.4 Tourist segments of visitors in Bylis Archaeological Park

In order to have a clear picture on the visitors' profile visiting Bylis Archaeological Park, it is necessary to understand the different types of customers visiting it.
Based on the interview with park management the categories of the visitors visiting Bylis Archaeological Park are as following:

Same day visitors:

- Individual visitors
  Their main motivation why the individual visitors are there in Bylis is:
  - visit to the archaeological park,
  - being there for nature based activities in the surrounding area (canoeing in Vjosa River),
  - going for lunch / diner in the Agrotourism facility near the village of Hekal
    They are foreigners, domestic visitors, and Albanian nationality Expats.

- Groups organised in a package tour by a DMC/inbound tour operator/ travel agency.
  Their main motivation is visiting only the Bylis archaeological park, or their visit there is part of a longer sightseeing tour in the region.
  They are mainly foreigners, as well as school students.

- Tourists with overnight:
  - FIT (Full Independent Tourists) with overnight in the Agrotourism facility located near the village of Hekal.
    They are foreigners, as well as Albanian visitors, mainly Albanian Expats.

1.3 Market segmentation of cultural tourism

1.3.1 Cultural tourism (heritage tourism)

Cultural tourism[3] refers to travel with the intent of experiencing and learning about the culture of a country or region. According to the United Nation World Tourism Organisation this includes "all aspects of tourism that can teach visitors about their past and inheritance, as well as their contemporary lifestyles".

Heritage/cultural tourism is recognised as one of the largest and fastest growing market segments within the global tourism marketplace. According to the World Tourism Organisation (WTO), about 40% of all international tourism trips contain a cultural component.[4]

Cultural heritage tourism is part of cultural tourism and it is about visiting archaeological and historic sites, museums and monument.

1.3.2 Customer segmentation in cultural tourism

Considering that there is no single market segment for cultural heritage, people engaged in cultural tourism have different levels of interest in the different aspects of cultural heritage. So it is almost impossible to talk about a unique product and a unique profile of cultural tourists. Cultural tourism attracts both travellers whose main motivation for travel is culture and the travellers who want to participate in cultural activities as part of their holiday. The visitor segmentation in cultural tourism varies.

A suitable categorisation of visitor segmentation participating in cultural tourism, which also fits for Bylis Archaeological site, is the profile given in case of Albania in the strategic document on Albania Culture Marketing Strategy[5]. According to this document, the following profile of the groups of visitors motivated by culture could be summarised:

"Apart those with the most dedicated interest in cultural tourism – almost an academic research-based interest, the other categories engaged in cultural tourism activities are interested in more than the cultural heritage of the destinations they choose to visit. Instead they look for a mixture of things to do and seek to combine cultural heritage with other aspects of the destination they choose to visit and giving them a full appreciation of the destination. Considering the diversity and variability in tourists' preferences, motivations, behaviours, and expectations when they seek cultural tourism experiences, the tourism market segments can be seen as a triangle with:

[3] *https://www.cbi.eu/*

[4] *World Tourism Organization (2018), Tourism and Culture Synergies, UNWTO, Madrid*

[5] *Tourism Development International (Ireland) 2010. Albania Culture Marketing Strategy. UNDP*

- ***the motivated cultural tourists****: those with almost an academic research-based interest at the top of the triangle. The holiday is motivated by the cultural element – their interest may be specialist or general interest, and their focus might be on permanent subjects such as archaeology, architecture or a festival. They are positioned at the top end of the triangle indicating the relatively small number of such persons.*
- ***the inspired cultural tourists****: those with a strong interest in the subject. They are attracted to well-known cultural sites, attractions or events (e.g. popular exhibitions), but prefer both to learn about the subject, and to enjoy the experiences provided by it. They are positioned further down the triangle, as it broadens out, indicating the larger volumes in the central part.*
- ***the incidental cultural tourists:*** *those who have only a passing interest in the subject. These typically have another primary reason for their trip and participate in cultural activities that are aligning with their travel plans or itinerary. Thus, while their interest in the subject may be limited, sporadically if the occasion will arise e.g. they can participate to a half day visit to a museum on a week-long vacation. They tend to be grouped towards the bottom end of the triangle occupying the largest numbers towards the base, which results in a greater economic impact for paid facilities than from the small volumes of those with an intense and serious interest in the subject."*

1.4 Understanding of Touring Tourism

1.4.1 Brief description of the Touring, travel characteristics and motivation

Touring (tourist tours) represents one of oldest forms of travelling. It is conceptually defined by motivation as a tourist product that implies the individual or organized group travelling to destinations with the aim of discovering, learning about and exploring the attractions, and the specific characteristics of the destination. They can include pre-defined thematic tours/routes related to the specificities of the destination such as culture, natural attractions, gastronomy, wine, etc. The main European markets for demand are France, Germany, the UK and Italy, generating over 20 million trips annually, making up almost 50% of all touring travel.

Modalities according to the mode of transport

- Tourist tour as a tourism product has two basic forms:

  - Individual tour - Tour organised by free independent travellers (individuals, families, couples, small group of friends) who form their own itinerary, which includes a tour of the most interesting points in a specific destination (based on the information they get before or after arriving to the destination), and takes place by individual means of transport. Individual tours include sightseeing tours if visitors do not spend the night. It is more popular among young people and people who want action and adventure.

  - Organized group tour - Tour defined and organized by tour operators or travel agencies in a tourist package. Travellers are joined in group tours that have similar interests as they want to explore and get to know new places and get the service from the travel organiser. This kind of tour is often used by older guests and families with children (safety and easy organization).

Market size estimate in Europe[6]

- Around 43 million of all European trips are touring trips (15-20% of the European holiday market)
- Average expenditure per trip per person is between EUR 1,100 and 1,400
- Demand for touring is growing, so the number of arrivals is growing by an average of 5% to 7% per year.

[6] *Study carried out by THR (Asesores en Turismo Hotelería y Recreación, S.A.) for Turismo de Portugal, IP, 2006*

Required infrastructure

- High-quality road infrastructure, accessible by bus, good road signage system to the site, a good system of parking and rest areas for touring buses, high-quality urban/public transport
- Adequate signage and markings
- Quality and interpretation of cultural content
- Active Destination Management Companies[7]/ Destination Management Organisations[8]
- Quality restaurants and accommodation facilities
- A rich offer of events and manifestations

[7] A Destination Management Company (DMC) is a specialist provider of tourism services operating in a required tourist destination at a local or regional level. A DMC provides comprehensive destination-related services to other businesses in the travel and tourism industry.
[8] A Destination Management Organisation (DMO) provides overall coordination of tourism in a tourist destination. At the local level DMOs are responsible for marketing and managing tourism in a smaller geographical area/local destination. They are responsible for product development, experience creation and promotion.

1.5 Bylis Archaeological Park as a tourism product

The development of cultural tourism products and initiatives should be considered as a complex process of tourism planning and development of the destination from which should benefit both, the tourism and cultural sectors as well as the entire social community.

The development of Bylis Archaeological Park as a primary tourism product should focus on the enhancement of the tourist offer and the increase of the presence and services for tourists there, thus improving its "market readiness" and turning it not only as a key tourist attraction in the South Albania for the development of touring tourism but as well as into a pole and a real promoter for the development of tourism in the area of the villages of Hekal and Klos. Today, the interaction between visitors visiting Bylis Archaeological site and the local community of Hakal and Klos is very poor. After visiting the archaeological site the visitors leave the site as the services in the villages are very limited. There is only one restaurant in the village of Hekal, except the one inside the Bylis archaeological park. A commercial accommodation complex close to Hekal village offers a restaurant, too.

The aim of turning Bylis Archaeological Park into an attractive cultural heritage tourism product should be focused not only to the tourists organised in package tours and the independent tourists motivated to visit it (motivated, and inspired cultural tourists), but is should be focused also on the bottom side of the triangle where there are the biggest numbers of tourists (incidental cultural tourists), the ones with interest on nature-based tourism, and summer holiday tourists.

1.5.1 Potential tourism products related to Bylis Archaeological Park

Not only the enhancement of the "market readiness" of Bylis Archaeological Park will influence on improving its tourist offer by making it a top cultural heritage attraction in the region, but also the other forms of tourism with potential to be developed in the surrounding area will have their impact in it and vice-verse.

The following is a presentation of the potential tourism products with influence to Bylis Archaeological Park.

Primary tourism products

- **Heritage tourism (Bylis Archaeological Park)**
  Heritage tourism is a form of tourism in which the basic motivation of visitors is to learn, discover, experience and visit tangible cultural attractions and products.
  Visits to a heritage site, in this case Bylis Archaeological Park and the other archaeological site of Nikaia near it, is the primary motive of visitors for coming there and the overall

effort and investment for the improvement of its "market readiness" should be focussed towards the effective increase of the number of both, individual visitors and organized groups who come to see, learn and experience about this site and the history of the Illyrian community of Bylliones and the traces left by many civilizations there as Hellenistic, Roman and Macedonian.

The visitor experience will be enriched not only by the improved "market readiness" factors, such as accessibility, services for visitors, interpretation of the monuments, as well as the developed marketing infrastructure for Bylis Archaeological Park, but also by the creation of different events (presentations, education, scientific and professional gatherings, visiting exhibitions, etc.) to be organised in the new planned Multifunctional Centre. The organisation of local cultural events and exhibitions with the participation of local community will be an added value, too.

Secondary tourism products (value adding to heritage tourism)

Products of added value, the ones with potential to be developed in the surrounding area of Bylis Archaeological Park, are active and recreation, stay in nature, Vjosa National Park and water activities in Vjosa River. Although they are not the primary motive for tourism, they give to the visitors an emotional feeling of enjoyment (enjoying recreational activities, rural ambiance, enjoying local specialties, as well as canoeing and kayaking in Vjosa River).

- **Active and recreation**

  The term active tourism refers to a tourism product in the function of recreation which includes recreational sports and activities (walking, hiking, cycling, horseback riding, etc.). This form of the tourist product will be much more present at the area surrounding Bylis Archaeological site. The configuration of the terrain offers potential for development of the walking, cycling, and horseback ride paths, by representing a large capacity for engaging in various recreational activities, from light to intense. None of these recreational activities, as well as the suitable infrastructure in support of these activities, are developed there so far. The hilly terrain of both villages of Hekal and Klos offers some great opportunities for the development of these activities.

  While the touring tourists, especially the individuals, after visiting the Archaeological Park of Bylis, if there was an opportunity for engagement in recreational activities, they could seek to be involved in additional recreational outdoor experiences such as walking/hiking, biking, horseback riding, etc.

- **Relax and stay in nature**

The products of "relax and stay in nature" must be aligned with the principles of sustainability and support for the local community. They connect people with nature and enable them to enjoy landscapes and views. Beautiful and preserved nature, well-maintained and marked walking paths with viewpoints, but also quality, local and traditional accommodation with an offer of quality local food and specialized facilities for certain segments of guests are important for this product.

The area of Hekal and Klos villages surrounding Bylis Archaeological site offer many opportunities for recreation, peace of mind, and being in nature in a specific, peaceful, green and cultivated olive grove environment. A good example is the tourist accommodation establishment of Agroturizem Bylis which offers rooms in five wooden bungalows. Precisely because of its garden's incredible view over Vjosa River Valley, preserved and attractive surrounding nature, this product can be strongly emphasised, and its possibilities for a feeling of complete rest should be highlighted.

- **Vjosa National Park and water activities in Vjosa River**

  The region of the designated Vjosa National Park is considered one of the most important tourist regions in Albania. Three main urban centres as Gjirokaster, Tepelene and Permet and an array of traditional villages are located in the rural areas within the boundaries of the park. This region consists of a rich potential for the development of tourism based on a pristine and yet untouched nature and landscape, tangible and intangible cultural heritage, a maintained rural cultural heritage, preserved local gastronomy and life style, as well as fascinating sacral objects.

  - The main tourist activities performed in Permeti area are nature-based activities such as rafting, trekking, jeep tours, mountain biking, camping and horseback riding.
  - The Gjirokastra region offers a variety of tourism activities, such as rafting, trekking, horseback riding, jeep tours, and camping experiences as well as visiting Gjirokastra and Tepelene towns as cultural heritage attractions.
  - The Kurveleshi region (Upper Kurvelesh / Lower Kurvelesh and Shushica River valley) offers opportunities for hiking, biking and visiting the canyons in Nivica.
  - Apart Vjosa River, some of the most important natural attractions within the Vjosa National Park are Benja thermal baths, the canyon of Langarica, and the Canyons of Nivica.
  - A rafting centre is situated next to the national road down the hill where Bylis Archaeological Park is situated. Water based sports performed in Vjosa River refer primarily to rafting, canoeing, and kayaking. The tourist participating in the above activities in Vjosa River National Park region are organized on a tour/same day

excursion-based, as well as “free independent travellers”. The majority of them are international tourists and less domestic.

Bylis Archaeological Park has good connections with the territory of Vjosa National Park through the national road in direction towards Gjirokaster-Tepelene-Permet, as well as through the bridge passing over Vjosa River, near the village of Poçem, linking the national road with Shushica River Valley area, Lower Kurvelesh, and Upper Kurvelesh area. Bylis Archaeological Park can profit from the volume of the tourists engaged in the activities in Vjosa National Park.

While in the upcoming period, primarily for long-term sustainability, the focus should be on diversifying of the tourist product in the wider area of Hekal and Klos and improving the competitiveness of all tourist value chain components.

1.6 Benchmark examples

The examples of good practice were selected based on information about the services and the experiences the site offers to the visitors in their website. A website analysis can reveal how the "market readiness" factors are developed and work for a cultural attraction, in our case the archaeological park. A professionally well developed website considers the following webpage elements, aimed to provide the best user experience:

- *Clear Navigation*: Sections for history, visiting information, tickets, ongoing excavations and educational experience
- *User-Friendly Design*: Clean interface with easy access to different sections
- *Tour & Visitor Information*: Detailed directions to the site, opening hours, ticket prices and booking, guided tour booking, accessibility info including it for disable people
- *Rich Visual Content*: Extensive galleries of images, reconstructions, and videos
- *Multimedia & Virtual Tours*: Virtual tours, downloadable maps, multimedia guides, 3D reconstructions available online and VR experiences
- *Historical Context*: Extensive background on site history and architecture
- *Storytelling Focus*: It provides detailed descriptions of the excavations, mosaics and frescoes, turning archaeological findings into stories.
- *Educational content*: Articles, publications, and educational resources.

Not to forget, the other factors that influence the "market readiness" should be developed by the archaeological site management, too.
The following archaeological park websites were visited and two of them were selected for identifying the services and products offered to visitors:

https://ercolano.cultura.gov.it/?lang=en
https://pompeiisites.org/en/#
https://www.ostiaantica.beniculturali.it/en/home/
https://colosseo.it/en/
https://parconaxostaormina.com/it
https://www.parcoarcheologicoappiaantica.it/il-parco/informazioni-del-parco/
https://cultura.castillalamancha.es/patrimonio/parques-arqueologicos/segobriga
https://parchiarcheologici.regione.sicilia.it/himera-solunto-iato/
https://www.theacropolismuseum.gr/en/plan-your-visit
https://delphi.culture.gr/
https://www.visitpafos.org.cy/a-proud-heritage/archaeological-sites/
https://knossos-palace.gr/

https://www.arenapula.hr/en/visitor-info/
https://www.stonehenge.co.uk/tours

Two good examples of website analysis are developed based on the selection made from the above websites.

Case 1: Archaeological Park of Herculaneum (Italy)

Website: https://ercolano.cultura.gov.it/?lang=en

Key findings of the website (ercolano.cultura.gov.it) analysis

No doubt, this archaeological park has a very professional website. It has a very user-friendly navigation menu organized at the top of the webpage helping visitors to easily navigate and find the information. Different labels are organized horizontally on the navigation menu.

Under the label "**Visit**" there are found useful visitor information in the following sections:

- *Ticket*: park's operation time, ticket price and how to book and buy them, information on parking and its location to a Google map;
- *How to get there*: giving directions how to reach the archaeological park; Rules and advice for the visitors to follow during their stay in the park;
- *Guided tours*: information on booking individual and group tours, and educational schools tours, as well as the information on how to hire audio-guides or download an augmented reality audioguide through the innovative 3D App that can be safely downloaded to the smartphone (IOS and Android version).
- *Accessibility:* There it is found information for the visitors with mobility restrictions on how to visit the Herculaneum for "Everyone route",
- *Map*: In this section there are different downloadable maps. Also, in the entrance the visitors are distributed with a free of charge map. The map indicates the following services and their location offered to the visitors: toilets, disabled toilets, tours for disabled visitors, health and safety, ercolano store, cloakroom, ticket office, information desk, refreshment and picnic areas.
- *App*: Here it is possible to download a versatile and interactive visitor app, full of photos and reconstructions.

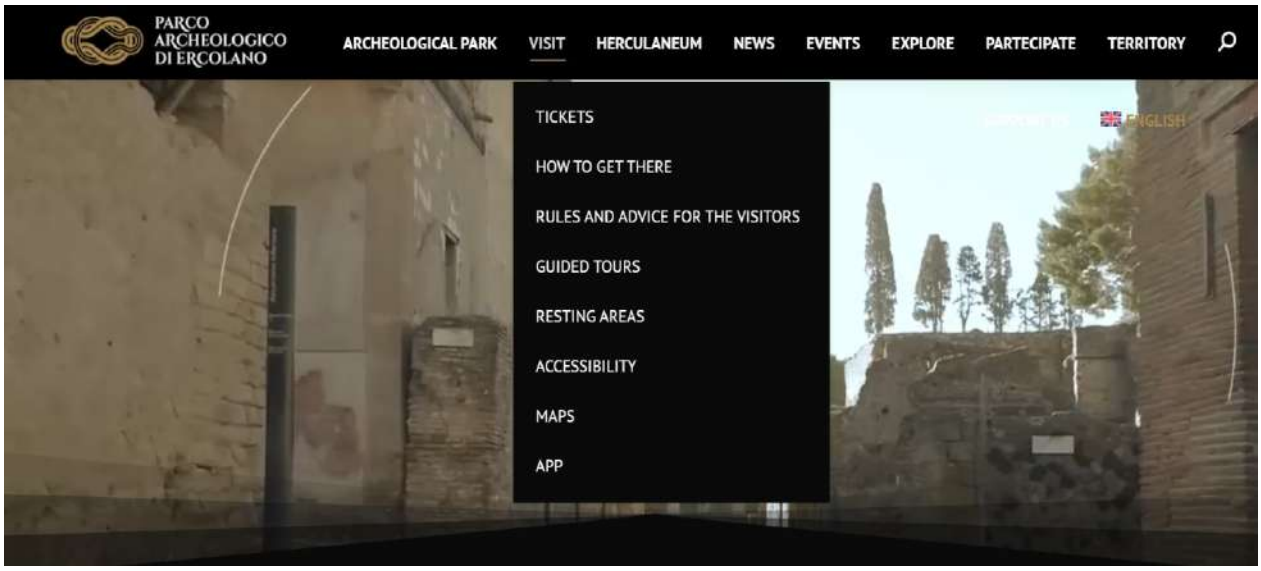


Figura 1 The view of the main page and how the label "Visit" is open down when the cursor arrow is set over it

Another important label "**Herculaneum**" gives information on the story of the site, the eruption of the volcano that destroyed it, how it was discovered, excavations and the creation of the Herculaneum Archaeological Park in 2016

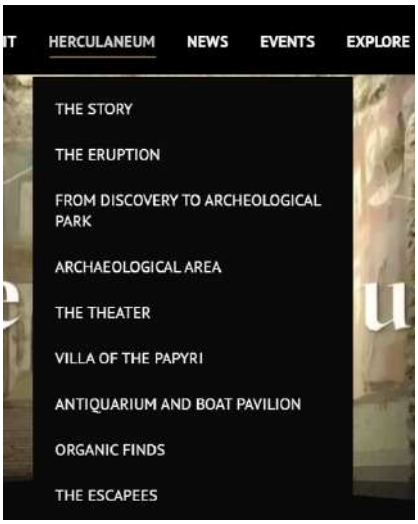


Figura 2 The view of the label "Herculaneum"

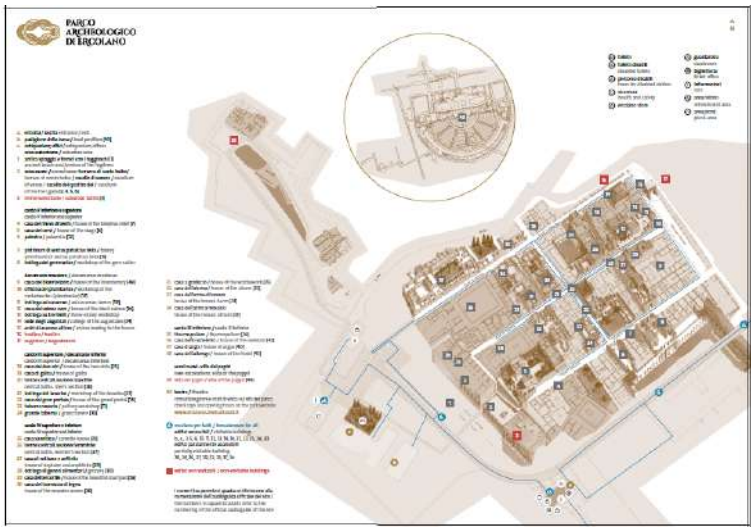


Figura 3 The downloadable Map of Herculaneum Archaeological Park

Under the label "**Events**" there are useful information on different events held in the archaeological park such as:

The Theater of Herculaneum: a tour organised to the underground route of the Herculaneum theatre.

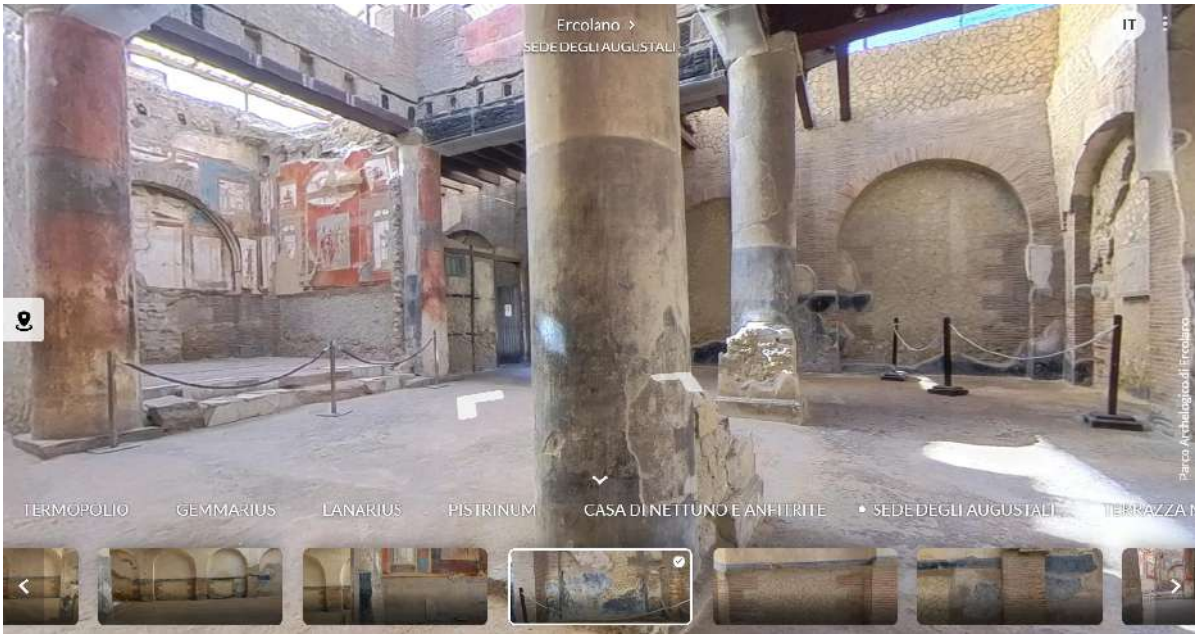


Figura 4 View from the virtual tour from Herculaneum

The Friday evening: every year between July and August, on Friday evenings, visitors can immerse themselves in the evocative setting of the ancient city, illuminated and brought to life through projections and theatrical performances.

The series "Gli Ozi di Ercole": they represent narratives on myth and history, past and future, research and enhancement through original interpretations of writers, philosophers, journalists, historians, archaeologists, actors, and musicians, by presenting each year new reflections on the identity themes of Herculaneum.

Another important label found in the navigation menu is the "**Explore**" where the visitor can find useful tools such as a downloadable Pdf map, an Application, a virtual tour in many languages including English, 3D gallery of pictures and a number of YouTube videos showing the most interesting parts of the park.
Under the label "Participate" there is the section which demonstrates that the Archaeological Park, under agreements with local educational institutions, organizes the Pathways for Cross-Curricular

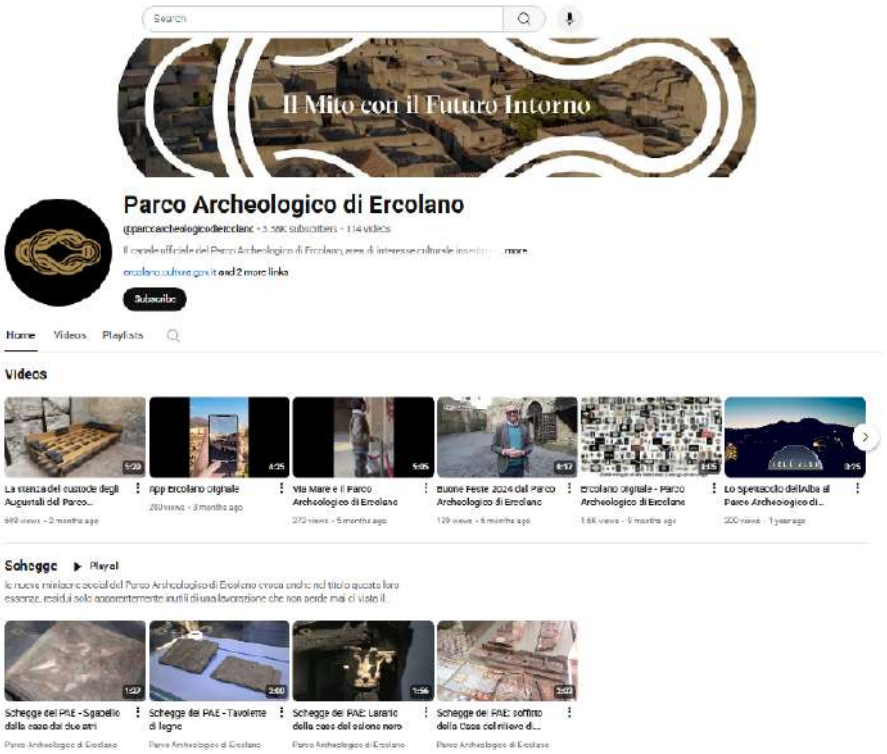
Competencies and Orientation. These programs actively engage students in the daily operations and management of the archaeological site.

Figura 5 The view of educational activities under Pathways for Cross-Curricular Competencies and Orientation

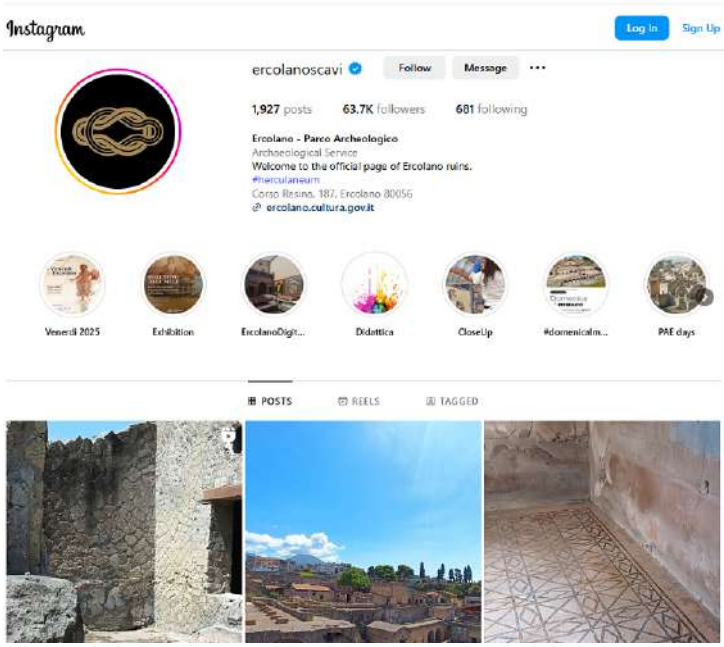
Presence in Social Media: The Archaeological Park of Herculaneum there is also in social media such as **Facebook**, **YouTube** and **Instagram**.

Facebook: there is a rich photo galley and the post is maintained and updated on a daily basis.

YouTube: it offers a very rich gallery of videos under a number of themes



Instagram: its format is different from facebook and offers diverse information under different themes.



Case 2: Pompeii Archaeological Park (website: https://pompeiisites.org/en/)

Key findings of the website (pompeiisites.org) analysis

This archaeological park has developed a very professional website. It has a very user-friendly navigation menu organized at the top of the webpage helping visitors to easily navigate and find the information. Different labels are organized horizontally on the navigation menu.

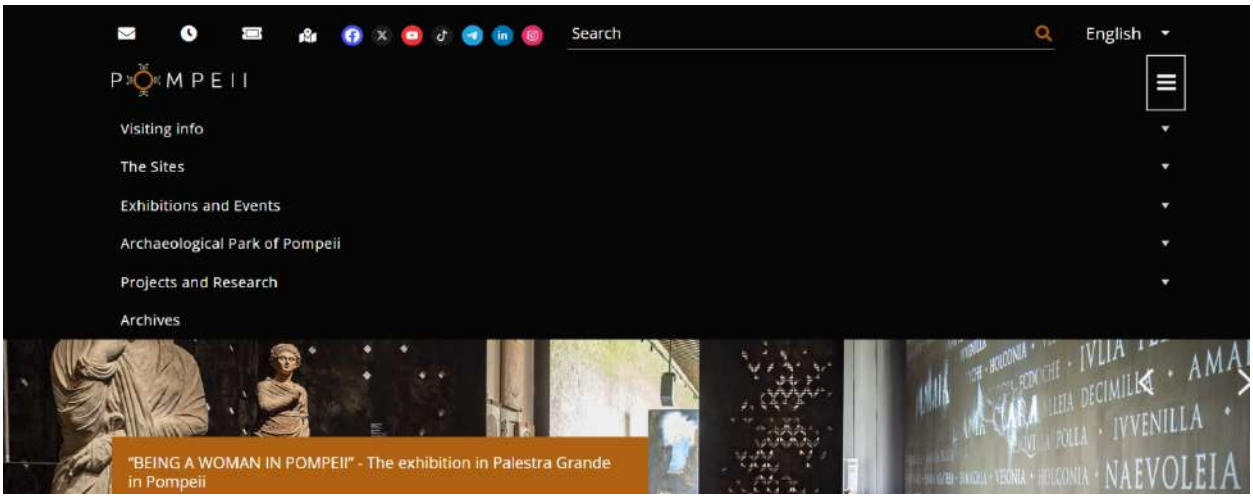


Figura 6 The view of the main menu of the webpage for Pompeii Archaeological Park

The webpage is presented, except the Italian language, in other eight ones (including the English language). The webpage is organized vertically with displaying of the visiting information and archaeological sites to visit. Also, the main menu is displayed by opening the icon of three dashes at the upper right corner of the page, as shown below.

Under the label "**Visiting info**" it is found useful visitor information in the following sections:

Timetables and tickets: park's operation time from 1st November to 31st March and from 1st April to 31st October**,** ticket price for different options and where to book and buy them, access points to the park, information on guided tours;

Community MyPompeii: The MyPompeii card is valid for one year for all of the sites of the Archaeological Park of Pompeii, as well as to current temporary exhibitions and to certain special and exclusive events, which are communicated periodically.

How to get there: information on how to get there to the entrances and the sites of the Pompeii Archaeological park by car, by bus and by train. The locations of the entrances are given in google maps.

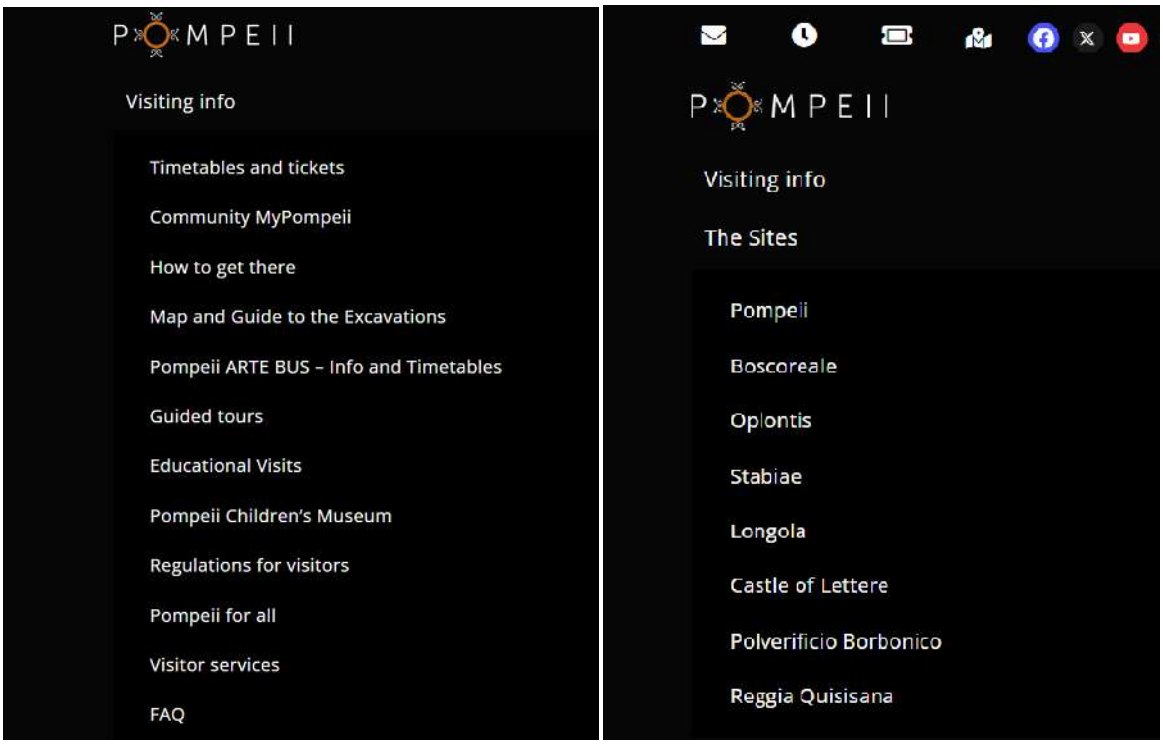


Figura 7 The view of the label "Visiting info" and "The Site"

Map and Guide to the Excavations: in this section the visitors can download the map and the mini guide of the site they want to visit.

Pompeii ARTE BUS: this section offers information on the detailed timetable for all the season for the movement of the visitors in a free of charge service for to the Park sites.

Guided tours: this service is requested at the entrances to the site of Pompeii. The service is provided by qualified freelance guides recognised by their badges.

Educational visit: this section gives information about the planned educational activities, please visit the following link www.pompeiichildrensmuseum.it
Regulations for visitors: this section offers the regulations the visitors have to respect during their visit to Pompeii.

Pompeii for All: The itinerary "Pompeii for All" is designed for people with motor disabilities. A downloadable map is available for disable people to visit Pompeii. The obstacles for movement of disabled people are fixed.

Figura 8 The movement of disabled people in the itinerary "Pompeii for All"

Visitor services: this section offers different information with interest for the visitors during their stay in Pompeii such as:

- the bookshop service with many scientific and non-specialist publications, as well as catalogues.
- the contact details of The Pompeii Excavations tourist information office
- the price list for audio guides available for the visitors to three Park entrances;
- the contact details for first aid
- the refreshment points
- the location of cloakroom service
- the location of the designated smoking areas available
- the location of baby Changing Facilities
- the location of toilet facilities.

Under the label "**The Sites**" it is found useful visitor information for all the monuments of park's sites accompanied by explanatory text and images.
Under the label "**Exhibitions and Events**", the following sections are found:

Exhibitions: this section shows the information about different exhibitions organized in Pompeii.

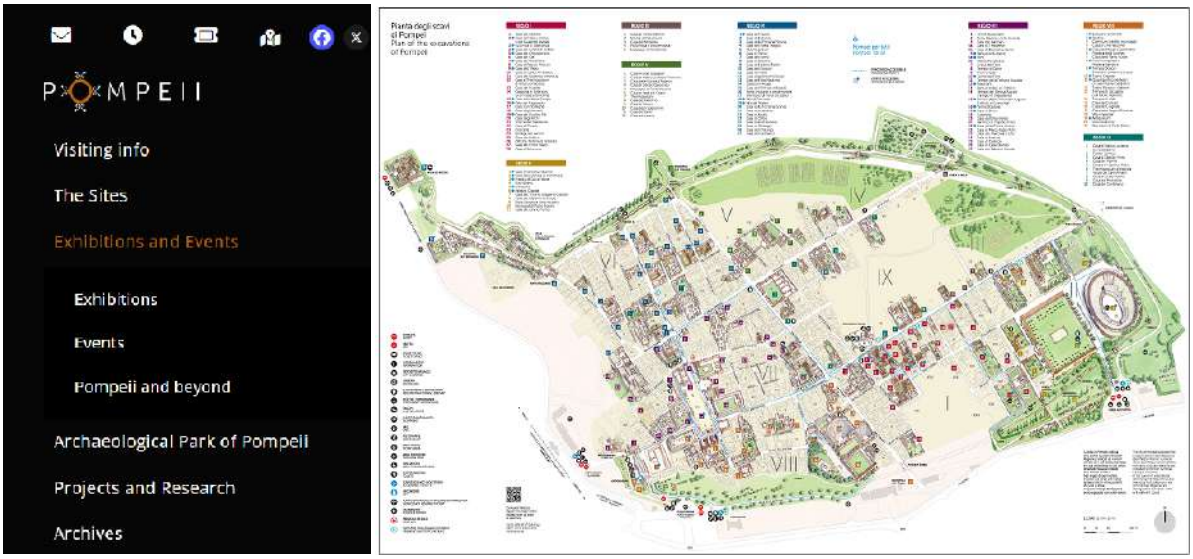


Figura 9 The label "Exhibitions and Events" The downloadable map part of mini guide of the site

Events: this section shows the information about different exhibitions organized in Pompeii.
Pompeii and beyond: this section shows the information about different exhibitions organised for Pompeii.
Other labels such as "**Archaeological Park of Pompeii**", "**Projects and Research**" and "**Archives**" are about the Park administration and responsibilities, excavation and research projects, and other issues of scientific interest.
The Archaeological Park of Pompeii there is also in social media such as Facebook, Tweeter, YouTube, tiktok, telegram, linkedin and Instagram. They are developed in different formats and with rich and updated information.

2 | Assessment and RECOMMENDATIONS FOR IMPROVEMENT OF market readiness FOR Bylis Archaeological Park

2.1 Analysis of website and social for Bylis Archaeological Park (https://bylisklos.al/en/)

As mentioned on the section about the benchmark examples, a website analysis can reveal the information about the services and the experiences the site offers to the visitors and how the "market readiness" factors are developed and work for the cultural heritage attraction, i.e. the Archaeological Park of Bylis.

The specific information about the Archaeological Park of Bylis is hosted in the newly website developed and launched recently (https://bylisklos.al/en/) in July 2025 with the support of AICS..

In this transitory phase the Archaeological Park of Bylis is managed up to now by the administration of Archaeological Park of Apollonia. This administration manages the website of Apollonia Archaeological Park which also features information about the Archaeological Park of Bylis (https://apolloniaarchaeologicalpark.al/).

The new website about Byllis Archaeological Park has an appealing design. It is in two languages, English and Albanian and gives explanation for both sites, Bylis and Klos. This webpage has a user-friendly navigation menu organized horizontally at the top of the front page. Visitors can easily navigate and find the information about Bylis and Klos, as well as information on park visiting. Also, the information is organized vertically in the front page with a mixture of videos, images and introductory information about the two sites. Two different icons open separately the subpages for Bylis and Klos.

As seen from the webpage view below, the one of Byllis has an attractive display and the quality of photos are appealing. The navigation in this webpage is organized vertically with information about the Bylliones and Byllis, a location map with relevant monuments, and a presentation of monuments and a gallery of a limited number of their photos. The photos of the mosaics are missing in this gallery although many of them are shown in the photos gallery of Facebook.

The webpage about Klos, except the view of nature scenery, is less impressive as it has no much to show as the excavations have been very limited there.

Figura 10 The view of Bylis webpage

Under the label "Plan your visit", the information is given about opening hours, ticket price for each category, and free admission days to the Park of Bylis.
Another section on "News and Updates" gives information on the progress of EU project "EU for Economic Development – Tourism-led, Local Economic Development, with a Focus on Cultural Heritage".

Bylis Archaeological Park is present in social media such as Facebook, as well as Instagram. They are only in Albanian language. Two icons of Facebook and Instagram are present at end of webpage.

Facebook:

Facebook is accessed directly by clicking on the icon at the end of the webpage, or through the browser "https://www.facebook.com/ByllisArchaeology". Facebook offers rich photo galley and posts. The posts are maintained and updated time to time reflecting the news and activities in the park. Also, the "Reels" have a considerate number of videos, interviews and photos.

Instagram:

Instagram is accessed directrly by clicking on the icon at the end of the webpage, or through the browser "parkuarkeologjikbylisklos

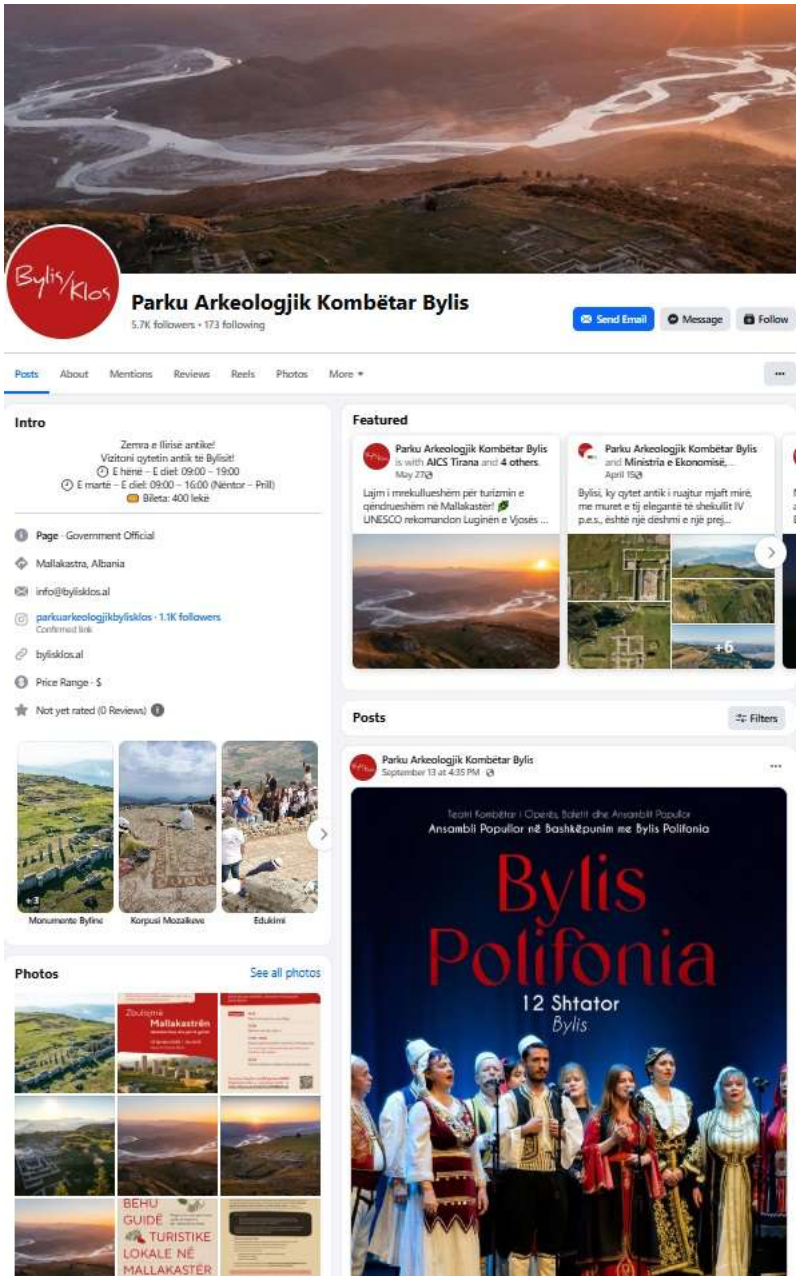


Figura 11 View of Facebook webpage

Instagram posts are not different from those posted in Facebook.

2.2 Assessment of market readiness for Bylis Archaeological Park

The assessment of market readiness of Bylis Archaeological Park will be done by using the methodology of value chain assessment for cultural attractions. A tourist value chain is a set of relations of products, services and experiences that tourists consume or buy during their arrival at the destination and their stay there. Cultural attractions are an important element of tourism value chain. The assessment for Bylis Archaeological Park as a tourist attraction is done by the tourism expert through primary research as well as some secondary research of all factors that influence the market readiness of the attraction. Each factor is assessed using grade ranging: 1 (lowest), 3 (mid) and 5 (highest), including qualitative observations, too.

Factors taken into account during the assessment include the accessibility and traffic signs, availability of parking space for cars and coaches, availability of price list in foreign languages and variety of payment options, sanitary facilities, the availability of guided tour, Wi-Fi service, audio guide/app and informational printed materials, availability of presentation and interpretation of the park with innovative techniques, souvenir shop, flexible visiting hours, the attractiveness and cleanliness of the site, staff professionalism and communication in foreign languages. The assessment of the factors is given in the table below.

Table 1: Assessment of the market readiness factors

Factors	Elements of factors	Grade
Accessibility/ Welcome	Road signs indicating the Park up to its location	3
	Road access from the main road to the Park	5
	Parking for cars/coaches in the Park area	3
	Attractiveness and cleanliness of the Park	3
	Safety to the Park	3
Visitor Services	Information / ticket kiosk	5
	Admission charge to the Park/ Price list in foreign languages	5

	Staff professionalism and communication in foreign languages	5
	Quality and functionality of toilet (up to 100 m from the Park)	3
	Bar / restaurant service (up to 100 m from the Park)	5
	Souvenir shop in the Park area	1
Interpretation	Tourist guide (professional guide)	3
	Interpretation / Explanatory panels in the Park area	3
	Innovative techniques of 3D, Augmented Reality, Virtual Reality	1
	Electronic guide with hearing/application for use by visitors	1
Publicity / Promotion	Promotional leaflets about the Park available to visitors	5
	Other paid promotional materials such as books, tourist guides	1
	Available and quality Wi-Fi in the Park area	1
	Foreign language website (minimum provided in English)	5
Visiting hours	Opening hours of the Park (flexible, fixed hours)	5

2.3 Success factors for the development of a primary cultural heritage attraction

Improved market readiness and attractiveness of an Archaeological Park/Site will consist in implementing of the following services, as well as the engagement of the park/site management on fulfilling its responsibilities on:

- Ease of access as well as good and suitable traffic signs to Archaeological Park and signposting to the attraction,
- Suitable parking for cars and coaches
- Reception and information office with electronic ticketing with payment options and price list available in foreign languages, and availability of souvenir shop
- Availability of quality and functional sanitary facilities including toilets, and catering facility (served at the restaurant close to the site)
- Renovated interpretation panels on site (with refreshed printed text and pictures)
- Availability of innovative interactive display techniques, such as Augmented Reality, Virtual Reality and 3D,
- Availability multi-lingual electronic self-guide systems/App for independent visitors, and quality Wi-Fi service
- Availability of professional tour guides with ability in foreign languages and quality informative printed leaflet, in foreign language(s)
- A managed, clean, attractive and secured territory of the archaeological site with a functioning and waste collection and disposal,
- Availability build paths of access for people with disabilities
- Directional signage of paths to guide visitor flow on their movement in the park.
- Promotional materials in relevant languages including location map.
- Dedicated Website for the archaeological site with relevant and useful information for the visitors
- Availability of professional and skilled staff using foreign languages,
- Flexible working hours,
- Comprehensive marketing activities aimed at strengthening the Archaeological Park as a high quality touring destination (for individual and group touring);

2.4 Conclusions and proposed measures for improvement of tourism market readiness of Bylis Archaeological Park

Considering the above analysis of market readiness for Bylis Archaeological Park, as well as the benchmark analysis, the following are proposals how to improve the factors that influence the tourism market readiness of Bylis Archaeological Park.

Road signs indicating the Park up to its location

The road traffic signage is very important for individual tourists who visit the tourist destination and cultural heritage sites on their own cars.

The traffic signage showing Bylis Archaeological Park is missing alongside the national road (from Levan to Tepelene direction as well from Tepelene to Levan).

Referring to the internationally recognised signage for showing the cultural heritage monuments, there are two kind of brown colour signage: a big vertical signage installed at the junction of the main road showing the cultural heritage attraction, and the other small one that should be installed alongside the road showing the direction towards the cultural heritage attraction.

At the road junction when approaching from national road SH4 towards the Park there is a very visible road signage showing Bylis Archaeological Park; this is of the right format and colour and installed at the right location. While a signage showing the direction to Bylis is set at the entrance of Hekal village, this is of the wrong colour and format. It should be of brown colour and of the format for cultural heritage monuments.

What to improve:

Installation of road traffic signage showing the Bylis Archaeological Park according to the national transport standards alongside the road from Fier to Leval to Bylis (junction of road SH4 towards Hekal), from Vlore to Leval (national road A2), and from Tepelene - Memaliaj to Bylis (junction of road SH4 towards Hekal).

Installation of vertical brown colour signage alongside the road showing the direction towards Bylis Archaeological Park

Examples of installation of internationally recognised signages

a) Road traffic signage showing the cultural heritage attraction

Road traffic signage indicating Pojan village and Apollonia Archaeological Park are good examples how and in what distances the road signage should be installed

Figura 12 Horizontal and vertical Road traffic signage

b) Brown colour signage showing the direction towards heritage attractions

Figura 13 Example: brown colour signage

The road access from the main road to the Park

There is a recently improved road access from the national road SH4 to Hekal village and approaching to the archaeological site of Bylis.

Public transport is missing from Fier town to Hekal village.

What to improve:

Establishing a public transport line from Fier town - Hekal village – Ballshi town. This would increase the visiting potential to the Park and the villages from the individuals.

Parking for cars/coaches in the Park area

There is a parking space within Bylis Archaeological Park which is very limited in space and not suitable for coaches.

What to improve:

A project for creating a new parking area for the archaeological park is underway. The new project should consider a suitable parking capacity for cars and coaches. The capacity of the new parking area must meet the needs of simultaneous users from coaches, microbuses, and cars. When calculating the parking capacity, the duration of a visitor tour should be considered. A tour of elderly visitors goes around 1.5 to 2.5 hours, considering the extra time for toilets and refreshes, too.

Attractiveness and cleanliness of the Park

Although not as famous as Butrint and Apollonia, Bylis fascinates as the largest city in Southern Illyria. Its fortified walls which are still partly in place, together with an agora, civic and other buildings, a Stadium, cistern and bathhouse, theatre and the large Byzantine religious complex with its basilica, baptistery and Episcopal palace, and the mosaic floors give to this site the mystery to be visited. According to the reviews in Trip Adviser, the majority of people have appreciated the visit to the site, leaving aside the complaints about the accessibility to the site. The majority of them visited Bylis before the new road was constructed in 2024 and the site management improved. Not to mention the wonderful and fascinating view over Vjosa River Valley, the green of the surrounding hills dominated by olive groves.

During the season the site land is cleaned from the brambles and briars and the site territory is maintained clean. There are litter bins scattered along the way where the visitors are supposed to walk, as there are no build paths.

What to improve:

The project of multifunctional centre includes the task for building of the paths.

Aesthetic and environmentally-friendy looking bins should be put along the paths.

Park management should consider disinfection against the snakes before the summer season.

Safety of movement to the Park

There are no tables that warn the visitor not to walk over the walls as well as near risky places such as the uncovered cisterns. The actual site needs care walking around, as there are deep pits and steep drops in the ground.

There is no directional signage of paths to guide visitors on their movement in the park. They can move freely everywhere, except to some signage that warn the visitors not to climb on the walls.

Bylis Archaeological Park doesn't offer access for people with disabilities.

What to improve:

Installation of warning signs that warn the visitors not to climb on the walls, not to walk close the cisterns and walk over the covered mosaics, too.

The project of new museum and multifunctional building includes the tasks for developing the paths into the Park. It is important the development of an itinerary for the movement of people with disabilities in the park.

Information / ticket kiosk

There is a simple tickets kiosk there selling tickets to the visitors.

What to improve:

A project for creating a new multifunctional centre for the archaeological park is underway. It will incorporate the information desk as well as the ticketing, toilets, disabled toilets, cloakroom, souvenir, refreshment area. An electronic ticketing system should be established following the existing examples of other cultural attractions in Albania.

Admission charge to the Park/ Price list in foreign languages

The price list is displaced on a table at the entrance of the site, both in Albanian and English languages.

What to improve:

Online booking of tickets should be considered following the existing examples of online ticket booking for cultural events in Albania.

Staff professionalism and communication in foreign languages

From the personal communication of the expert and the interviews with the inbound tour operators, they confirm for staff professionalism and communication.

What to improve:

The new staff to be employed should fulfil the requirements of professionalism and proficient communication in foreign languages (English is mandatory).

Quality and functionality of toilets for visitors *(up to 100 m from the Park)*
The visitors can continue to use the toilets at the restaurant located within the territory of the Park until the new multifunctional building will be in place.
What to improve:
The new multifunctional building will include sufficient toilets for both sexes, as well as the ones for disabled toilets.

Bar / restaurant service *(up to 100 m from the Park)*
The restaurant located within the territory of the Park offers service for refreshes and catering. The visitors can continue to use it until the new multifunctional building will be in place.
What to improve:
The multifunctional building should include the facility for refreshes and snacks.

Souvenir shop in the Park area
There is not a souvenir shop and there are no available printed books for sale about Bylis.
What to improve:
The new multifunctional building should include a space for souvenir shopping.

Tourist guide (professional guide) in a foreign language provided to the Park
Archaeological Park of Bylis offers guided tour on request for independent visitors, a service offered by the head of the park.
This service is insufficient to be offered by him considering the increasing percentage of independent visitors as well as his engagement to care about the Park management issues.
What to improve:
Professional licensed guide(s) with ability in foreign languages should be allowed to offer their service to the Park or they should be employed of full-time job, to offer guided tours on request for visitors.

Presentation and interpretation of Archaeological Park of Bylis
Interpretation/Explanatory panels in the Park area
The interpretation of the archaeological site is done through printed text and pictures in fixed tables for each of the ruins and archaeological findings of the site, in both languages English and Albanian. They offer information for almost all the ruins. The information includes a map that indicates the location of the ruin, as well as a layout of the ruin. The tables' displays need renovation as they have an outdated look.
What to improve:

The project of multifunctional centre includes the task for the interpretation of the monuments and points of interest. Considering the complains of the visitors in the reviews in Trip Adviser, the English text used in the interpretation tables should be improved to be perfect. Also the interpretation should take into consideration people with visual disabilities by using Braille typing.

Innovative technique of 3D, Augmented Reality and Virtual Reality

No such a techniques are used for visitors in the Archaeological Park of Bylis.

What to improve:

These technological techniques should be introduced there. They help visitors to have an immersive and interactive experience. They help the general public to better understand the remains being observed, as well as the children in particular with an insight into the past by improving their learning experience.

Electronic guide with hearing (headphones) / application for use by visitors

There is no Electronic guide with hearing in the Park.

There is an application which can be downloaded free of charge, but it is only in Albanian language and it is available only in Google play store. It offers information referring to the webpage on Byllis Archaeological Park hosted in Apollonia Archaeological Park webpage.

What to improve:

An improved version of the application should be considered to be produced. The English version should be mandatory.

Promotional leaflets about the Park available to visitors

There is a printed leaflet featuring Bylis Archaeological Park, including the English, Italian and Albanian languages. A map of the park associates the content of the leaflet, but it is hard to read on it. The leaflet is distributed free of charge to the visitors when they buy the ticket.

What to improve:

The design and printing quality should be improved. The leaflet can be designed as a guide by using the same information, but making it more practical for individual visitors for understanding the Park. The map should be bigger and the monuments be listed in a legend with reference numbers.

Other paid promotional materials offered to visitors such as books, tourist guides

No other promotional printed materials are available for sale.

What to improve:

Copies of published publications, such as books/guides about Bylis Archaeological Park should be offered for sale.

Available and quality Wi-Fi in the Park area

There is no Wi-Fi service within the area of the Park.

What to improve:

When the new multifunctional building for the archaeological park will be functional the Wi-Fi service should be mandatory and offered free of charge.

Online presence of Bylis Archaeological Park

A newly website (https://bylisklos.al/en/) for the Archaeological Park of Bylis and Klos was launched recently in July 2025. The website is in two languages, English and Albanian. The website gives explanation for the monuments of sites, Bylis and Klos, as well as information on park visiting.

There is a discrepancy on the online presence of Bylis Archaeological Park. There are two websites: https://apolloniaarchaeologicalpark.al/ is managed by the administration of Apollonia Archaeological Park, while https://bylisklos.al/en/ was launched with the support of AICS as part of EU program for Economic Development – Tourism and Local Economic Development with a Focus on Cultural Heritage. The issue of the ownership is important for the webpage management.

The following are some recommendation for the improvement of the online presence of the Archaeological Park of Bylis and Klos at https://bylisklos.al/en/

1. When searched Google for Bylis it doesn't rank first in the row, even it is not in the first page of the search. This lowers the chances to immediately find the new website about Archaeological Park Bylis and Klos (https://bylisklos.al/en/). Instead, the other website ranks the first (https://apolloniaarchaeologicalpark.al/).
   What to improve:
   As the primary source of information about Bylis and Klos (ancient city of Nikaia), the website https://bylisklos.al/en/ should optimize its search engine performance. A strategy for SEO (search engine optimisation) should be considered and applied.

2. Photo gallery of the webpage has not included the photos of the mosaics
   What to improve:
   Enrich the photo gallery of the webpage with photos of mosaics. There are many of them in the Facebook page.

3. More information for individual visitors should be provided under the label "Plan your visit"
   What to improve:
   Information on the presence of toilets and refreshes at the restaurant within the territory of the park should be added.
   Information on booking individual/group tours, and educational schools tours,
   Rules and advice for the visitors to follow during their stay in the park;

4. More useful information on activities and events, scientific work, and the archaeological park itself can be organized under the horizontal menu.
   What to improve:
   Adding the label "Events": Celebration of heritage day, Polifonia festival, etc. There are many photos of these events in the Facebook page.
   Adding the label "About Archaeological Park of Bylis and Klos" including the following information:
   - Statistics on visitors (in the Facebook page are published statistics on visitors over the years)
   - Maintenance, excavations and conservation works (in the Facebook page are published many photos of these activities)
   -
5. There is no official theme of videos on Archaeological Park of Bylis in YouTube.
   What to improve:
   There are many videos in the rubric of "Reels" of Facebook, which can be published in YouTube under the theme of Archaeological Park of Bylis.

6. Selection of photos in the facebook galley
   The gallery of photos should be carefully checked as they are uploaded there in bulk with no selection.
   What to improve:
   They could be selected and used as recommended above. Also, there are many photos from Apollonia Archaeological Park uploaded there, without any relevance.

7. Facebook and Instagram
   Facebook and Instagram are only in Albanian language.
   What to improve:
   To be visited by foreign tourists it is important the both of them the translated version in English language be introduced.

Opening hours of the Park (flexible, fixed hours)

Archaeological Park of Bylis:

- maintains consistent operating hours in the high season (1st May – 31st October), offering services seven days a week from 09:00 AM to 7:00 PM;
- while in the low season (1st November – 30th April) it operates from Tuesday – Sunday from 09:00 AM to 4:00 PM. Monday is day off.

3 | Stakeholder Engagement & Community Action Plan

The stakeholder engagement process for the Conservation Plan of the Byllis–Klos Archaeological Park was designed and implemented to ensure inclusivity, transparency, and meaningful participation. In line with international standards (ICOMOS, ICCROM) and Albanian legislation, the process brought together institutional actors, experts, community representatives, and businesses to shape the future of the site.

The approach was based on three guiding principles:

- **Inclusivity**, by involving institutional actors, field experts, local communities, civil society, and the tourism sector.
- **Transparency**, through clear communication of objectives, limitations, and processes.
- **Iterative dialogue**, where engagement was not treated as a one-off event, but as a recurring consultation at every milestone.

During the drafting phase of the Conservation Plan, the stakeholder engagement expert (along with the team of other consultants) carried out a series of technical-level consultations to ensure that the document was grounded in expert knowledge and institutional collaboration. The consultations provided valuable insights into conservation needs, management challenges, and institutional priorities, which later informed the engagement strategy and shaped the draft plan.

2.1 Work Undertaken on Stakeholder Engagement during the preparation of the conservation plan

The work on stakeholder engagement during the preparation of the Conservation Plan included:

- Technical consultations with MEKI, IKTK, Institute of Archaeology, Park Administration, and AICS.
- Stakeholder mapping, which identified:
    - Central government (MEKI, IKTK).
    - Local government (Municipality of Mallakastër).
    - Park management (Apollonia–Bylis Park Administration).
    - Technical experts (archaeologists, restorers, engineers).
    - Community stakeholders (farmers, landowners, restaurant owners).
    - Tourism sector (tour operators, guides, hospitality providers)

In addition, a mapping of the villages surrounding Bylis site was designed based to their proximity to the site.

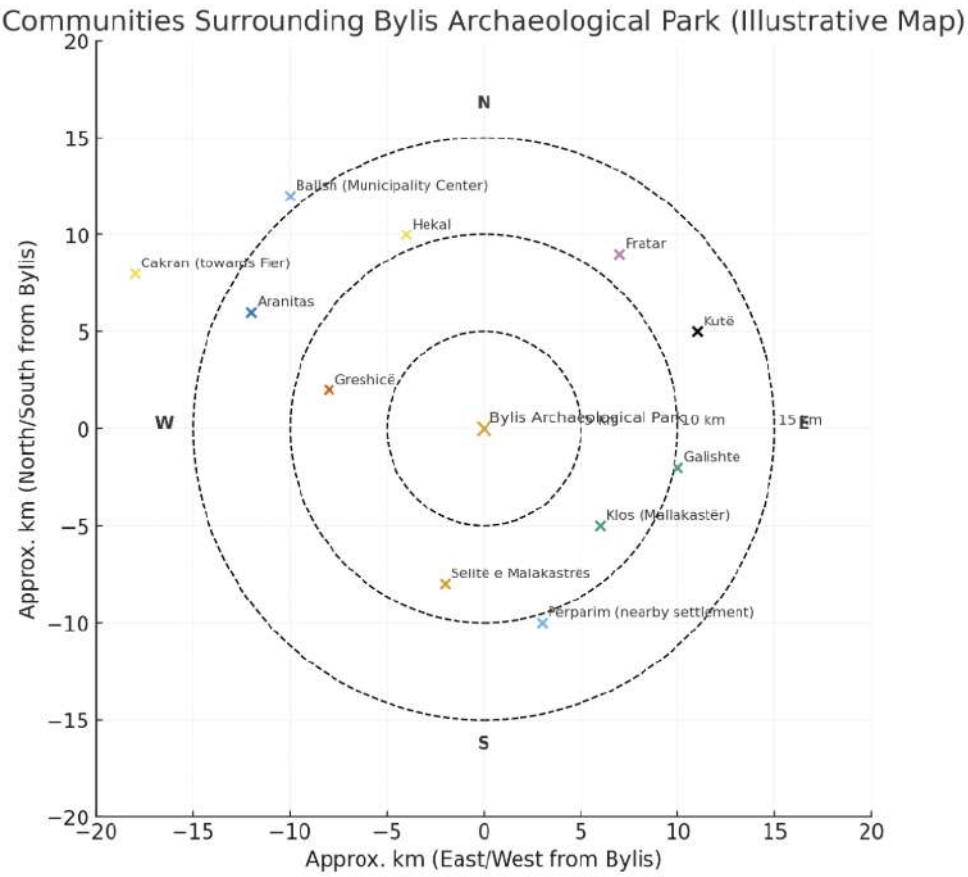


Figura 14 Communities Surronding Bylis Archeological Park. Illustrative Map

Based on this exercise the list of communities closest to **Byllis Archaeological Park** with their approximate distances are as below:

1. **Klos (Mallakastër)** – ~7.8 km
2. **Greshicë** – ~8.2 km
3. **Selitë e Malakastrës** – ~8.2 km
4. **Galishte** – ~10.2 km
5. **Përparim (nearby settlement)** – ~10.4 km
6. **Hekal** – ~10.8 km
7. **Fratar** – ~11.4 km

8. **Kutë** – ~12.1 km
9. **Aranitas** – ~13.4 km
10. **Ballsh (Municipality Center)** – ~15.6 km
11. **Cakran (towards Fier)** – ~19.7 km

The **closest villages** to the park are **Klos, Greshicë, and Selitë e Malakastrës** (all under 9 km away). Out of the surrounding areas, of particular importance stands the area of Klos Mallakastër. The Integrated Management Plan for the Byllis–Klos Archaeological Park (2024–2029) identifies the **ancient city of Nikaia (today's Klos)**, as a fortified settlement from the 5th century BC and its close historical link to Byllis.

2.3 Stakeholder Meeting in September 2025 – Summary

As part of the preparation of the conservation plan, a stakeholder meeting was organized on 4th of September 2025, at the premises of the Mallakastër Municipality. The meetings' objective was the presentation of the first draft of the Conservation Plan and open dialogue with stakeholders. The list of the participants, along with the agenda and presentations are an integral part and annex to this document.

Key Highlights:

Opening Statements:

- Mayor Qerim Ismailaj underlined the importance of inter-institutional cooperation and active involvement of the local community.
- AICS and MEKI representatives reiterated donor commitment and stressed the integration of conservation with tourism and local development.

Expert Presentations:

- Prof. Neritan Ceka: Introduced the priority monuments (Theatre, Stoa, Victorinus Wall, Cistern, Basilica B, and Klos-Nikaia). He stressed potential reuse, including night visits and cultural programming.
- Berbis Islami: Focused on mosaic conservation, long-term protection, and maintenance strategies.
- Genc Metohu: Addressed tourism gaps, including insufficient infrastructure, poor access, lack of marketing, and limited visitor services. He emphasized the potential link with the Vjosa Valley and community-based tourism.
- Edvin Lamçe: Coordinated discussions on community involvement and outlined opportunities for local benefits.

Community Contributions:

- The head of Klos village raised the need for better signage and orientation.
- An agrotourism representative called for connecting the site with the Vjosa River through walking trails.
- The Mayor stressed expanding the Theater's function for cultural activities such as the "Bylis Foni" festival, and noted the need for greater public access to the mosaics.

Conclusions:

- Full support for the Conservation Plan by Municipality, MEKI, IKTK, and AICS.

- Consensus on priority projects and integrated approaches combining archaeology, restoration, and tourism.
- Recognition of the EU and AICS for funding and implementing a strategic heritage project.
- Agreement to expand community use of the site after interventions, through cultural events and performances.

4 | Community and sustainable conservation

The new administration shall take into consideration the principle of Sustainable Conservation when it comes to the preservation and promotion of the cultural monuments and the entire site (Bylis and Klos). This concept, when applied to the case, can combine elements and interventions that consider both daily maintenance and strategic, long-term approaches and objectives.
As a principle, it encompasses the classical approach to conservation while also including additional elements that pose challenges from a broader management perspective and involve strategic practices followed at both global and local levels.
Sustainable Conservation involves finding a balance between preserving the heritage values of the monument and managing the impact of visitors to the site, as well as local resident activities, etc.
Some examples of sustainable conservation practices for heritage monuments that would be beneficial to implement at Bylis and Klos(Nikaia) and the surrounding area include:

- Involvement of the local community (residents); using traditional and local skills/crafts and materials.
- Green Energy: Utilizing renewable sources such as solar and wind energy for use at the monument.
- Green Infrastructure.
- Integrated Waste Management.
- Environmentally friendly approaches and Eco-Tourism: Considering the transformation of the park into an Eco-Archaeological Park.

Maintenance works and conservation interventions at the site, the surrounding walls, and the protected area can successfully involve local residents, as well as promote local traditions such as artisans, craftsmanship, and trades.
Sustainability also requires the use of local materials whenever possible and materials that are cost-effective. Identification of the workers who have participated in excavations and conservation works in Byllis, as well as identifying the production of traditional lime in the area and how it has been used in past restoration works. This can target Apolonia and Butrint the way how they operate in there.
The site and the park as a whole, is located in a very favorable position on a hill. Harnessing wind and solar energy could result in a successful and sustainable approach, provided there is careful planning and consideration of several factors, including potential impact on the surrounding environment and heritage values. A detailed site assessment would be necessary to determine the most suitable location, wind speed, and direction. The use of portable turbines could be considered. However, a detailed analysis and study must be conducted, as such interventions carry public and political sensitivity.

5| Five-Year Action Plan for Community Engagement

Objective: To ensure that conservation of Bylis–Klos Archaeological Park is sustained through long-term community involvement and benefits.

Year 1 (2026) – create the foundations:

- Establish a Community Advisory Forum including municipal representatives, rangers, elders, NGOs, and businesses.
- Develop and distribute educational materials in schools and surrounding villages on site conservation.
- Launch pilot training sessions for local workers in conservation and maintenance.
- Organize 2 times per year – open days – with the topic of conservation and preservation
- Organize at least one (1) workshop with teachers of the area – skills in children and site preservation activities
- Organize at least 4 events and learning activities with children – schools
- Review the conservation plan implementation and other investments such as the museum and the VC aka Multifunctional Centre, parking etc. regarding access
- Organize events and skilling activities for preservation and artisan skills in mosaic production

Year 2 (2027) – improve capacity and access:

- Initiate scholarship programs for local youth in archaeology, restoration, and tourism.
- Improve site signage and orientation infrastructure in consultation with community representatives.
- Pilot community ranger collaboration workshops to reduce conflicts related to grazing and parking.
- Organize 2 times per year – open days – with the topic of conservation and preservation.
- Organize at least one (1) workshop with teachers of the area – skills in children and site preservation activities.
- Organize at least 4 events and learning activities with children /schools.
- Review the conservation plan implementation and other investments such as the museum and the VC aka Multifunctional Centre, parking etc. regarding access
- Organize events and skilling activities for preservation and artisan skills in mosaic production

Year 3 (2028) – Economic Integration:

- Support development of community-based tourism services (guesthouses, agrotourism, crafts).
- Organize cultural events in partnership with municipalities and local groups.
- Expand seasonal employment opportunities for conservation works and guiding.
- Organize 2 times per year – open days – with the topic of conservation and preservation
- Organize at least one (1) workshop with teachers of the area – skills in children and site preservation activities
- Organize at least 4 events and learning activities with children – schools

Year 4 (2029) – Consolidation:

- Develop eco-cultural trails connecting Bylis with Vjosa and nearby villages.
- Strengthen youth and women's groups through micro-grants linked to Park activities.
- Document and disseminate community heritage narratives for promotion.
- Organize 2 times per year – open days – with the topic of conservation and preservation.
- Organize at least one (1) workshop with teachers of the area, skills in children and site preservation activities.
- Organize at least 4 events and learning activities with children – schools.

Year 5 (2030) – Sustainability:

- Formalize the Community Advisory Forum into a permanent consultative body.
- Review progress and update the engagement plan based on monitoring and lessons learned.
- Scale up successful models (festivals, crafts, agrotourism) into regional networks.

6| Annex

ANNEX 1 - Project's site visit in Byllis and Klos Archeological Park, May 9, 2025

ANNEX 2 - Stakeholders' Meeting to present the first draft of the Conservation Plan for the Bylis Archaeological Park, Municipality of Mallakastër, September 4, 2025

7| Index of Figures

This document is to be considered an integral part of the Conservation Plan. Specifically, it defines the priorities for interventions and maintenance.
This plan includes an emergency response plan, outlining the procedures to be followed (maintenance, monitoring, management of natural and man-made risks, further excavations, and analyses).
This will ensure the sustainability of the interventions and the resilience of the site, allowing the preservation of the heritage for future generations, in compliance with international and national regulations regarding the protection of cultural heritage.
The action plan will take into account the timelines of the IPA 2018 project "EU for Tourism-Led Economic Development, Local Economic Development with a Focus on Cultural Heritage."
The related costs will be identified and broken down into these categories:

- Conservation and structural consolidation
- Cleaning and ongoing maintenance
- Monitoring.

1 | Introduction and Objective

The primary objective of the action plan is the conservation and development of the cultural heritage of Bylis and Klos.
This objective is pursued through:

- short-term objectives (2024-2026)
- medium-term objectives (2027-2029)
- long-term objectives (2030+)

In line with the IPA Acton Document 2018, the specific objectve of the project is "to increase and preserve the usability and attractiveness of cultural heritage assets in the archaeological area of Bylis". On this basis, the following results will be produced[1]:

1. Protecton, conservaton and restoraton of the architectural and artstc heritage of Bylis, coordinated with the increase of the professional and management capacites of the park's personnel and the implementaton of adequate ways of its administraton in accordance with the prerogatves of Law no. 27/2018 "On Cultural Heritage and Museums" and the "Natonal Strategy for Culture 2019 – 2025" .
2. Radical improvement of the infrastructure of recepton and visits for tourists, identficaton at their service of the values of the cultural and environmental heritage of Bylis, increase of opportunites for interactvity with the educatonal insttutons of Mallakasta and with the Albanian educaton system in general.
3. Impact on local economic growth and development through the adopton of the EU community-led local development (CLLD) approach, enhanced skills and capacites, and an enhanced cooperation between local communites and the park administraton.

[1] *Bylis Management Plan*

2 | The risk management

The Risk Management Plan is a strategic and operational document that serves to:

- identify and describe risks that could compromise the achievement of the site's conservation objectives.
- Analyze the likelihood of these risks occurring and their impact;
- Assess how to avoid, mitigate, manage, or, if necessary, accept them;
- Assign responsibilities, resources, timeframes, and procedures to ensure the planned interventions are effectively implemented;
- Continuously monitor the status of risks, update assessments, manage change, and report to stakeholders.

Taking into account the general state of conservation of the site, the mitigation priorities have been classified into:

- High risk levels.
- Medium risk levels.
- Low risk levels.

2.1 High Risk

2.1.1 Vegetation

The presence of **invasive vegetation** within an **archaeological park** poses a serious and complex problem, both from a **conservation** and a **management** perspective. Its main implications concern the **physical degradation of archaeological structures**, **landscape alteration**, and **difficulties in site maintenance and visitor accessibility**. Particularly in the Klos area, where vegetation is obscuring the archaeological remains and and in general in all the structures of the Bylis site.

Invasive plants (weeds, shrubs, climbers, and pioneer species such as fig trees, ailanthus, capers, or robinia) can severely compromise the **stability and integrity of ancient structures**:

- **Root penetration:** roots grow into **cracks and joints** of ancient masonry, widening them over time and causing detachment of stones, mortar loss, and partial collapse.
- **Stone disintegration:** plant roots and organic exudates chemically alter the **composition of stone materials** (limestone, sandstone, tuff), accelerating erosion and decay.
- **Increased humidity:** vegetation promotes **moisture retention** and creates a humid microclimate, encouraging the growth of mosses, lichens, and biodeteriogenic microorganisms.
- **Lifting and fracturing of floors or foundations**, due to root expansion beneath archaeological surfaces.

Landscape and Perceptive Implications

- Overgrown vegetation hides and **reduces the visibility of archaeological remains**, making it harder to interpret the site.
- It disrupts the **historical landscape coherence** and the aesthetic relationship between the ruins and their natural surroundings.
- For visitors, the presence of uncontrolled vegetation conveys a **sense of neglect and abandonment**, lowering the perceived cultural value of the site.

Safety and Accessibility Issues

- **Risk of falling debris** from weakened structures.
- **Blocked paths and limited accessibility** for visitors and maintenance staff.
- Presence of **allergenic or irritant plant species** posing health risks to the public and workers.

Management and Operational Implications

- Requires **regular monitoring** and **targeted clearing or selective weeding** (preferably manual or mechanical, avoiding harmful chemicals).
- Involves collaboration among **archaeologists, botanists, and conservators** to distinguish between harmful and stabilizing vegetation (e.g., old trees or slope-retaining plants).
- Should be included in a **Green Management Plan for Archaeological Sites**, defining periodic maintenance, seasonal control, and photogrammetric monitoring.

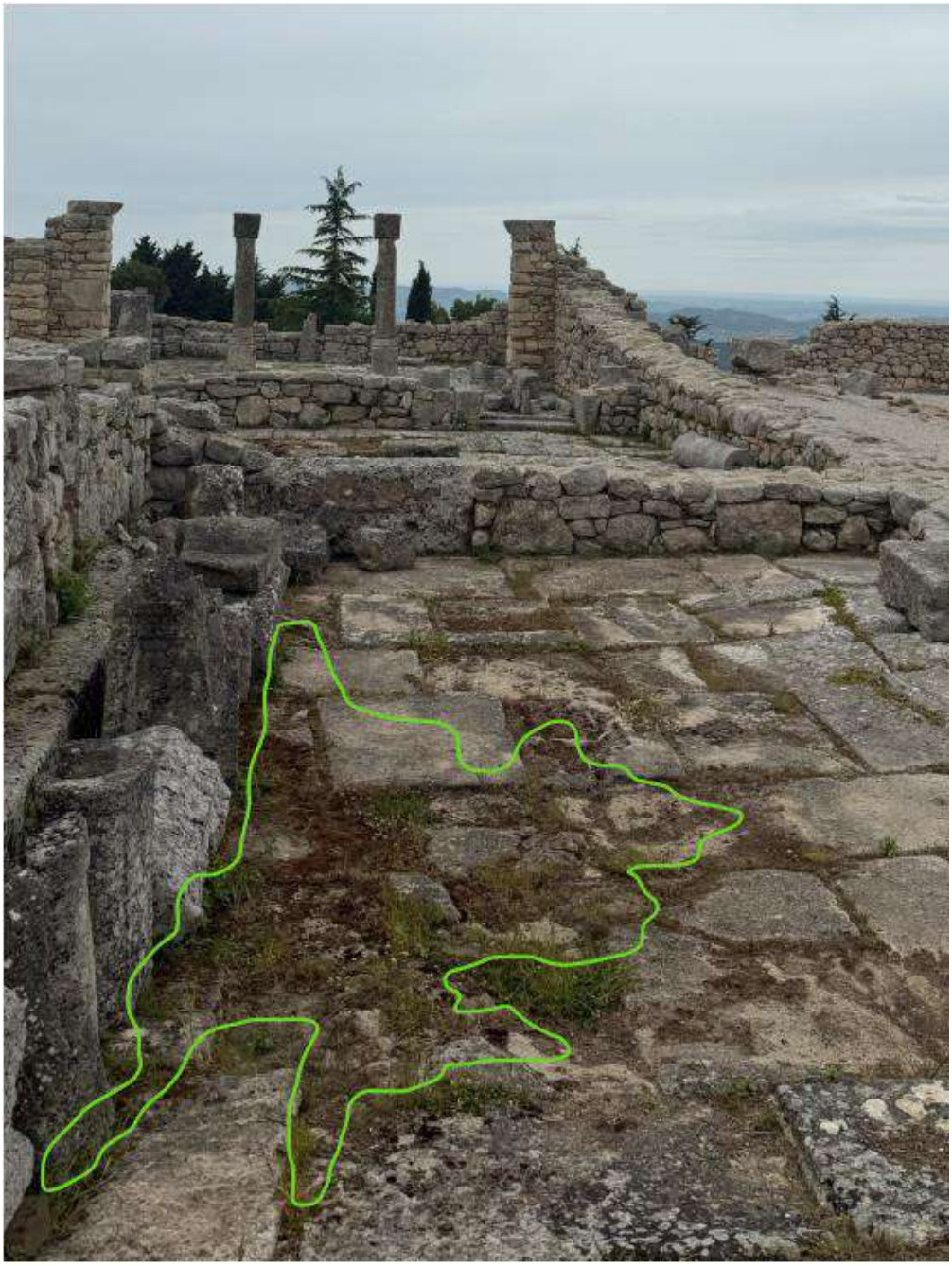


Figure 1 Presence of vegetation rooted in the joints of the paving of Basilica B.

Figure 2 Presence of biological patina and vegetation rooted in the joints of the paving of Basilica C, lacunae and cracks favouring the growth.

Figure 3 House A-B Vegetation overgrowth within the wall remains obscures archaeological traces and threatens their conservation.

Figure 4 Klos - Significant illegibility of the archaeological remains due to the complete lack of continuous vegetation maintenance on the site

2.1.2 Erosion

The erosion (and more generally, the deterioration) of stone materials in an archaeological park is due to a combination of natural, climatic, biological, and human factors. Below are the main causes, each with an explanation:

Main Causes of Stone Deterioration

1. Physical / Climatic Actions

- **Thermal fluctuations**: Temperature changes between day and night or across seasons cause the stone to expand and contract. These repeated stresses can lead to cracks, fractures, and exfoliation.
- **Freeze-thaw cycles**: Water enters the stone's pores or cracks and freezes in cold weather. As it freezes, it expands, causing the material to break apart. This repeated cycle is especially damaging.
- **Mechanical actions**: Wind, driving rain, and abrasion from sand or airborne particles can wear down the stone. Water runoff can also erode surfaces or carry away loose particles.

2. Chemical Actions

- **Dissolution**: Many stone types, especially carbonates (marble, limestone, calcarenite), are soluble in acids. Acid rain and polluted air containing SO_2, NO_x, and CO_2 accelerate chemical dissolution.
- **Salt crystallization**: Soluble salts (nitrates, sulfates, chlorides, etc.) are transported by water. When the water evaporates, salts crystallize and expand inside the pores, causing powdering, flaking, patina formation, and fractures.

3. Biological Actions

- **Colonization by lichens, algae, fungi, mosses**: These organisms cling to the stone surfaces, retain moisture, and produce organic acids, contributing to both chemical and physical damage.
- **Plant roots**: Roots can grow into cracks, widen them, and cause portions of the stone to detach.

4. Human (Anthropic) Factors

- **Air pollution**: Industrial emissions, vehicle traffic, and the burning of fossil fuels release sulfur, nitrogen, and carbon oxides, which react with stone surfaces.

- **Tourism and physical contact**: Touching, walking on, placing objects, or graffiti can physically damage the stone.
- **Environmental or structural alterations**: Improper water drainage, impermeable surfaces, construction near the site that changes sunlight exposure or wind flow can also have an impact.

5. Climate Change / Global Environmental Shifts

- **Increased frequency or intensity of rainfall and extreme weather events**: These can intensify erosion and chemical reactions on the stone surface.
- **Higher atmospheric CO_2**: Leads to more acidic rain and faster chemical erosion of calcareous stones.

Figura 2 Presence of biological patina and vegetation rooted in the joints of the paving of Basilica C, lacunae and cracks favouring the growth.

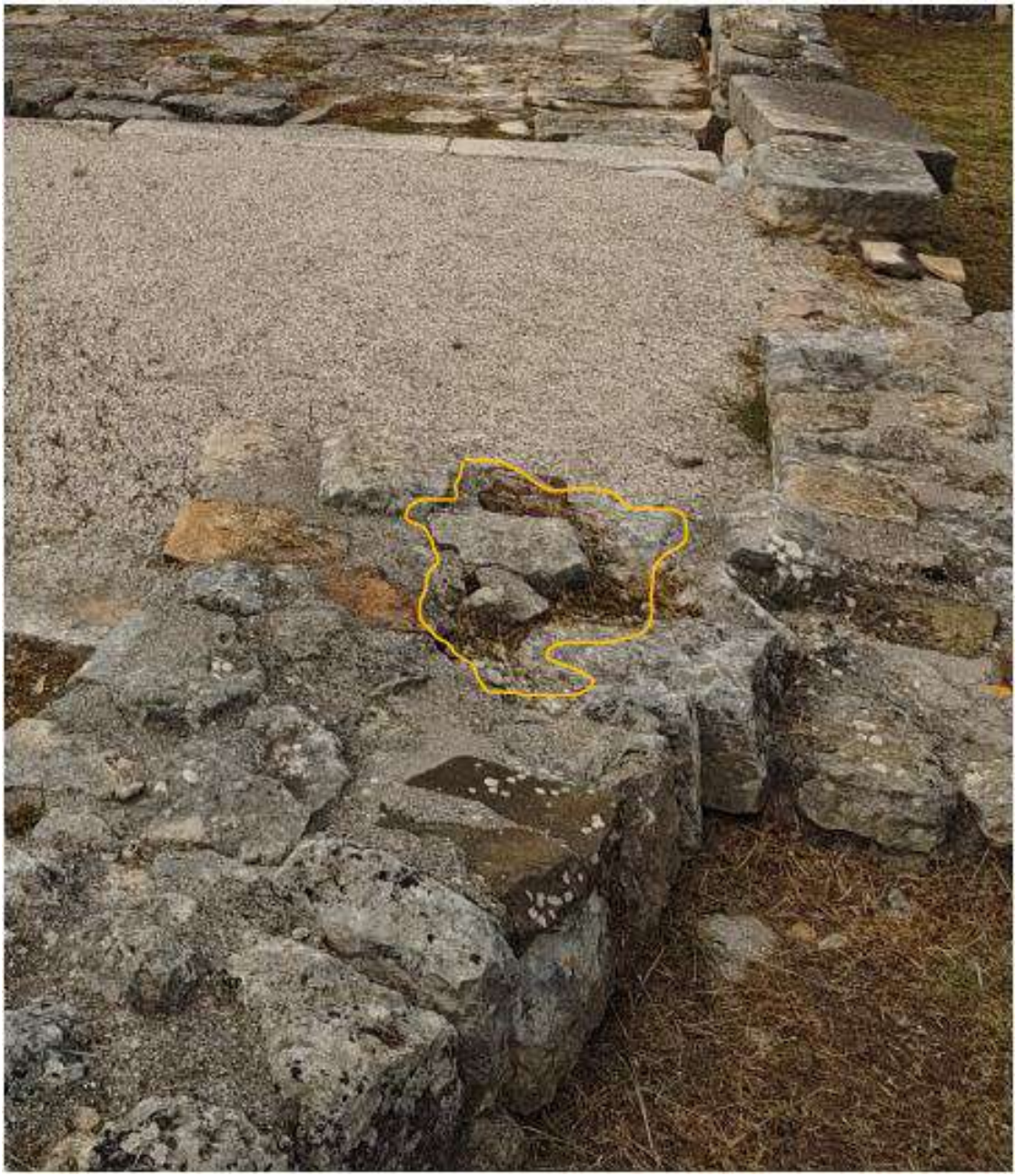


Figure 5 Erosion of wall crests and degradation of cementitious joint repointing.Basilica C

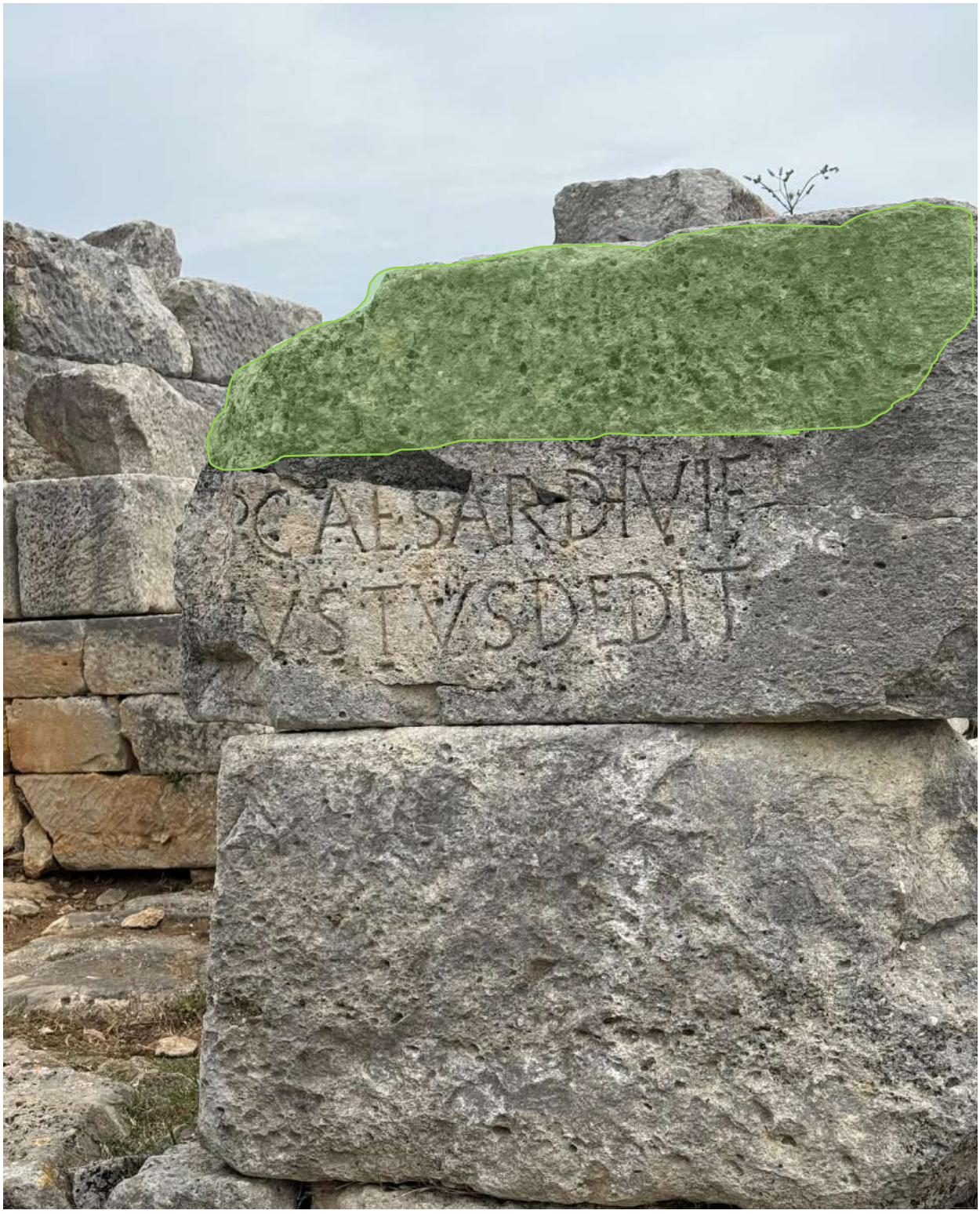


Figure 6 Inscribed stone block in Stoa B showing fractures, biological patina, and signs of erosion.

Figure 7 Erosion of wall crests and deterioration of cementitious joint repointing and stabilization with improper infill (pottery fragments). Basilica E

Figure 8 Erosion of cementitious joint repointing, facilitating vegetation growth and loss of archaeological legibility.

Figure 94 Signs of erosion and biological patina on the steps of Bylis theatre.

2.1.3 Landslides and slippages

The **risk of landslides and slope failures** within an **archaeological park** represents one of the most serious threats to the integrity of ancient structures and the overall safety of the site. These are complex **geomorphological processes**, caused by **slope instability**, **erosion**, **water infiltration**, and **human activities**, which can lead to irreversible damage to the archaeological heritage. Below is a detailed analysis:

Structural Implications

- **Settlements and collapses:** ground movements can cause **differential displacements** in the foundations of ancient structures, resulting in cracks, deformations, or partial collapses.
- **Detachment of masonry elements:** vibrations and micro-movements in the soil compromise the cohesion of stone blocks and historic masonry, particularly in buildings without deep foundations.
- **Deformation of the archaeological soil:** slow landslides or surface flows may **alter stratigraphy**, leading to the loss of valuable archaeological information.
- **Damage to protective and drainage structures** (e.g., channels, retaining walls, walkways), producing a cascading effect on site degradation.

Main Causes

- **Prolonged water infiltration** and increased pore pressure in clayey or silty soils.
- **Surface runoff** due to poor drainage systems or improper management of stormwater.
- **Soil saturation** caused by heavy or irregular rainfall events, often intensified by climate change.
- **Removal of stabilizing vegetation**, whose root systems consolidate the soil, or growth of **invasive plants** with root systems that disrupt soil cohesion.
- **Archaeological excavations** not adequately consolidated, which may weaken slopes.
- **Human activities:** pedestrian pathways, vehicle traffic, or nearby construction that alter the natural slope profile.

Safety and Accessibility Implications

- **Risk to visitors and personnel** from falling debris or sudden ground movements.
- **Restricted public access** to large areas of the park, reducing its usability and touristic value.
- **Damage to visitor infrastructure**, such as walkways, barriers, or information panels.

Mitigation and Management Measures

- **Continuous geotechnical and topographic monitoring** using inclinometers, extensometers, GPS, and photogrammetric surveys.
- **Bioengineering interventions:** wooden piling, gabions, shallow drainage systems, stormwater management works, and revegetation with native species.

- **Localized structural consolidation** of at-risk masonry and flooring using compatible and reversible methods.
- **Design of safe and controlled visitor routes**, including protective barriers and risk signage.

Figure 10 Structural failures of the blocks in the retaining walls of the cistern, caused by soil pressure and slippage.Cisterna

Figure 61 Uncontrolled slippage of masonry blocks, potentially hazardous for both conservations and safety reasons.

Figure 12 Risk of landslides and slippages. Safety measures are required following hydrogeological analyses and archaeological sampling.

Figure 13 Uncontrolled slippage of masonry blocks, potentially hazardous for both conservations and safety reasons.

Figure 14 Ancient walls of Klos largely illegible due to insufficient maintenance and site management; risk of soil pressure and slippage.

2.2 Medium Risk

2.2.1 Structural Collapse and Instability Risk

The **risk of structural collapse and instability** is among the most significant threats in archaeological parks, where ancient remains—often lacking deep foundations and built with perishable materials—are particularly vulnerable to **physical, environmental, and mechanical decay**. Causes are multiple and interrelated, ranging from material deterioration and lack of maintenance to seismic or extreme weather events, potentially leading to **irreversible damage** to the archaeological heritage.

Structural Implications

- **Differential settlements and deformations** due to foundation instability or loss of material cohesion.
- **Cracks and detachments** in masonry caused by uneven loads, vibrations, or thermo-hygrometric variations.
- **Partial or total collapses** of walls, arches, vaults, and columns in the absence of proper consolidation.
- **Progressive decay of mortars and stone materials**, reducing load-bearing capacity.
- **Breakage or displacement of architectural elements** such as capitals, cornices, blocks, or paving slabs.

Main Causes

- **Aging and deterioration of materials** (mortars, stones, bricks) due to chemical, physical, and biological processes.
- **Water infiltration** and freeze–thaw cycles accelerating disintegration.
- **Lack or inefficiency of drainage systems** and routine maintenance.
- **Seismic or vibrational stresses** (from traffic, nearby works, or natural events).
- **Abnormal static or dynamic loads** due to visitors or incompatible structures.
- **Outdated or improper restoration interventions** using non-compatible materials (e.g., rigid cement, corroded steel).

Safety and Accessibility Implications

- **Risk to visitors and staff** from falling fragments or sudden collapses.
- **Restricted access** to affected areas, reducing public enjoyment and educational use.
- **Loss of cultural and identity value** of the archaeological asset.
- **Collateral damage** to service infrastructure (walkways, parapets, lighting).

Prevention and Mitigation Measures

- **Continuous structural monitoring** (crack gauges, movement sensors, 3D and photogrammetric surveys).
- **Compatible and reversible consolidation works**, in line with conservation principles.
- **Efficient rainwater management** and infiltration control.
- **Scheduled maintenance plans** with seasonal inspections.
- **Physical protection of unstable areas** and regulated visitor access.
- **Ongoing documentation and condition surveys**, integrated into the park's GIS system.

Figure 15 Wall crest deformations and structural failures; ineffective stabilization with improper infill (pottery fragments).

Figure 16 Structural failures of the blocks in the hypogean retaining walls of the cistern, caused by soil pressure and slippage.

Figure 17 Wall crest deformations and structural failures; ineffective stabilization with improper infill (pottery fragments) and scattered, poorly executed repointing with cementitious mortar.

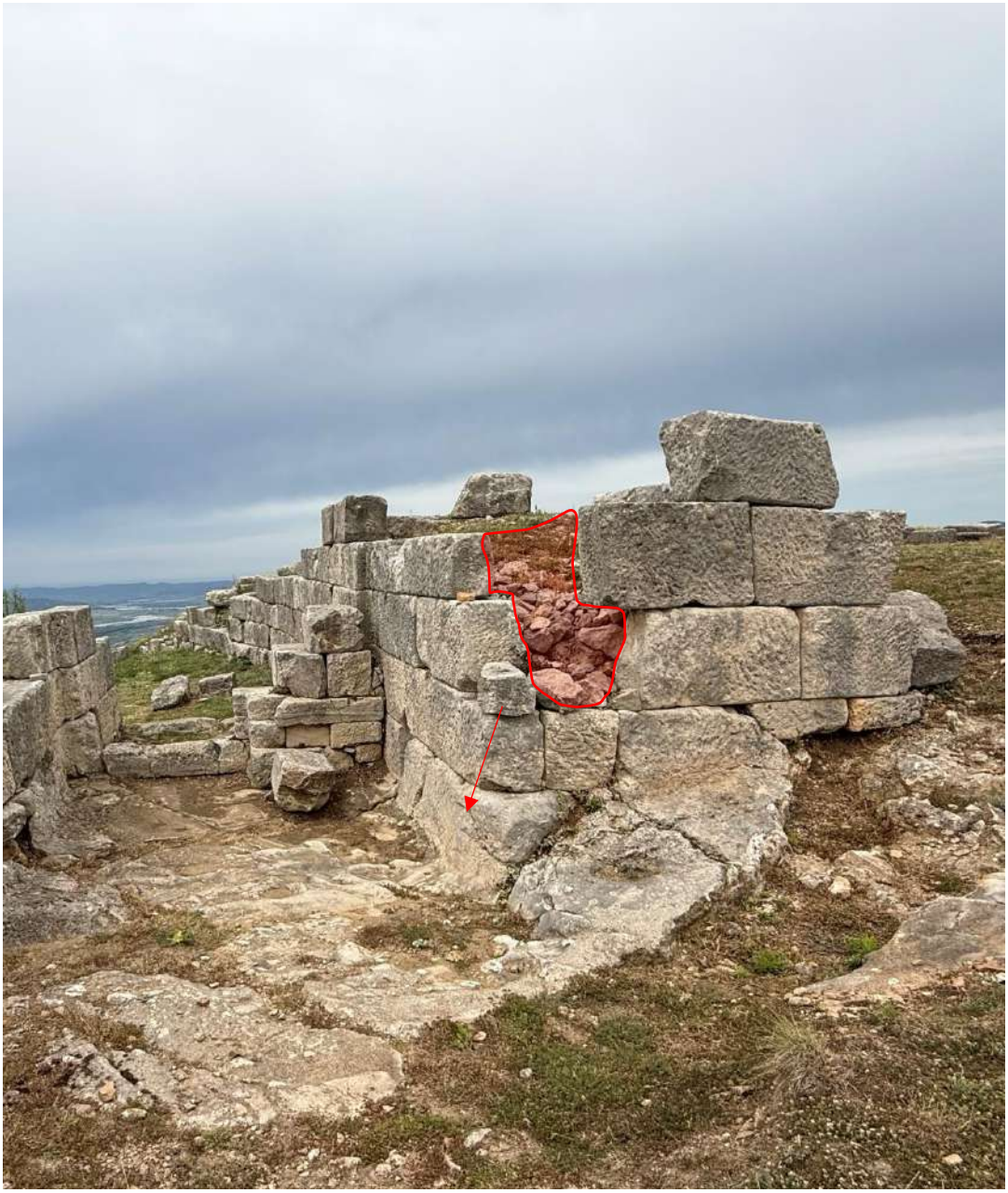


Figure 18 Missing stone blocks, structural failures and collapse of the wall's elements.

2.2.2 Improper Interventions and Stabilizations

The **risk arising from improper interventions and stabilizations** is a major concern in archaeological contexts, where every conservation or consolidation action must adhere to the principles of **compatibility, reversibility, and minimal intervention**.
Works carried out without proper expertise or with inappropriate materials and techniques can permanently compromise the authenticity, stability, and legibility of ancient structures.

Structural Implications

- **Alteration of static balance** due to rigid reinforcements, cement injections, or metal anchors incompatible with original materials.
- **Formation of internal stresses and cracks** caused by differing mechanical behavior between old and new materials (e.g., cement mortars on lime-based masonry).
- **Blocking of voids or drainage channels**, increasing loads or retaining moisture.
- **Indirect damage to adjacent remains** through load redistribution, vibration, or unplanned excavations.
- **Loss or concealment of original elements** replaced by inappropriate materials.

Main Causes

- **Use of incompatible materials**, such as rigid cements, synthetic resins, or corrodible steel reinforcements.
- **Lack of preliminary investigations** (geotechnical, diagnostic, and structural studies).
- **Emergency or temporary works** left in place without proper evaluation.
- **Overemphasis on immediate stability**, neglecting long-term conservation.
- **Use of non-reversible modern techniques**, without assessing their impact on the historical fabric.
- **Lack of interdisciplinary coordination** among archaeologists, engineers, and conservators.

Conservation and Usability Implications

- **Loss of historical and material authenticity** of the remains.
- **Increased maintenance difficulty** due to incompatible or irreversible materials.
- **Alteration of the aesthetic and landscape appearance** of ancient ruins.
- **Reduced archaeological legibility** and loss of documentary value.
- **Potential future instability** from differential material behavior over time.

Prevention and Mitigation Measures

- **Adoption of conservative restoration principles**, using materials similar to the originals (lime mortars, local stone, traditional techniques).
- **Preliminary diagnostic analyses** (endoscopy, thermography, laser scanning).
- **Multidisciplinary design approach**, assessing interactions between structures, soil, and archaeological context.
- **Continuous documentation and monitoring** of all interventions.
- **Review or removal of incongruent past repairs**, where compatible with safety.
- **Training and supervision** of technical staff under the direction of qualified experts.

Figure 19 Deep fractures visible in the columns of Basilica B.

Figure 20 Wall crest deformations and structural failures; ineffective stabilization with improper infill (pottery fragments).

Figure 81 Absence of a protective casings to stabilize the wall crests and prevent settlement, material loss, and vegetation growth.

Figure 22 Risk of collapse of stone blocks that were repositioned during previous restoration works, potentially due to inadequate stabilization and geotechnical issues.

Figure 93 Wall crest deformations and structural failures; ineffective stabilization with improper infill (pottery fragments) and scattered, poorly executed repointing with cementitious mortar.

Figura 104 Resettlement and compaction of the soil with improper infill (pottery fragments), facilitating weeds growth.

Figure 25 Incomplete cementitious joint repointing, facilitating vegetation growth and loss of archaeological legibility.

Figure 26 Risk of wall-crest collapse failure of the portal, posing a hazard to visitor circulation.

Figure 27 Significant loss of masonry blocks, posing hazards to both conservation and safety, possibly due to anthropogenic activity, and facilitating vegetation rooting further endangering the walls' stability.

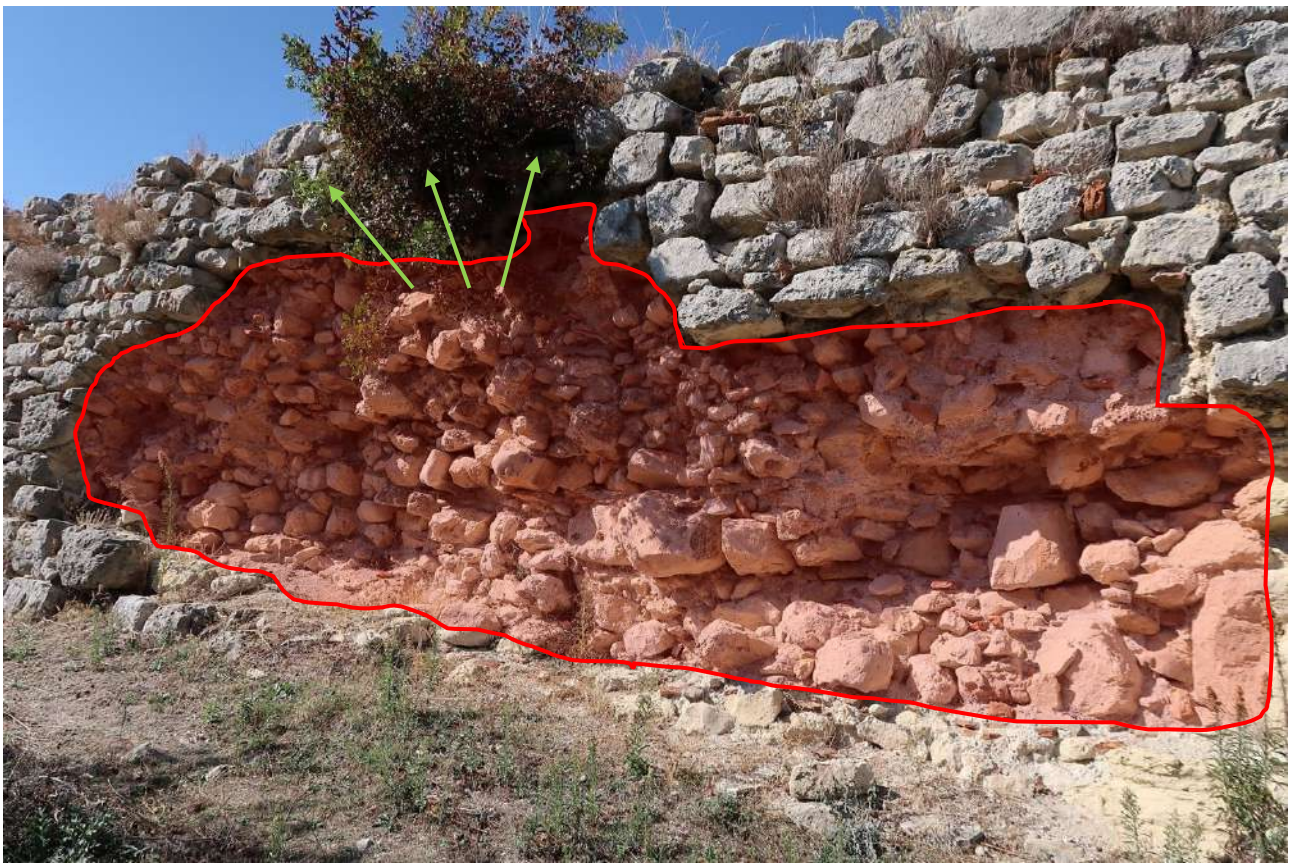


Figure 28 Significant loss of masonry blocks, posing hazards to both conservation and safety, possibly due to anthropogenic activity, and facilitating vegetation rooting further endangering the walls' stability.

Figure 29 Risk of wall-crest collapse and structural failure of the portal as shown by the concrete lintel replacements already arranged along the openings of the walls and towers, posing a hazard to visitor circulation.

2.3 Low Risk

The **risk arising from the use of inappropriate protective materials**, combined with the **absence of systematic cataloguing** and the **need for further archaeological investigations and excavations**, poses a major threat to the **conservation, documentation, and management** of the archaeological heritage.
These conditions affect the site's preservation both **materially**, by causing physical damage to structures, and **scientifically**, by limiting knowledge and future planning.

Structural and Conservation Implications

- **Accelerated decay of ancient materials** caused by non-breathable coatings, sealants, or mortars (e.g., synthetic resins, cement, plastic films).
- **Moisture entrapment** leading to mold growth, salt efflorescence, and microcracking.
- **Surface and chromatic alterations** of ancient masonry and flooring.
- **Loss of original elements or stratigraphic layers** due to undocumented or misguided interventions.
- **Indirect damage** during future excavations or restorations due to missing mapping or data.

Main Causes

- **Improper use of modern, non-compatible materials** with different physical-chemical properties.
- **Lack of cataloguing and digital documentation protocols** (stratigraphic unit sheets, surveys, photographs, lab analyses).
- **Protective or restoration works carried out without scientific supervision** or official approval.
- **Absence of a comprehensive archaeological research plan**, leaving gaps in the site's stratigraphic understanding.
- **Emergency or partial excavations** not followed by systematic investigation.

Scientific and Management Implications

- **Reduced understanding of the historical and structural context**, hindering accurate archaeological interpretation.
- **Difficulty in planning future conservation or enhancement actions**, due to missing or inconsistent data.
- **Risk of overlap or accidental damage** during new excavations.
- **Inconsistent data management** between institutions and authorities.
- **Limited scientific and educational value** of the site for research and visitors.

Prevention and Mitigation Measures

- **Use only compatible and reversible protective materials**, tested for breathability and long-term stability.
- **Develop an integrated cataloguing and documentation system**, including unique coding, georeferencing, and digital storage (GIS, archaeological database).
- **Promote targeted diagnostic surveys and stratigraphic excavations**, under multidisciplinary scientific supervision.
- **Train conservation and restoration personnel** on appropriate materials and techniques.
- **Collaborate with universities and research institutes** for methodological updates and knowledge sharing.

Figure 30 Removal of the plastic sheet covering the mosaic of Basilica B to allow inspection of its condition and replacement with a more suitable protective material, such as geotextile.

Figure 31 Erratic elements with inscriptions, requiring cataloguing and relocation to a safe environment suitable for conservation.

Figure 32 Erratic elements with inscriptions, requiring cataloguing and relocation to a safe environment suitable for conservation.

Figure 33 Concrete blocks used as infill for missing areas and for protection, temporary in appearance and inconsistent with both their intended function and the site's aesthetics.

Figure 34 Reconstruction of a portion of the column using incongruous material.

Figure 35 Resettlement and compaction of the soil with improper infill (pottery fragments), facilitating weeds growth.

Figure 36 Decorated erratic elements scattered around Bylis theatre, poorly arranged and affected by biological patina and erosion; requires cataloguing and relocation for proper conservation.

2.4 Risk Level Summary Table

RISK LEVEL	RISK FACTORS	SITES OF INTEREST
High	Vegetation	Basilica B Basilica C Haouse A-B Klos Stoa Basilica E Gymnasium Theatre
High	Erosion	Klos Basilica B Basilica C Stoa Basilica E Gymnasium Theatre Klos
High	Landslides/Slippages	Cisterna Stoa B Theatre Ancient walls of Klos Victorinus Walls Stadio
Medium	Structural Collapse/Istability Risk	Wall crest Ancient walls of Klos Victorinus Walls Sourranding Wall Bylis Stoa A Stoa B Basilica A Basilica B Basilica C Basilica E Gymnasium Cisterna Prytaneum Stadio Ancient walls of Klos
Low	Inappropriate protective materials/cataloguing	Basilica A - Mosaic Basilica B - Mosaic Basilica B – Columns

		Basilica C - Mosaic Basilica D – Mosaic Stoa A Erratic elements Cisterna Theatre Haouse A-B

3 | Action Plan

The Bylis and Klosi sites have undergone several archaeological campaigns over time and are still ongoing.
During these phases, the sites underwent consolidation and restoration interventions. This information is detailed in **Part 2 of the conservation plan.**
With reference to the state of conservation identified in **Part 6 of the conservation plan** and in reference, these were classified according to the management plan, evaluating them on a scale of 1 to 5. The same analysis was also performed for the degree of emergency of the interventions, evaluating them as follows:

***Degrada□on**[2]	
1	it is in very good condi□on
2	it is in good condi□on
3	Not in good condi□on
4	is in a damaged conditon
5	is in very damaged condi□on

***Emergency**	
1	there is no emergency
2	needs cleaning and □dying up
3	needs restora□on/conserva□on
4	there is a need for consolida□on interven□ons
5	there is a need for emergency interven□on
	5a - archaeological excava□ons
	5b - discovery of mosaics

[2] *Managment Plane*

Table1 - structures/monuments of Bylis – state of degradation and degree of emergency

Monuments	Typology/Type	Degrada□on	Emergency
Ancient Bylian wall	Wall/structure	4-5	2-3
Victorine Wall	Wall/structure	2-3	3-4
Wall towers S,T,U,VX,Y	Tower	2-3	3-4
Basilica A	Basilica	2	2-3
Basilica B	Basilica	2	2-3
Basilica B	Mozaik	2	2-b
Episcopal Palace Complex	Wall/structure	2	2-3
Baptistery	Wall/structure	2	2-3
Basilica C	Basilica	2	2-3
Stoa A	Wall/structure	3-4	2-3
Stoa B	Wall/structure	4-5	4-5
Theater of Bylis	Wall/structure	2-3	2-3-5a
Proedria (Bylis Theater)	Wall/structure	2-3	2-3-5a
Mark Lolian's inscrip□on	Inscription	2	2
Stadium and cistern	Wall/structure	2	3-a
Gymnasium and Baths of Jus□nian	Wall/structure	2-3	3-a
Prytaneion and Arsenal	Wall/structure	2-3	3
House A	Wall/structure	3-4	3
House B	Wall/structure	2	3
House C	Wall/structure	3-4	3
Basilica E	Basilica	2	2-3
Basilica D	Basilica	2	2-3-5b
Mural fragments	Mural	2	3
Gate No. 5 and Gate No. 6	Gate	2-3	4
Round Tower	Wall/structure	2	2
Fortified Court Wall	Wall/structure	2	2
Agora Wall	Wall/structure	2-3	3
Kiln	Wall/structure	2	2

Necropolis	Tomb	4-5	2-3-5a
Altar	Wall/structure	2-3	2-3-5a

Table2 - structures/monuments of Klos – state of degrada□on and degree of emergency

Monuments	**Typology/Type**	**Degrada□on**	**Emergency**
Entrance gates	Wall/structure	4	2-4
Stoa	Wall/structure	4	2-3-5-a
The stadium	Wall/structure	4	2-3-5-a

3.1 Conservative Intervention Implementation Plan

Planning for the implementation of interventions in both the settlements of Bylis and Klos is related to several factors, the analysis of which schematically predetermines where and when this process will take place.

The period of conservation interventions is intended to take into account, in principle, visitor numbers and weather conditions expressed in four 3-month periods:

- based on visitor flows during the year:
  Winter season (December-January-February - low season)
  Spring season (March - April - May- high season)
  Summer season (June-July-August - medium season)
  Autumn season (September-October-November - high season)

- based on weather conditions:
  During the winter season, it is expected that interventitons of a consolidating nature will be carried out, which are not affected by low temperatures (below zero degrees) and rain. Works that require the presence of heavy equipment and increased safety measures, a period in which they are favored by the low presence of visitors during this season.
  During the spring season, it is expected that light interventions will be carried out such as vegetation cleaning, arrangements, remodeling of monuments or filling in missing parts as well as archaeological surveys.
  During the summer season, it is expected that interventions will be carried out such as remodeling of monuments or filling in missing parts, archaeological surveys, discovering mosaics of basilicas and con□nuing their restora□on. Which also coincides with optimal atmospheric conditions, such an high temperatures that help in the rapid drying of various mortars and the lack of rain.
  During the autumn season, light interven□ons such as vegetation clearing, arrangements, remodeling of monuments or filling in missing parts/anastylosis as well as archaeological surveys are expected to be carried out.

Works that are very atractive and for visitors, a very good opportunity to create interac□on between them and restauration specialists, archaeologists and park employees. Such an approach will give visitors unforgetable impressions and experiences[3].

- Based also on the state of degradation and the emergency of intervention in the monument: The condition of the structures/monuments depending on the degree of damage, those that have emergency consolidation/restoration needs will be the first to be subjected to conservation interventions.

In the first year, these interventions can be preceded by the implementation of a scanning of the territory using geo-prospecting techniques every month of the year, with the aim of identifying potential areas that will be subject to research.
Likewise, maintenance works will be a continuous part of the work, intervening according to a plan but also according to the needs that the structures/monuments will display.

[3] *Management Plan*

3.2 Conservative Intervention -Mosaic

* In the last year, it is suggested that all Basilicas be opened in order to carry out their detailed documentation, which will serve for the drafting of the next 5-year Conservation Plan.

	DESIGNATION	TIPOLOGY	TYPE OF INTERVENTION	YEARS			
				FIRST YEAR (4 – three months)			
				Dec-Jan-Feb	Mar-Apr-May	Jun-Jul-Aug	Sep-Oct-Nov
				low season	high season	medium season	high eason
SETTLEMENT OF BYLLIS							
1	**BASILICA A**	Mosaic	*Maintenance/ Conservation*		x	x	x
2	**BAZILICA D**	Mosaic	*Maintenance/ Conservation*		x	x	x
3	**BASILICA E**	Mosaic	*Maintenance/ Conservation*		x	x	x
4	Graphic and photographic documentation	Mosaic	Documentation		x	x	x

	DESIGNATION	TIPOLOGY	TYPE OF INTERVENTION	YEARS			
				SECOND YEAR (4 – three months)			
				Dec-Jan-Feb	Mar-Apr-May	Jun-Jul-Aug	Sep-Oct-Nov
				low season	high season	medium season	high eason
SETTLEMENT OF BYLLIS							
1	**BASILICA B**	Mosaic	*Maintenance/ Conservation*		x	x	x
2	**BAZILICA C**	Mosaic	*Maintenance/ Conservation*		x	x	x
4	Graphic and photographic documentation	Mosaic	Documentation		x	x	x

	DESIGNATION	TIPOLOGY	TYPE OF INTERVENTION	YEARS			
				THIRD YEAR (4 – three months)			
				Dec-Jan-Feb	Mar-Apr-May	Jun-Jul-Aug	Sep-Oct-Nov
				low season	high season	medium season	high eason
SETTLEMENT OF BYLLIS							
1	**BASILICA A**	Mosaic	*Maintenance/ Conservation*		x	x	x
2	**BAZILICA D**	Mosaic	*Maintenance/ Conservation*		x	x	x
3	**BASILICA E**	Mosaic	*Maintenance/ Conservation*		x	x	x
4	Graphic and photographic documentation	Mosaic	Documentation		x	x	x

	DESIGNATION	TIPOLOGY	TYPE OF INTERVENTION	YEARS			
				FOURTH YEAR (4 – three months)			
				Dec-Jan-Feb	Mar-Apr-May	Jun-Jul-Aug	Sep-Oct-Nov
				low season	high season	medium season	high eason
SETTLEMENT OF BYLLIS							
1	**BASILICA B**	Mosaic	*Maintenance/ Conservation*		x	x	x
2	**BAZILICA C**	Mosaic	*Maintenance/ Conservation*		x	x	x
4	Graphic and photographic documentation	Mosaic	Documentation		x	x	x

	DESIGNATION	TIPOLOGY	TYPE OF INTERVENTION	YEARS			
				FIFTH YEAR* (4 – three months)			
				Dec-Jan-Feb	Mar-Apr-May	Jun-Jul-Aug	Sep-Oct-Nov
				low season	high season	medium season	high eason
SETTLEMENT OF BYLLIS							
1	**BASILICA A**	Mosaic	*Maintenance/ Conservation*		x	x	x
2	**BASILICA B**	Mosaic	*Maintenance/ Conservation*		x	x	x
3	**BASILICA C**	Mosaic	*Maintenance/ Conservation*		x	x	x
4	**BAZILICA D**	Mosaic	*Maintenance/ Conservation*		x	x	x
5	**BASILICA E**	Mosaic	*Maintenance/ Conservation*		x	x	x
6	Graphic and photographic documentation	Mosaic	Documentation		x	x	x

4 | Annexes

ANNEX 1 - Five-Year Conservation Plan Matrix

ANNEX 2 - Cost Estimation