

Article

Protection of Immovable Cultural Heritage: The Urban Structure of Vlasotince, Southern Serbia

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Abstract

This study examines the architectural heritage of Vlasotince, a small town in southern Serbia affected by long-term depopulation, economic stagnation, and insufficient institutional mechanisms for heritage care. The research provides a comprehensive and systematically documented basis for protecting the historic urban core—Stara čaršija—using an integrated methodology that combines archival analysis, urban and architectural surveying, interviews, and extensive 3D photogrammetric documentation. The collected dataset enabled the evaluation of cultural, architectural, and urban values, the identification of a coherent spatial cultural-historical unit, and the development of a typology of degradation affecting the historic fabric. Results show that 52% of buildings within the core possess exceptional or notable value, yet degradation is widespread: 40% of buildings exhibit altered openings or portals, 29% have lost decorative plasterwork, and 23% represent new constructions incompatible with the ambient character. Mapping values and vulnerabilities at the building level allow for the definition of priority interventions. The study demonstrates that combining digital documentation, spatial analysis, and value-based assessment offers an effective framework for heritage management in small towns with limited resources. The proposed methodological model is replicable and contributes to data-driven conservation planning, supporting the sustainable revitalization of historic urban landscapes in similar regional contexts.

Keywords: architectural heritage; urban conservation; historic urban landscape; degradation assessment; photogrammetry; small town



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1. Introduction

Small towns across Serbia are increasingly at risk of losing their distinct identities due to ongoing processes of demographic decline, economic stagnation, and reduced institutional capacities for spatial governance. These dynamics have a particularly adverse impact on historic urban cores, where the built heritage is often exposed to neglect, inappropriate alterations, and a gradual erosion of character and identity. In such circumstances, cultural heritage tends not to be addressed in an integrated manner within broader urban development agendas; instead, it is treated as an isolated issue, disconnected from urban planning instruments and development policies. Consequently, opportunities for sustainable regeneration are constrained, contributing further to abandonment and physical deterioration.

Southern Serbia, encompassing the Nišava, Toplica, Jablanica, Pčinja and Pirot districts, is one of the most vulnerable regions in the country, marked by prolonged depopulation, economic stagnation, and uneven spatial development. This area, covering approximately 14,000 km², is home to around one million inhabitants, more than a quarter of whom are concentrated in the Nišava District. Research indicates that abandoned and semi-abandoned areas have become increasingly “homogenized,” particularly in southern districts such as Toplica and Pirot, where the share of abandoned cadastral units is among the highest in Serbia [1]. Studies of depopulated and abandoned areas in Serbia show that the highest concentrations of abandoned cadastral parcels occur precisely in these southern districts, characterized by extremely low population density—around 2 inhabitants/km² in the most vulnerable zones—and cumulative population losses that in some municipalities reached 65% between 1961 and 2011. As villages are abandoned, arable land decreases while forested or shrub-covered areas expand, a trend documented in land-use analyses for the period 1990–2018 [2]. The most recent national census conducted in 2022 confirmed the ongoing depopulation trend in this area. In addition to a negative natural population growth rate of −98‰, the Jablanica District is also characterized by unfavorable migration patterns exceeding −60‰ [3]. These demographic shifts have led to significant economic and infrastructural decline, reduced agricultural activity, and profound transformations in land-use patterns [1]. Such conditions fundamentally affect the management of cultural heritage, limiting institutional capacities, financial resources, and the ability of local governments to implement systematic protection.

Historical urban cores in this historical region therefore face a dual challenge: on the one hand, the inherited architectural stock is often fragile, inconsistent, or insufficiently documented; on the other hand, existing planning instruments rarely integrate heritage protection into broader development policies. This gap is particularly significant in light of the Historic Urban Landscape (HUL) approach [4]. The Historic Urban Landscape (HUL) approach, adopted by UNESCO in 2011, provides a comprehensive framework for addressing these challenges by integrating cultural heritage values into urban planning, management systems, and development strategies regarding sustainability. Instead of focusing solely on the protection of individual monuments, the HUL approach emphasizes the need to valorize entire cities, to identify historically layered urban districts, to analyze their spatial characteristics, and to manage change through context-responsive strategies. A further conceptual evolution of the Historic Urban Landscape is represented by the Heritage-Based Urban Development (HBUD) approach to sustainable development, which recognizes built heritage as a starting point and a resource for future development, rather than as an obstacle [5]. Although these concepts are widely represented in international literature, their practical implementation remains uneven. In Serbia, these approaches are still insufficiently applied, particularly in small towns and peripheral regions with limited technical and administrative capacities. This gap hampers the operationalization of heritage-led strategies and limits the potential for sustainable territorial development.

In Serbia, heritage protection practices still rely predominantly on qualitative descriptions, fragmented documentation, and the legal protection of individual buildings or small spatial ensembles, while systematic, spatially explicit, and quantitatively informed analyses of the historic urban fabric are largely absent. This gap is particularly evident in small towns, where historic cores often remain outside the scope of comprehensive protection and planning strategies [6,7]. As a result, decision-making processes lack reliable data on heritage values, degradation patterns, and intervention priorities, which weakens the effectiveness of conservation policies and urban development.

Within this broader context, Vlasotince represents a characteristic example of the challenges outline above. Although the town has retained a valuable corpus of architectural

heritage and a relatively coherent urban structure, only a small number of buildings had legal protection, while the historical structure of the old bazaar (čaršija) has not yet been subjected to a comprehensive, data-driven evaluation as a unified cultural-historical entity. The lack of quantitative and spatial analysis represents a research gap, both within national practice and in the wider international discourse on cultural heritage management in small towns.

Recognizing these gaps, the Institute for Cultural Heritage Preservation Niš launched in 2023 the project “Assessment of the Condition of Immovable Cultural Heritage in the Municipalities of Vlasotince and Babušnica and Preparation of the Conservation Study for the Old Čaršija of Vlasotince”, supported by the Ministry of Culture of the Republic of Serbia.

The project included extensive architectural and urban surveys, archival research, and 3D photogrammetric documentation, along with an analysis of previously protected immovable cultural goods such as the Giga House and the Church of the Holy Spirit.

An important contribution of the project was established collaboration with the Faculty of Civil Engineering and Architecture at the University of Niš, which enabled the application of scientific methodologies and the systematization of the collected data. The resulting document, “Vlasotince—A Study for the Protection of Architectural Heritage: Protection of the Old Bazaar-Čaršija” [8], represents the first comprehensive attempt to classify the old čaršija as a spatial cultural-historical unit, aligned with contemporary HUL-oriented conservation approaches. By integrating historical analysis, architectural surveying, typological evaluation, and degradation mapping, the study provides a multilayered understanding of the urban landscape and its vulnerabilities.

The key idea is that cultural heritage constitutes an important resource for identity, sustainable development, and economic development. Rather than being viewed solely as an object of protection or a “monument” from the past, this study treats heritage as a proactive resource for urban development, based on the premise that preserving identity and cultural values can contribute to ecological and social sustainability as well as economic growth [5,9].

The primary aim of this research is the development and application of a systematic, data-driven methodological framework for the identification, evaluation, and assessment of architectural heritage degradation in small historic towns, using the historic core of Vlasotince as a case study. Another objective is to create a data-driven methodological framework that can support the recognition of Vlasotince—and similar small towns—as potential resources for sustainable development. Their effective utilization, however, depends on strategic valorization and their integration into broader tourism, cultural, and spatial planning frameworks, thereby enabling informed decision-making and long-term urban development strategies.

By integrating archival research, field surveys, value-based assessments, and high-resolution 3D photogrammetric documentation within GIS and similar environments, this study aims to establish a reproducible analytical model aligned with the principles of the Historic Urban Landscape approach.

The systematized and technically processed key spatial elements of the old bazaar (čaršija) provided the basic documentation for its protection as a cultural-historical unit. The study, grounded in a clearly defined methodology, constitutes a solid starting point for future urban planning documentation that will establish the legal framework for the restoration, revitalization, and sustainable use of the heritage.

By examining and mapping heritage-related data, as well as conducting a detailed analysis of degradation typologies that diminish its value, it becomes possible to identify and mitigate negative impacts, while areas already affected can be restored in accordance

with conservation principles. In this way, the authors highlight that heritage-based urban development (HBUD) can enable sustainable growth of towns through cultural-urban principles and provide a data-driven development strategy. What can make small towns distinctive—and create a positive image of them—is the combination of their tangible and intangible heritage alongside the unique environmental, cultural, and spatial attributes.

To achieve the stated objective, the research addresses the following questions:

- Which categories of individual buildings can be identified within the historic core of Vlasotince, and how can they be systematically classified?
- What types and degrees of degradation affect the architectural heritage of the old commercial zone, and what is their spatial relationship to the identified value categories?
- How can detailed digital documentation and spatial analysis contribute to establishing priorities for conservation interventions in small towns with limited institutional and financial resources?
- What forms of support are provided to owners of protected heritage during interventions and restoration processes?
- To what extent does the proposed methodological framework help bridge the gap between cultural heritage protection and urban planning within the Historic Urban Landscape (HUL) paradigm?

In addressing these questions, the research aims to demonstrate that the integration of value-based assessment, degradation typologies, 3D photogrammetric documentation, and spatial analyses enables a more transparent and comparable approach to managing urban development and cultural heritage. Beyond its local significance, the proposed methodological framework contributes to international research by offering a model that can be applied in other small historic towns facing similar demographic, economic, and institutional challenges.

2. Theoretic Framework and Literature Review

The concept of integrated protection of historic urban ensembles developed during the second half of the 20th century, when there was a significant shift in the understanding of urban heritage—from the protection of individual monuments to a comprehensive consideration of historic urban areas, whose value derives from spatial structure, urban relationships, and collective memory [10]. This change was formalized in The Washington Charter: Charter on the Conservation of Historic Towns and Urban Areas (1987). The Charter introduces the understanding of a city as a historically layered organism rather than a collection of individual monuments. It emphasizes a multidisciplinary approach, the coordination of conservation and development, active community involvement, and the treatment of tangible and intangible values as an inseparable whole [11]. This document laid the foundation for subsequent theoretical and practical advances in the planning of historic urban ensembles. The Québec Declaration on the Preservation of the Spirit of the Place (2008) emphasizes that heritage protection must encompass both tangible and intangible values, which together constitute the “spirit of the place.” The spirit of the place encompasses a set of physical elements—such as architecture, spatial layout, landscape, and natural surroundings—as well as intangible aspects, including memories, traditions, community identity, patterns of space use, and cultural practices [12]. In recent years, the academic discipline of urbanism has shown a significant shift in the understanding of heritage—from the classical protection of individual monuments to an integrated, layered approach. A key milestone is the UNESCO Recommendation on the Historic Urban Landscape (HUL) of 2011, which introduces a landscape-oriented perspective and redefines cultural heritage as a process of managing change rather than a collection of static objects [3]. This approach enables the inclusion of a broader range of stakeholders, the

integration of heritage into urban and spatial planning instruments, and the development of methodologies based on participation, value mapping, and vulnerability assessment. The UNESCO HUL Recommendation formalizes the layered, participatory, and adaptive nature of heritage. The transition from “heritage as object” to “heritage as process” allows cities to valorize cultural values within dynamic urban contexts. Contemporary conservation theories define heritage protection as “managing thoughtful change” and emphasize the importance of a landscape-based approach in heritage management [13].

An increasing number of studies emphasize the need for systematic, multi-criteria evaluations of urban heritage, particularly in small historic towns. Research indicates that combining architectural, urban, and socio-cultural criteria contributes to both sustainable development and conservation-oriented planning [14]. Particular emphasis is placed on the quantitative and qualitative assessment of the potential of historic parts of settlements for adaptive reuse or urban rehabilitation. Research increasingly relies on qualitative analyses and relevant data, with special consideration given to historical significance, architectural integrity, economic impact, and community participation and engagement. In this context, regional and local policies and socio-cultural specificities constitute key determinants that influence the shaping of conservation practices [15]. In order to formulate potential scenarios for the enhancement of settlements in marginal and less-developed areas of Calabria (Italy), a proposed methodological approach recognizes the territory as a valuable cultural landscape. Given the area’s limited economic capacities, a combination of bottom-up and top-down approaches is suggested, aligning with existing plans and strategies while highlighting the unique characteristics of the territory. This approach also promotes the interaction of all stakeholders and actors to jointly develop a vision for future development scenarios and strategic actions [16]. Under the influence of the Historic Urban Landscape (HUL) approach, a holistic paradigm has emerged recognizing culture’s potential to enhance people’s quality of life and to link culture, development, and sustainability. Therefore, it is necessary to re-evaluate existing urban governance models—including those applied to UNESCO World Heritage sites—with regard to regulatory frameworks, data collection and planning tools, investment of financial resources, and citizen engagement [17].

Additionally, an advanced analytical methodology that combine the Analytical Hierarchy Process (AHP) with GIS tools is introduced to define protection boundaries within historic built environments [18]. Researchers highlight the often-overlooked role of cultural memory in supporting the psychosocial well-being of residents in historic urban landscapes, emphasizing that sense of place and place attachment are closely linked to the memory of the place and contribute to overall quality of life [19]. The role of local communities and participatory mapping in the management of historic urban ensembles is emphasized [20]. On the other hand, some authors through a systematic review demonstrate how cultural heritage can be integrated into smart city strategies via the concept of place-making. They propose a framework with four key dimensions—digital infrastructure, community participation, spatial design, and preservation—which can guide the inclusive development of historic urban areas [21]. Research in the Field of Adaptive Reuse of Industrial Heritage [22] shows that it is possible to reconcile economic, cultural, and communal values when transforming old industrial buildings into vibrant urban functions. Furthermore, methodological innovations—such as GIS and AHP applied to define protection boundaries and buffer zones for historic-cultural areas—demonstrate the practical value of the HUL approach in urban heritage planning and management [18]. These insights indicate that contemporary conservation and planning theory goes beyond traditional frameworks: heritage is no longer viewed solely as a static resource but as a dynamic environment with significant influence on social structures, collective identity, and urban resilience.

To operationalize contemporary theoretical approaches, a comprehensive framework—the Cultural Heritage Town Development Index (CHTDI)—has been developed, integrating conservation, socio-economic, physical, ecological, economic, and developmental dimensions. The application of this approach, with its multidimensional criteria encompassing multiple heritage-specific characteristics, community participation, tourism, infrastructure, economy, cultural entrepreneurship, development policies, revenue generation, and more, represents a future direction in heritage assessment and evidence-based urban planning [23]. The international research community has recognized the need for a new paradigmatic framework through the development of the Historic Urban Landscape (HUL) concept, which reorients sustainable development toward a human-centered and ecologically informed approach. This framework emphasizes the role of cultural heritage in sustainability, where cultural heritage can play a key role in realizing the humanistic and ecological paradigm of sustainable cities [24].

In the context of Serbia, these approaches may be particularly relevant and useful, given the challenges faced by the country's architectural heritage. The state of heritage protection is marked by numerous systemic weaknesses. A report by the State Audit Institution indicates that key elements of the protection system have not been regulated by a dedicated law, despite the obligation established in 2016, leading to slow protection procedures, insufficient funding, and a decline in the number of experts within heritage institutions [25]. Spatial and urban planning has been so degraded that it has been entirely reduced to investor-driven planning, with plans shaped according to investors' preferences without prior analyses or professional and scientific studies. In recent years, the adoption of the National Architectural Strategy for the period 2023–2035 [26] and the Cultural Heritage Law [27] opens the possibility of applying HUL principles to preserve historic urban fabrics (environmental ensembles) and establish a balance between development and the conservation of identity.

In the context of the theoretical and methodological bases outlined above these challenges, research in small towns such as Vlasotince, addresses the identified gaps in heritage protection practices in Serbia, particularly the lack of systematic, spatially, and quantitatively grounded analyses that can be directly applied in urban planning processes. The methodological framework applied in this study is consistent with contemporary international approaches to urban heritage assessment and offers practical relevance for similar small historic towns, providing a transferable model that can inform planning, decision-making, and heritage-led urban development strategies. Linking local studies with the global discourse allows historic ensembles to be viewed not as a burden but as a vital resource for sustainable development and social identity.

3. Materials and Methods

3.1. Methodology

The motivation for researching the architectural heritage of Vlasotince arose from its particularly poor condition, the insufficient recognition of its value, and the absence of adequate treatment in contemporary planning documents. Partial and predominantly descriptive documentation, combined with the absence of quantitative and spatial analysis, represents one of the key challenges in managing cultural heritage in small towns. The weak presentation and interpretation of heritage, as well as the limited awareness of its significance among the local community, represent a problem that extends beyond the local context and is characteristic of most small towns in Serbia.

The methodological framework of this study was designed as an integrated, multi-phase model for the assessment and evaluation of architectural heritage degradation in small historic towns, in accordance with the principles of the Historic Urban Landscape

(HUL) approach. While starting at the level of individual plots and buildings, this methodology allows the historic core to be considered as a spatially coherent urban ensemble, where architectural, historical, and other values intersect with ongoing processes of change and degradation.

The methodological framework combines qualitative and quantitative methods, integrating insights obtained through archival research, field surveys, value-based assessment, typological analysis of degradation, and detailed digital 3D photogrammetric documentation, which provides a reliable baseline that can be verified at any time, as it is publicly available on the website of the Institute for the Protection of Cultural Monuments in Niš [28]. This approach enables spatial analysis at the level of individual buildings, as well as comparison, visualization, and prioritization of conservation interventions, while the sequential structure of the methodological process ensures transparency, reproducibility, and applicability to other small historic towns with similar characteristics.

The methodological process comprises six main phases (Figure 1):

- Definition of the research area and sampling criteria;
- Data collection through archival sources, field surveys, and digital documentation;
- Evaluation of individual buildings;
- Identification and classification of degradation types;
- Spatial processing, data analysis, and synthesis of results to establish priorities for conservation interventions.
- Formulation of recommendations for the preservation, enhancement, and integration of heritage into spatial and urban planning instruments.

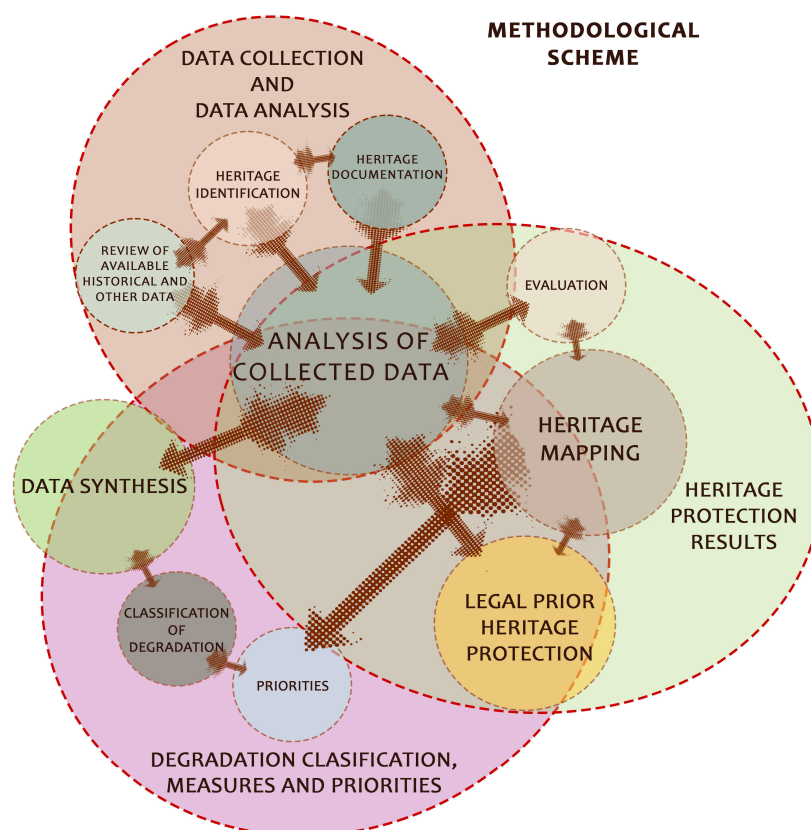


Figure 1. Methodological Scheme.

The research area covers the historic core of Vlasotince, with a particular focus on the former commercial and artisan zone (the old bazaar-čaršija), which represents not only a historical section but also the social and administrative center of the town. This

urban ensemble was selected due to its preserved urban morphology, the concentration of architecturally representative buildings from the late 19th and early 20th centuries, and the increasingly pronounced processes of neglect and inadequate interventions. A total of 84 buildings within the defined research area were included in the analysis. The selection of buildings was based on clearly defined criteria to ensure analytical consistency.

Buildings were included if they met at least two of the following conditions:

- Located within the historically defined commercial core;
- Construction period corresponding to the phase of formation and development of the historic urban fabric;
- Preservation of original or partially retained architectural elements;
- Contribution to the continuity of street fronts and ambient value of the area.

Buildings that have been completely reconstructed without any preserved historical elements, or that no longer contribute to the spatial coherence of the historic core, were excluded from the analysis. This purposive sampling allows for a focused assessment of the key elements of the historic urban landscape while maintaining a manageable scope for detailed documentation and evaluation.

Data collection was carried out using multiple complementary methods to ensure the reliability and depth of information. Archival research included historical maps, cadastral documentation from the late 19th and early 20th centuries, historical plans, previous and current planning acts, and archival photographic material, providing insight into the development and transformations of the urban structure. Field surveys were conducted to record the current physical condition of buildings, their architectural features, structural elements, and construction materials, as well as to document visible forms of degradation. Each building was documented using standardized field forms (architectural measurements accompanied by field and technical documentation, detailed photographic records, and descriptive reports), ensuring data consistency across the entire sample. Additionally, high-resolution 3D photogrammetric documentation was produced for selected buildings and entire street segments. Photogrammetry enabled precise geometric recording of facades and architectural details and served as both an analytical and visual tool, complementing field observations and value-based assessments.

The photogrammetric surveys formed the basis for a database of realistic 3D models of individual buildings and ensembles, enabling digital reconstruction of the current state of immovable cultural heritage. Public access to the 3D model database allows for further research and community participation [28].

Mapping of buildings and spatial units was carried out partly in QGIS 3.44 and partly using GstarCAD2024 software. Statistical analyses were performed in Excel, where data were also visualized in the form of charts. Photogrammetric models were generated from a large set of photographs obtained through terrestrial photography with a camera and aerial photography using a DJI Mavic 2 Pro drone (DJI, Shenzhen, China). The collected photographs were processed using RealityCapture 1.5, an advanced photogrammetry and 3D reconstruction software. This tool automatically converts standard photographs and/or laser scans into precise, high-quality 3D models, maps, and orthophoto projections.

The evaluation and assessment of buildings were carried out using a value-based assessment model. Each building was analyzed according to pre-defined criteria encompassing architectural, historical, and urban values. Particular attention was given to individual buildings, which were considered in terms of architectural-artistic significance, historical and cultural context, memorial and identity-related value, functional schemes, community value, as well as urban significance.

The criterion of architectural and historical value in the context of the old bazaar (čaršija) of Vlasotince encompasses the assessment of the building's period of construc-

tion and subsequent construction phases, which determine the historical continuity and typological evolution of the settlement. It also considers building typology, facade composition, structural and material characteristics, and the degree of authenticity. Historical value relates to the construction period, its connection with phases of urban development, and representativeness for local building traditions. Urban value was assessed based on a building's contribution to street front continuity, spatial coherence, the identity of the historic core, and the recognizable city silhouette. The typological affiliation of buildings characteristic of the Vlasotince old bazaar (čaršija) was also examined, including street-oriented commercial houses and family houses located deeper within plots, enabling a coherent understanding of the historic urban landscape and its specific morphology.

The evaluation was based on expert judgment, supported by archival data, field observations, and comparative analysis within the study area. Assessment criteria and the evaluation scale were predefined and consistently applied to all buildings.

A potential limitation of this study lies in the value assessment of buildings, which is largely influenced by the expertise of the evaluators, as no software exists to process it, making the results subject to human error. However, such errors were minimized by establishing clear criteria prior to the start of the study, which were carefully considered and consistently applied throughout the evaluation process.

At the same time, the condition of the structure, facade surfaces, roof elements, and openings was examined, providing a clear understanding of the levels of degradation and the priority conservation needs. Particular attention was given to authentic architectural and spatial elements, such as wooden doors and windows, arched openings, stone plinths, and plaster finishes, which enhance the aesthetic and cultural value of the space [29].

In the analysis of degradation, a typological system was applied to track various forms and degrees of deterioration of architectural and spatial values. Identified types of damage included material decay, inappropriate facade modifications, altered openings, changes to roof planes and coverings, volumetric alterations due to extensions, as well as functional changes affecting the external appearance of buildings. Each type of degradation was classified according to its impact on heritage values, distinguishing between reversible and irreversible interventions. This system facilitates the identification of buildings where values can be relatively easily restored, as well as those where degradation has resulted in a significant loss of authenticity. By linking types of degradation to value categories, precise mapping of the most vulnerable areas is enabled, allowing the identification of zones with priority conservation needs within the historic core (Figure 2).

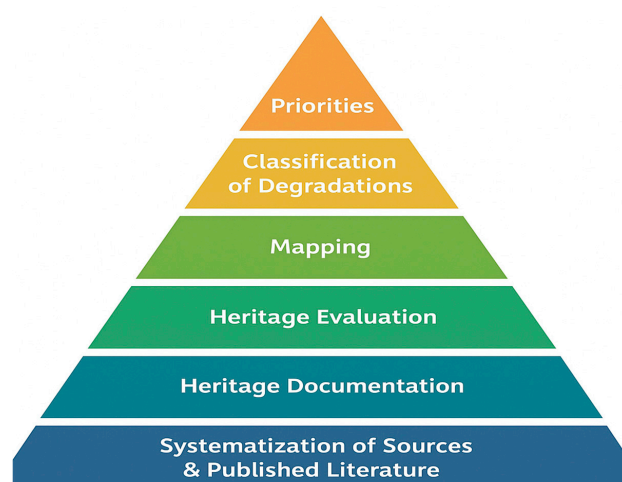


Figure 2. Research Process Pyramid.

All collected data were systematized and processed within GIS and G-Star environments, enabling spatial visualization and analysis at the level of individual buildings. Attribute databases were created linking spatial elements with indicators of heritage value and degree of degradation, allowing thematic mapping and comparative analysis. The spatial analysis focused on identifying patterns, such as concentrations of value, the intensity of degradation, and zones of increased vulnerability. The integration of photogrammetric models into the spatial analytical framework further enhanced detailed facade analysis and precise documentation of the existing conditions.

Data validity was verified through cross-comparison of archival sources, field observations, and digital documentation. The proposed methodological framework can be applied to other small historic towns, with adjustments to criteria and the scope of research according to local conditions, ensuring its reproducibility and comparability.

3.2. Historical Context of the Study Area

Vlasotince is a small town in southern Serbia, located within the Jablanica District, which has so far not been significantly affected by depopulation. The municipality comprises a total of 47 settlements and has a population of approximately 26,000, of which around 15,000 reside in the town itself. Despite its small size, Vlasotince boasts an exceptionally valuable corpus of architectural heritage. However, until recently, this heritage was insufficiently treated and legally protected; apart from a few buildings designated as cultural monuments, most urban houses and palaces—although recorded in planning documentation—had not been professionally evaluated or protected as immovable cultural property.

The earliest written references to Vlasotince can be found in *The Life of Saint Simeon*, the 12th-century biography of Stefan Nemanja. Here, Vlasotince is referred to as *Uska*, denoting the area around the Vlasina River. Throughout history, the town appears in numerous records. Ottoman documents from 1516 mention it under the name *Vlasotinac*, noting that it was then a cultural and agricultural center. In the 16th century, it had around 600 inhabitants, and by the 1879 census, approximately 2600. Vlasotince was officially designated as a town in 1878 [30].

After liberation from Ottoman rule, most affluent residents of Vlasotince sent their children to study in European countries, from where they brought back advanced ideas, marking the beginning of an intensive period of development for the town. The growth of Vlasotince was further supported by the development of the textile industry, trade, crafts, and viticulture [31].

Regarding Vlasotince's architectural stock, it gradually began to take shape at the end of the 18th century. By the mid-19th century, the town had developed as an elongated linear settlement with a commercial and craft-oriented character [31]. This layout is still discernible today. By the late 19th century, European stylistic influences became evident in the representative buildings constructed during this period. In the early 20th century, and later between the two world wars—when conditions for architectural development were established—significant construction activity took place, accompanied by greater stylistic diversity. In addition to academicism, two entirely distinct styles emerged: the Serbian-Byzantine, or national style, and Art Nouveau (Secession) [32]. Family residential and commercial buildings constructed in the first decade of the 20th century are characterized by massiveness, symmetry, representativeness, and academic-style design [31].

The study analyzed buildings constructed from the late 19th century to the first half of the 20th century, corresponding to the phase of formation and development of the historic urban core of Vlasotince.

3.3. Architectural Heritage of the Study Area

Over the centuries, Vlasotince developed as a town with a strong commercial, craft, and architectural identity, with each historical period—the Ottoman era, the post-liberation period, the interwar years, and the postwar period—clearly reflected in the city's structure. This stratification is evident in the layout of the old bazaar (čaršija), house typologies, urban lines, and numerous buildings that bear the marks of different eras. Along the main street are rows of craft workshops and shops with narrow facades and typically deep plots, as well as multi-story bourgeois houses of architectural and artistic value, showcasing skilled craftsmanship. The partially preserved old trading bazaar (čaršija) in the town center represents the urban and living core of the settlement, densely built and retaining inherited specificities (Figure 3).



Figure 3. A part of the historic ambient ensemble in Vlasotince (documentation of ICHP Niš).

To understand the layering of space and the character of the heritage embedded in Vlasotince's urban fabric, it was necessary to examine its spatial organization and natural conditions, as well as the historical processes that shaped its urban development. Understanding these layers is essential for correctly interpreting the architectural heritage and defining its values in a contemporary context.

In 2023, extensive research was conducted on Vlasotince's architectural stock to identify and define inherited values. This involved mapping and evaluating buildings across the wider area, and, based on detailed analyses and the higher concentration of structures with notable heritage characteristics, a spatial cultural-historical unit—the Old Čaršija—was delineated. It encompasses Dragoljub Petković Square, 12th Brigade Street and Dušanova Street, as well as Liberation Square and Marka Oreškovića, AVNOJ, Ive Lole Ribara, Nemanjina, Dimitrija Stojanovića, Njegoševa, and Vuka Karadžića Streets (Figure 4) [8].

To facilitate the assessment and evaluation of the identified historic unit, as well as to define measures for technical protection, the area was divided into several smaller ambient units, or groups of valuable buildings. These are located along Dušanova Street, Liberation Square, Marka Oreškovića Street, Ive Lole Ribara Street, Nemanjina Street, and Dimitrija Stojanovića Street near the Old Mill, and are presented below.

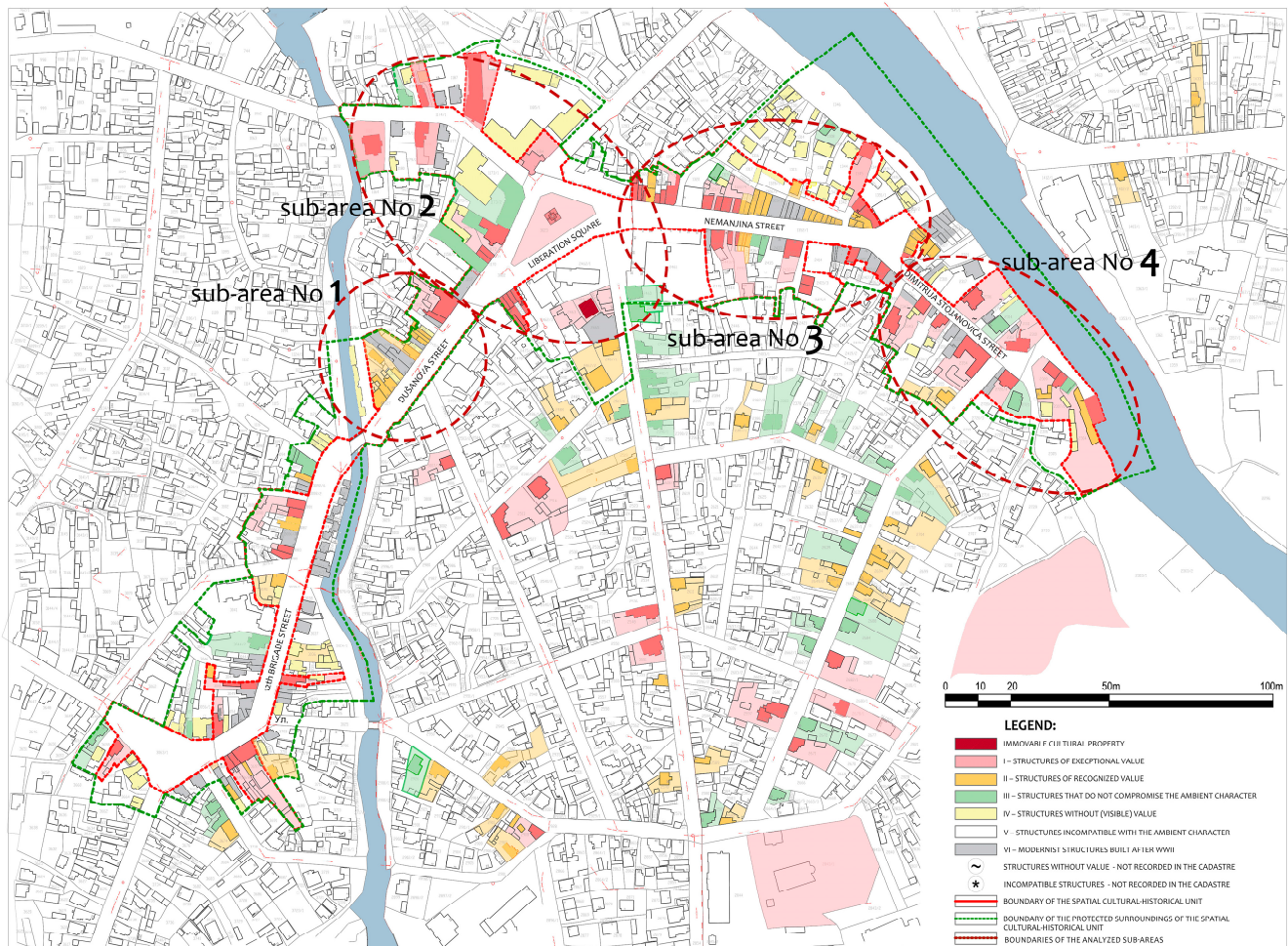


Figure 4. Evaluation of the built heritage in the area of Vlasotince (documentation of ICHP Niš, edited by authors).

3.3.1. Sub-Area No 1.—Dušanova Street

Dušanova Street represents the central part of the Old Čaršija, with the remnants of architectural heritage preserved only on the even-numbered side, while buildings on the odd-numbered side were completely demolished during the implementation of total reconstruction plans for the city center and the construction of multi-story buildings in the second half of the 20th century. The houses on the even-numbered side of Dušanova Street in this section of the Old Čaršija are modest in appearance, either single- or two-story, arranged within a block bordered by Đura Daničić Street, which runs along Peškina Valley. The composition of this subunit consists of two sections of Dušanova Street, divided by the passage of Đura Daničić Street. This part of the unit is among the most degraded areas of the Old Čaršija. The disharmony of the street row is accentuated by buildings of varying heights, numbers of floors, and facade treatments. Notable buildings in this subunit include the Paraskeva Bojković House, the Zaharija Hadži Stamenković House—a structure of high architectural value and one of the few with Art Nouveau motifs in Vlasotince—the Tasa Valčić House, with exceptional documentary and historical significance, among others.

3.3.2. Sub-Area No 2.—Liberation Square

Liberation Square is a spontaneously formed town square in the center of Vlasotince, originally serving as the main marketplace. The square has a triangular shape, with the former main market located at its center, around which the urban core and central town square developed spontaneously, featuring a fountain and a monument to fallen

soldiers in the form of an obelisk. Over time, significant public buildings were constructed around the former market, forming the urban core of Vlasotince. In addition to public institutions—such as the Old Municipality building, the District Administration, and the People's House—the marketplace was surrounded by numerous single- or two-story private buildings with mixed public–private functions, including hospitality, commercial-craft activities, and residential use, forming the town's commercial-craft *čaršija*.

Marka Oreškovića Street represents a small residential branch of the Old *Čaršija* in Vlasotince. It is directly connected to Liberation Square, forming an integral unit that continues the spatial fabric of the *čaršija*. In addition to characteristic residential houses with diverse architectural treatments—such as the corner house with a dome by Miladin Đorđević and the monumental Gligorija Parunović House, set in spacious courtyards with abundant greenery—significant public buildings are located at the corner with Liberation Square, including the Police building, the Regional Museum building, the complex of the Primary School, and the former People's (Sokol) House.

3.3.3. Sub-Area No 3.—Nemanjina Street

Nemanjina Street constitutes the largest part of the observed spatial unit. Along this street, craft workshops and shops were arranged, typically with a residential upper floor. Over time, the population density led to the construction of a few four-story buildings. The street also functions as the town's promenade, becoming a pedestrian zone between 6 p.m. and 10 p.m.

The odd-numbered side of the street is quite disharmonious, primarily due to varying building heights and diverse architectural styles resulting from construction across different periods. The most prominent buildings on the odd side include the two-story corner house of Kriste Bošković, the Golub Arandelović Belja House with its highly decorative facade, and the Ilija Krainčanić House.

On the even-numbered side of Nemanjina Street, in the section that has preserved architectural heritage, the street begins with Ilija Krainčanić's tavern and ends with Uroš Valčić two-story building. The aforementioned tavern and several adjacent establishments represent remnants of the old urban matrix and architecture, while the subsequent buildings exhibit characteristics of a broken row. This block primarily consists of lower structures with gable roofs and roughly uniform roof cornices.

3.3.4. Sub-Area No 4.—Dimitrija Stojanovića and Njegoševa Street

Dimitrija Stojanovića Street represents a direct continuation of Nemanjina Street, which is further extended by Njegoševa Street. This unit is characterized by buildings that vary in form and spatial rhythm, with a rather irregular and inconsistent arrangement and size of houses. It is the part of Vlasotince with the highest concentration of architectural heritage and is intensively used as the most attractive section of the Old *Čaršija*.

In this subunit, monumental buildings dominate, which remain symbolic landmarks of the town today: the old Popović Mill, accompanied by several houses oriented toward the river; the representative Stamenko Milošević House, now functioning as a restaurant; and the monumental Petar Popović House, currently housing the Social Services Center. Buildings located further along this street do not match the height of its roofline, proportions, or number of stories. A similar situation occurs along Njegoševa Street, with differences due to terrain configuration. This section of the town possesses significant recreational, tourist, and commercial potential.

4. Results

The research results represent an integrated outcome of the value-based evaluation, analysis of types and intensity of degradation, and their spatial correlations within the historic core of Vlasotince. The analysis was based on data collected for 84 buildings (Appendix A), which were systematically processed and integrated into a GIS environment, enabling a multi-layered assessment of the urban heritage condition. The results are organized into thematic sections corresponding to the research questions defined in the Introduction.

4.1. Classification Framework of Architectural Heritage Values

To comprehensively assess the heritage of Vlasotince, graphic mapping and building valuation were conducted. The evaluation revealed a pronounced diversity of architectural heritage within the study area. Based on the overall value score, the buildings were classified into six categories:

- I-Buildings of special value;
- II-Buildings of value;
- III-Buildings that complement into the ambient setting;
- IV-Buildings of no (recognizable) value;
- V-Buildings that disrupt the ambient character;
- VI-Modernist buildings constructed after WWII [8].

Buildings of special value (I) are those that possess recognizable architectural, artistic, and constructional qualities, have retained their authentic form and materiality, contribute to the shaping of the wider space, squares, and streets, or have cultural or historical significance associated with specific events or notable historical figures.

Buildings of value (II) do not exhibit as pronounced stylistic features as category I to be considered individual cultural monuments, but their design significantly contributes to the formation of the surrounding environment.

Buildings that complement the ambient setting (III) are, in most cases, later additions that do not correspond chronologically to the primary structures of the row. However, their construction did not drastically disturb the visual coherence of the streetscape: the heights of cornices, roof ridges, and the general proportions of the adjacent buildings were respected, and no drastically different materials were used. These buildings appear neutral in character.

Buildings of no (recognizable) value (IV) are those in which no heritage-related qualities can be observed. Their current design and appearance do not indicate the presence of older layers or historical elements, often appearing as new construction (although further investigation may reveal hidden historic elements). Regardless, their present form is incompatible with the surrounding environment, and adaptation is recommended.

Buildings that disrupt the ambient character (V) are those that significantly violate the identity of the spatial unit. They were constructed beyond the original building footprints, both horizontally and vertically. Features such as aluminum or PVC profiles, large glass surfaces, protruding bay windows, and flat roofs disrupt the visual coherence of the street row.

Modernist buildings constructed after WWII (VI) are treated as a separate category. These multi-story buildings were erected during the post-war reconstruction of Vlasotince with the intention of modernization and improvement. Although they interrupt the traditional street rows in terms of height, given their historical context, they are not considered incongruent with the urban environment.

The valuation of individual buildings was conducted in relation to the overall urban environment. Although the heritage values of each building were also assessed individually,

the primary goal was to determine which buildings serve as key carriers of protection and their current condition, and which buildings degrade the environment and to what extent.

The evaluated heritage was identified and mapped on the cadastral plan of the historic center, with detailed documentation of conditions. All buildings were classified into five categories. The analysis shows that the current state of the historic center can and should be improved in terms of style and design. Out of a total of 84 examined buildings, 52% fall into categories I and II (exceptional value or notable value), 5% of buildings that complement the ambient setting, 11% of buildings have no visible value, while 32% of buildings are incongruous with the surroundings and degrade the overall value of the ensemble (Figure 5).

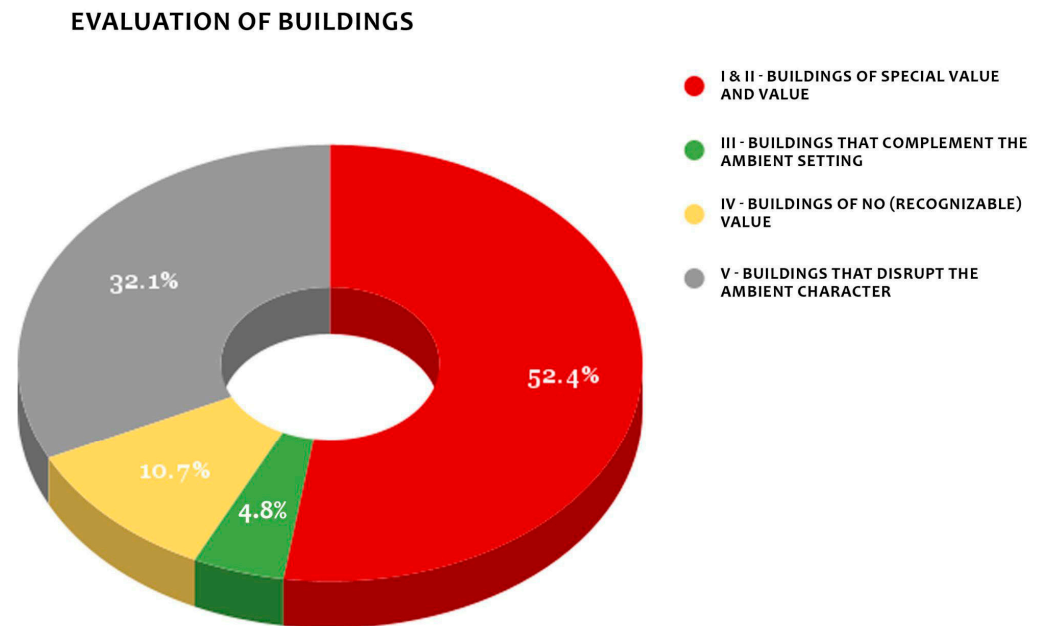


Figure 5. Diagram—evaluation of buildings in the historic area of Vlasotince.

High-value buildings (categories I and II) are predominantly located in the central parts of the historic commercial zone. They retain their original dimensions, authentic architectural details, and a clear connection to the historical development of the town. These buildings represent the most significant structures that define the identity of the historic core. Medium-value buildings (categories III and IV) constitute the largest group. They exhibit partial degradation of original elements but also possess significant potential for preservation through adaptive interventions. Low-value buildings (category V) have lost much of their authenticity, primarily due to volumetric changes. Within the urban structure, they create discontinuities and inconsistencies.

4.2. Typological Analysis of Degradation

Following the valuation, each building was analyzed in terms of its current condition, considering structural, functional, and aesthetic changes it has undergone over time. Based on the observed degree of value reduction, several levels of degradation were defined, which are presented typologically:

A—The facades are well preserved, with almost no damage, except for minimal alterations caused by changes in color over time, soiling, graffiti, or biodegradation. Buildings with this level of degradation are in satisfactory condition or require only minimal interventions.

B—The facades are preserved but marred by inappropriate partial interventions, such as the installation of advertising panels, poorly placed air-conditioning units, or inconsistent shutters. This degradation level implies that the façade’s plastic and decorative elements are almost entirely intact. Buildings in this category can be relatively easily restored to their original state by removing subsequently added inappropriate elements.

C—Some of the façade’s decorative elements have been partially removed. This represents a more significant form of degradation, requiring the reconstruction of missing parts, based on preserved *in situ* elements.

D—Decorative plaster elements have been completely removed and replaced with inappropriate finishes. This represents a higher level of degradation compared to the previous categories. Restoration would require prior research into the original appearance, removal of unsuitable interventions, and reconstruction of decorative finishes based on the original design.

E—Changes in materialization and the original appearance of portals, while retaining dimensions, affect the overall appearance of the street row, though not as severely as changes in opening sizes. Restoration would require returning the portals to their original state, based on preserved elements or analogies from the immediate surroundings.

F—Alterations in shape, materialization, size, and original appearance of openings represent a more pronounced type of degradation compared to the previous category, due to additional dimensional changes.

G—Changes in the type of roof covering are more problematic if they involve alterations in roof pitch or the addition of dormers or skylights.

H—Extensions or additions to buildings, i.e., changes in horizontal or vertical dimensions, represent a significant level of structural and visual intervention.

I—Complete replacement of buildings with new constructions of inappropriate architectural treatment, but relatively appropriate volume, represents an intervention that entirely disrupts the appearance of the row.

J—Construction of new buildings with completely inappropriate architectural features and volume, entirely out of context with the heritage ensemble, represents the most severe type of degradation affecting the integrity of the urban unit.

In addition to the typological classification, degradation was analyzed according to its intensity. The results indicate the existence of clear degradation gradients, ranging from moderate damage to severely deteriorated buildings (Appendix A). Notably, a number of high-value buildings exhibited a moderate but prolonged process of degradation, highlighting a latent risk of value loss if timely conservation measures are not undertaken.

The main types of degradation were classified into ten categories, with types A and B considered milder forms of degradation, present on 36% of the examined facades. For these, historically accurate facade restoration is possible with minimal interventions and relatively low financial costs.

Types C and D are present on 29% of buildings and require additional research to restore the original appearance.

A significant proportion of degradation is observed on portals, shop windows, and window openings (types E and F): on 40% of buildings, old wooden portals and windows have been replaced with new ones made of wood, PVC, or aluminum. In 22% of buildings, the shape and dimensions of openings have been altered along with the materials. On 40% of roofs, the roofing material, roof slope, or roof elements such as dormers and skylights have been changed (type G).

Type H—vertical or horizontal extensions mostly in accordance with the surroundings in terms of size and volume (e.g., an added floor not higher than adjacent buildings of

special value)—was carried out on 2% of buildings. However, even if relatively consistent in volume, these interventions are architecturally inconsistent.

The most drastic example of degradation of the historic-architectural ensemble is type I—complete replacement of old buildings with new ones, maintaining dimensions consistent with the environment. This type is present on 20% of the analyzed buildings. In recent decades, new buildings were constructed in place of old structures that were an integral part of the historic center. For some, precise information about their original appearance is unavailable.

The final type of degradation identified is type J—construction of completely new buildings with inappropriate architectural characteristics and dimensions, entirely out of context with the ensemble, accounting for 23% of the buildings (Figure 6).

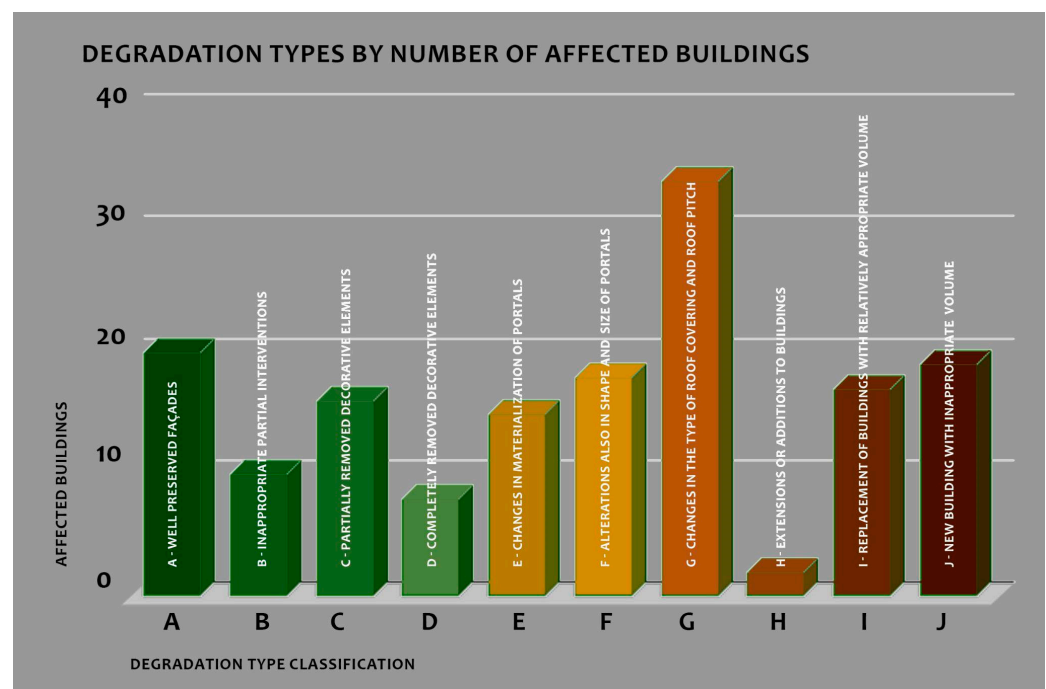


Figure 6. Diagram—types of buildings degradation in the historic area of Vlasotince.

The first eight types of degradation concern high-value heritage assets as the primary protected components, while types I and J refer to the degradation of the historic urban ensemble caused by inappropriate building replacement or new construction.

The analysis of the relationship between heritage value and degradation revealed that these two categories are not linearly correlated. While low-value buildings often exhibit a high degree of degradation, high-value buildings can display a variety of preservation patterns.

4.3. Setting Priorities for Conservation Interventions

By integrating the results obtained from the analysis of value and degradation layers, priority intervention zones were defined. The highest priority was assigned to areas where high heritage values coincide with pronounced degradation. Medium-priority zones include areas with moderate values and potential for revitalization, while low-priority zones represent areas suitable for controlled transformations.

The analytical processing of the collected field and archival data yielded three interrelated results:

1. A spatial classification of values and vulnerability for conservation.
2. A typology of degradation types observed in the historic core.

3. A priority list of intervention needs.

The overall analysis shows that the urban core of Vlasotince is significantly endangered in terms of preserving its architectural identity. A large portion of the valuable buildings has undergone changes that diminish their aesthetic value. Another issue is new construction that is not aligned with the surrounding context, leading to its degradation. For preservation and revitalization, systematic protection is needed, along with priority interventions based on the typology of degradations, as well as the use of archival materials and analogous examples for precise restoration.

For further heritage protection and identification of priority buildings, structures of special value (Category I) were considered, as they represent the main carriers of protection within this spatial cultural-historical ensemble. Priority buildings are those where the original appearance has been best preserved, classified as Category I according to the valorization map, regardless of the building type or its function.

To determine which buildings require urgent conservation and revitalization interventions, the degree of degradation of such buildings was analyzed, in order to identify individual structures where immediate action is necessary to prevent further deterioration and loss of original values and elements. For this purpose, the following facade degradation classification was established:

- Excellent—No conservation work needed; the building is fully preserved.
- Good—Minor maintenance or interventions recommended; building largely intact.
- Average—Some interventions required; building shows signs of wear but is not at risk.
- Poor—Urgent interventions needed; original elements are deteriorating or at risk of loss.
- Critical—Immediate action required; building is severely threatened, with significant loss of original fabric.

The following buildings were identified as priority for conservation: Sub-unit 1—Dušanova Street: numbers 2–4 and 6, the houses of Tasa Valčić and Zaharija Hadži Stamenković. Sub-unit 2—Trg oslobođenja and Marka Oreškovića Street: Miladin Đorđević's house at numbers 10 and 10a. Sub-unit 3—Nemanjina Street: buildings retaining original elements at numbers 1, 3, 7–11, and 19–23 on the odd-numbered side of the street (Table 1).

Table 1. Analysis of the Condition and Degradation of Category I Buildings.

Object Name	Address	Stepen Degradacije
Zaharije Hadži Stamenković House	Dušanova 6	Critical
Tasa Valčić House	Dušanova 2–4	Average
Tasa Valčić House	Liberation Square 5–7	Good
Milan Valčić Palace	Liberation Square 9	Good
Old Municipal Building	AVNOJ-a Street 1	Excellent
Miladin Đorđević House	Marka Oreškovića 10–10a	Critical
People's House	Marka Oreškovića 4	Average
Dinkić House	Marka Oreškovića 11	Good
Parunović House	Marka Oreškovića 25	Excellent
Sotir Valčić Building	Nemanjina 1	Critical
Vojislav Popović Building	Nemanjina 3	Critical
Krista Bošković Building	Nemanjina 7–11	Critical
Golub Arandjelović Building	Nemanjina 13–17	Good
Ilija Krainčanić Building	Nemanjina 19–23	Critical
Vlajko Takić House	Nemanjina 75	Average
Uroš Valčić House	Nemanjina 72	Good
Đorđe Popović Building	Nemanjina 38	Average

Table 1. *Cont.*

Object Name	Address	Stepen Degradacije
Krainčanić Shops	Nemanjina 18–20	Critical
Stamenko Milošević House	Vuka Karadžića 1	Good
Petar Popović Palace	Dimitrija Stojanovića 14	Excellent
Petar Gorunović House	Dimitrija Stojanovića 8	Good
Milošević House	Dimitrija Stojanovića 4	Good
Dušan Milošević Pharmacy	Nemanjina 78	Good
Old Popović Mill	Njegoševa 1	Poor
Tihomir Popović House	Njegoševa 7	Good
Aleksandar Popović House	Negoševa 3	Poor

Overall, the spatial pattern indicates a dual structure:

- critical zones concentrated around the commercial axes with the strongest development pressures (Dušanova and Nemanjina Street), and
- preservation zones concentrated along the river-oriented streets with the highest density of buildings of exceptional value.

This outcome enables a rational allocation of limited resources and provides direct operational value to the research.

4.4. Financial and Advisory Instruments for Heritage Conservation

Domestic legislation does not provide clearly defined mechanisms to support heritage owners in carrying out conservation and maintenance works. Owners often face the inability to secure financial assistance for the restoration of cultural properties, being required to finance all works themselves. Considering that conservation-restoration works under the specific conditions of heritage authorities are generally more expensive than standard construction works on non-protected buildings, this situation frequently leads to dissatisfaction, reluctance toward heritage protection, and neglect of cultural assets. Periodically, certain local governments adopt measures to maintain roofs and facades in specific parts of settlements and implement related works; however, these activities remain limited in scope. While commendable, such efforts are not systematic, as they depend on various factors and follow a campaign-based approach. It is therefore necessary to establish mechanisms for the permanent allocation of financial resources on an annual basis to ensure continuity. Alongside this, it is essential to strengthen supervision mechanisms, provide additional training for construction inspectors in heritage treatment, and continuously raise awareness of heritage values through local cultural institutions. The most significant future progress is expected to come from new planning documents, scheduled for development in 2026–2027. Given the existence of these studies, it is anticipated that they will be integrated into planning and development documents, thereby becoming formally binding and subsequently implemented in practice. The next step that can be undertaken is a participatory approach to the development of planning documents based on heritage, given that this segment of the plan has largely been informed by the studies outlined above and brought closer to the local community. It will be further validated through community involvement and a participatory process.

5. Discussion

The findings of contemporary studies addressing cultural heritage, its management, sustainability, and community participation in decision-making largely align with the results of this research [33–35]. The research findings were compared with the results and insights of other studies addressing heritage management in small European towns.

Compared to the examined case studies, the methodological framework applied in this research further emphasizes the spatial assessment of cultural values and the degree of degradation at the level of individual buildings within the historic core.

The case study of Taverna, Italy [33] focuses on community branding and local engagement in heritage management. It highlights the importance of involving local stakeholders in co-design processes and in recognizing the identity of the place to enhance the role of heritage. This approach strengthens social participation, as cultural heritage fosters both pride and a sense of belonging within the community, while relying primarily on governance structures and strategic visioning. In contrast, the research presented in this study emphasizes the material dimension of cultural heritage through the valorization and spatial mapping of values and patterns of physical degradation. The proposed methodology does not replace participatory approaches, rather, it complements them with a spatially analytical framework that can more precisely inform both professionals and the broader public, supporting decision-making—particularly in contexts where formal participation mechanisms are limited.

The management model applied to and proposed for the historic city of Regensburg, Germany—a UNESCO World Heritage site [34] is examined within a highly institutionalized framework, supported by a broad network of stakeholders and regulations. In contrast, this research addresses the challenges faced by small historic towns operating with limited administrative and financial capacities and outside international protection regimes. By assessing values and vulnerabilities at the level of individual buildings, clear criteria for prioritization are established, utilizing methodologically grounded spatial tools. This approach demonstrates how the principles of the Historic Urban Landscape (HUL) can be applied even in contexts with modest resources.

The methodology applied in the study of heritage in historic towns of inland Andalusia [35] shows greater methodological similarity to this research, particularly regarding the mapping of values and the spatial disposition of heritage. However, it addresses heritage at a larger scale, considering the interrelations of seven towns across multiple indicator categories reflecting broader dimensions of territorial and urban sustainability, while remaining insufficiently linked to the material condition of the built fabric. In contrast, this research specifically focuses on connecting spatial indicators with categories of architectural values and typologies of degradation, thereby strengthening the link between sustainability assessment, conservation practice, and urban planning.

Overall, the comparative analysis indicates that the primary contribution of this study lies in linking the valorization of cultural heritage, the assessment of vulnerability, and spatial analysis within a methodological process tailored to small historic towns. By integrating mapping, expert evaluation, and detailed analysis of degradation, this research complements the approaches considered, which are primarily focused on heritage management, spatial planning in the context of sustainable development, and the engagement of local communities and other stakeholders. Revitalization strategies based on cultural heritage should be differentiated according to their cultural value and physical condition and level of vulnerability, rather than applied uniformly across entire historic cores. In this way, a spatially grounded dimension of decision support is introduced, enhancing the operational potential of the Historic Urban Landscape (HUL) approach by translating its conceptual principles into concrete planning tools applicable beyond large or internationally recognized cities.

6. Conclusions

A significantly larger number of buildings and heritage ensembles could and should have been preserved in the historic center of Vlasotince than is currently the case. Although

wartime events had some impact, the main cause of the loss of significant buildings was aggressive urban policy and investor-driven urbanism in recent decades. Many important buildings and entire blocks were demolished, while the construction of inappropriate architectural structures disrupted the coherence and ambient value of the urban core. Past urban planning largely neglected cultural heritage and the existing urban fabric, leading to the degradation of the urban environment.

The results of the comprehensive analysis of degradations in the historic core of Vlasotince provide a solid basis for formulating strategic recommendations for the preservation of urban heritage in small towns. This methodological framework, integrating field documentation, photogrammetry, spatial analysis, and detailed building valorization, provides a foundation for data-driven decision-making based on the real condition of the urban fabric. Detailed mapping of building conditions and their spatial distribution allows for the identification of areas within the urban core where degradation is most concentrated, serving as a basis for prioritizing interventions and planning phased actions according to available resources. At the same time, comparing the degree of degradation with cultural value categories clearly indicates which buildings require urgent restoration.

By integrating GIS, photogrammetry, and field documentation, a reliable spatial database has been established that can be directly incorporated into urban planning, enabling decision-making based on measurable and objective parameters rather than subjective assessments. This database also facilitates the evaluation of the impact of new interventions on the urban environment and contributes to the formulation of clear guidelines for construction, reconstruction, and spatial arrangement within the historic core.

Additionally, visualizations of building conditions, orthophoto sequences, and photogrammetric models serve as effective tools for communication with the local community and property owners, raising awareness of heritage values and encouraging active participation in preservation processes. The methodology developed through the Vlasotince study can be easily applied to other small towns in Serbia, offering a practical and replicable model for problem identification, revitalization planning, and integrated management of historic urban environments.

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Abbreviations

The following abbreviations are used in this manuscript:

ICHP Niš Institute for Cultural Heritage Preservation Niš, Serbia;

Appendix A

The typology, valorization results, and degree of degradation for each building are presented in tabular form for each sub-unit of the Old Bazaar. In the case of newly constructed buildings that are incompatible with the surrounding environment (category V), the degree of degradation of individual buildings was not assessed; instead, their negative impact on the overall urban environment was considered.

Appendix A.1. Sub-Area No 1—Dušanova Street

Of the total number of buildings in this row (Figure A1, Table A1), 50% are buildings of value or of special value (categories I and II). Buildings without visible value and those incompatible with the surrounding environment (categories IV and V) make up the remaining 50% of the building stock in this part of the Old Bazaar. A degradation level A was observed in 19% of the examined buildings. The same share was recorded for degradation levels C and I. Degradation level B is present in 37% of the buildings, level D in 6%, level E in 44%, and level F in 12%. The most common interventions are those on roof planes (G), identified in as many as 56% of the buildings. The most severe degradation level (J) is present in 12% of the buildings.



Figure A1. Orthophoto view of the street-front facades on the even-numbered side of Dušanova Street (documentation of ICHP Niš edited by authors).

Table A1. Dušanova Street—Heritage Value Assessment and Building Degradation.

Object Number	Object Value	Type of Degradation
32–32A	II	B, C, F, G
30	II	B, D, E, G
28–28A	II	B, E, G
26	IV	B, E, G
24	IV	B, E, G
22	V	J
20	V	J
18	II	C, F, G
16	IV	E, G
14	V	I
12	II	C, E, G
10A	II	A
10	IV	I
8	V	I
6	I	A, E
2–4	I	A, B, G

Appendix A.2. Sub-Area No 2.—Liberation Square and Marka Oreškovića Street

The row at Liberation Square is considerably smaller in scale, comprising only five buildings (Figure A2, Table A2). Of these, 60% are buildings of exceptional value (Category I), while 40% are those that complement the ambient setting by their appearance (Category III). Among the buildings of value (Category I), 67% exhibit only minimal types of degradation (Grade A), whereas the remaining 33% show more pronounced forms of degradation (Grades F and G).

**Figure A2.** Odd-numbered side of the frontage on Liberation Square (documentation of ICHP Niš edited by authors).**Table A2.** Liberation Square—Heritage Value Assessment and Building Degradation.

Object Number	Object Value	Type of Degradation
3	III	I
5–7	I	A, B, F, G
9	I	A
11	III	I
1 (AVNOJ Street)	I	A

The row on Marka Oreškovića Street is characterized by numerous contradictions (Figure A3, Table A3). As much as 44% of the buildings are classified as Category I, of

exceptional value. On the other hand, the remaining 56% consist of buildings without visible value or those completely out of context with the environment (Categories IV and V). Minor degradations of Grade A are present in 22% of the observed buildings, while 11% exhibit Grade C and G degradations. As expected, buildings that are out of context have the most significant degrading effect on the row, with the proportion of this type (Grade J) reaching 56%.



Figure A3. Even- and odd-numbered sides of the frontage in Marka Oreškovića Street (documentation of ICHP Niš edited by authors).

Table A3. Marka Oreškovića Street—Heritage Value Assessment and Building Degradation.

Object Number	Object Value	Type of Degradation
10A–10	I	A
6–6B	V	J
4	I	A
2	IV	J
1	IV	J
9	V	J
11	I	C
13	V	J
25	I	A, G

Appendix A.3. Sub-Area No 3.—Nemanjina Street

Of the total number of buildings in this row (Figure A4, Table A4), as much as 77% are buildings of value or exceptional value (Categories I and II). Buildings that are out of context with the environment (Category V) account for 23% of the built heritage in this part of the Old Bazaar. In terms of degradation levels, the situation is as follows: 27% of buildings exhibit the mildest form of degradation (Grade A), 23% are classified as Grade B, and 32% as Grade C. On 9% of buildings, facade elements have been completely removed (Grade D), 41% have altered portal materialization (Grade E), and 32% show changes in the portal shape. In 63% of buildings, the original roof covering, pitch, or shape has been altered. The most drastic degradation of the environment (Grade J) is present in 23% of

buildings in this row. All buildings in this category (J) are newly constructed and entirely out of context with the surroundings.

The row on the even-numbered side of Nemanjina Street (Figure A5, Table A5) consists of 31% Category I buildings and 8% each of Categories II and III. Buildings that are incompatible with the ambient character (Category V) make up the largest share, accounting for as much as 53% of the building stock in this part of the Old Bazaar. Eight percent of the buildings exhibit degradation type A, and the same share is recorded for type J. Degradation type B is observed on 15% of the analyzed buildings, while type C appears on 31% of the buildings in this row. The most prevalent forms of degradation are types F and I, with total shares of 46% (F) and 54% (I), respectively, which is expected given the high percentage of buildings incompatible with the ambient character on this side of Nemanjina Street. Interventions on roof surfaces (G) are recorded on 23% of the buildings.



Figure A4. Orthophoto of the frontage on the odd-numbered side of Nemanjina Street (documentation of ICHP Niš edited by authors).

Table A4. Odd-Numbered side of Nemanjina Street—Heritage Value Assessment and Building Degradation.

Object Number	Object Value	Type of Degradation
1	I	A, E
3	I	A, E, G
5	II	A, E, G
7–11	I	A, B, F, G
11A	VI	J

Table A4. Cont.

Object Number	Object Value	Type of Degradation
13–17	I	A, E
19–23	I	A, B, E, G
25	II	C, E, G
27	II	B, C, E, G
29–33	II	B, C, F, G
35–39	V	J
41	V	J
43	V	J
43b	V	J
45	V	J
47–49	II	D, F, G
51	II	D, F, G
53–57	II	C, F, G
59	II	C, E, G
69	II	C, E, G
71	II	C, E
73	II	C, F, G
75	I	B, F, G



Figure A5. Orthophoto of the frontage on the even-numbered side of Nemanjina Street (documentation of ICHP Niš edited by authors).

Table A5. Even-numbered side of Nemanjina Street—Heritage Value Assessment and Building Degradation.

Object Number	Object Value	Type of Degradation
76	V	I
74	V	I
72	I	B, F, G
70	V	I

Table A5. Cont.

Object Number	Object Value	Type of Degradation
68	V	I
64	V	I
62–56	VI	J
38	I	A, B, F
36	V	J
32	III	C, F
28–26	V	I
24–22	II	C, F, G
20–18	I	C, F, G, I
14 V	I	C, F

Appendix A.4. Sub-Area No 4.—Dušana Stojanovića Street

The row on Dimitrija Stojanovića Street (Figure A6, Table A6) comprises 50% of buildings in Category I with exceptional value, 10% in Category IV, and 40% of buildings in Category V. In terms of degradation, 40% of the buildings exhibit Grade A. The same percentage is observed for Grade G. Grade B degradation is present on 10% of the surveyed buildings, with Grades D, E, and J also each accounting for 10%. Grade F degradation occurs in 20% of buildings, while Grade J affects 30% of the built heritage in this unit.

The row on Njegoševa Street (Figure A7, Table A7) represents the core and most significant part of the entire unit. It comprises 60% of buildings classified as Category I with exceptional values, 20% of buildings that complement the ambient setting (Category III), and the remaining 20% are buildings without visible value (Category IV). Grade A degradation was observed in 40% of the surveyed buildings, while Grade C occurred in 20%. Grade G degradation is present in 60% of the buildings, and Grades H, I, and F each occur in 10%.

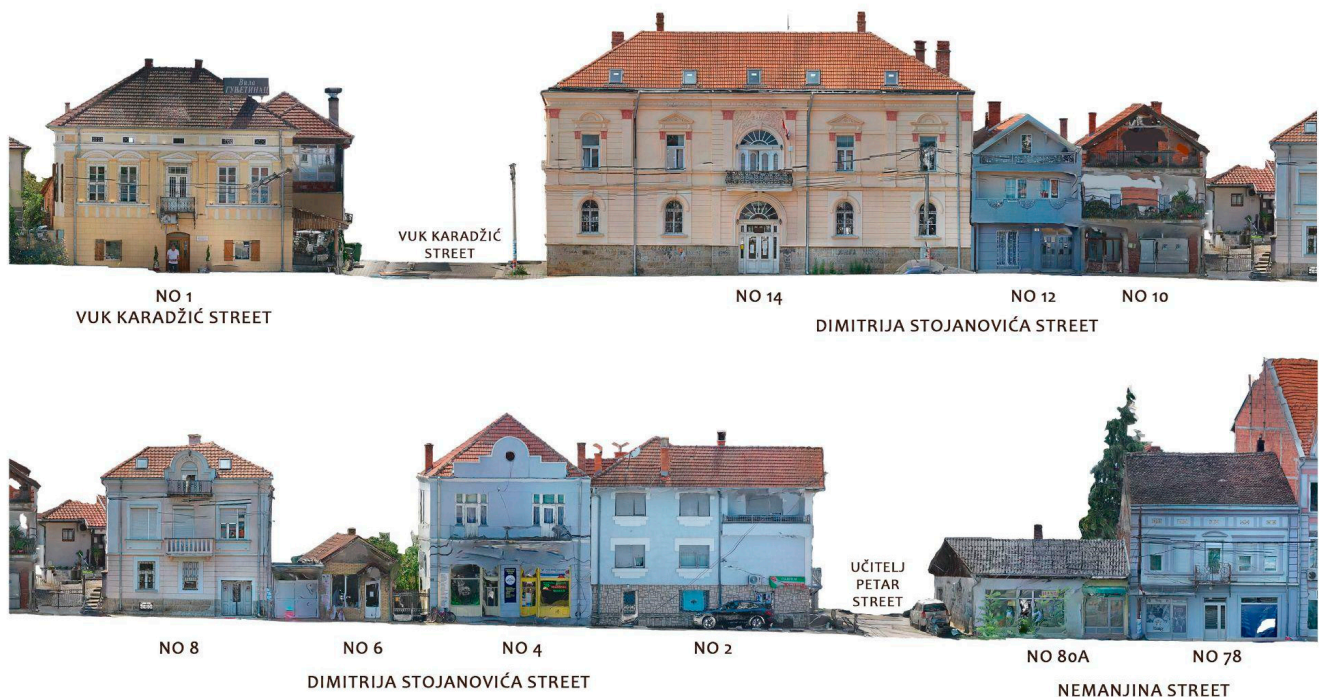


Figure A6. Orthophoto of the frontage in Dimitrija Stojanovića Street (documentation of ICHP Niš edited by authors).

Table A6. Dimitrija Stojanovica Street—Heritage Value Assessment and Building Degradation.

Object Number	Object Value	Type of Degradation
1 (Vuka Karadžića)	I	B, F, G
14	I	A, G
12	V	J
10	V	J
8	I	A, G
6	V	J
4	I	A
2	V	I
80A (Nemanjina)	IV	D, F, G
78 (Nemanjina)	I	A, E

**Figure A7.** Orthophoto of the frontage in Njegoševa Street (documentation of ICHP Niš edited by authors).**Table A7.** Njegoševa Street—Heritage Value Assessment and Building Degradation.

Object Number	Object Value	Type of Degradation
1 (object 3)	I	A, G
1 (object 2)	IV	C, G, H
1 (object 1)	III	I
7	I	A, F
3	I	A, G

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